



February 18, 2016

American English edition

Issue Number 269

## In this issue

**Suez Canal Route preferred**  
**Printing** on vellum  
**Chinese** New Year  
**Catholic-Orthodox** meeting  
**Missing** osprey located  
**Locust** swarms and plagues  
**St. Valentine's Day**  
**Ice Maiden** verdict  
**NATO** fleet in Aegean Sea  
**Rare** mineral catalog  
**Van Gogh's** bedroom paintings  
**Gathering** manatees  
**Purple** socks and the tree of life  
**Finding** Antarctic meteorites  
**Women** at the Western Wall  
**Bacteria** vision  
**Michelangelo's** hands  
**Aid** for besieged towns in Syria  
**Blow** away grass  
**Glossary** Crossword and Wordsearch Puzzle

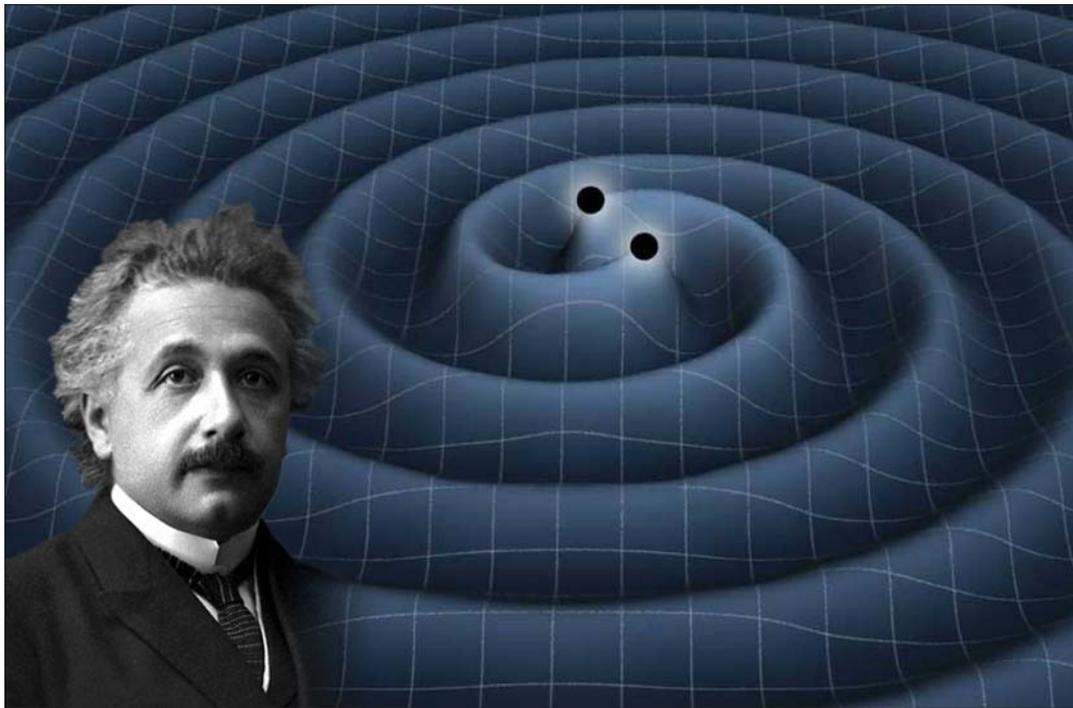


Illustration of gravitational waves created by two black holes orbiting each other (NASA). Inset: Albert Einstein in 1921

## GRAVITATIONAL WAVES RECORDED

“Ladies and gentlemen, we have detected gravitational waves”. An American cosmologist, or scientist who studies the Universe, made this announcement on February 11. He was speaking at a news conference in Washington DC, the U.S.’s capital city. The scientist explained that there was now a new window through which the cosmos, or Universe, could be studied. Some space researchers described the announcement as the 21st century’s most important discovery.

Amazingly, Albert Einstein (1879 – 1955) predicted gravitational waves 101 years ago. He was a German-born physicist. Einstein moved to the U.S. in 1933. He produced several famous theories. They said that the mass of a space object can warp, or bend, both space and time (or space-time). Einstein’s theories also suggest that time passes more slowly

when gravity is very strong and that rays of light can bend.

Many of Einstein’s theories are now believed to be correct. One predicted that large space objects, such as big moving planets, create gravitational waves. These waves would be weak. However, huge explosions in space would generate much stronger gravitational waves. Some examples are supernovas, or exploding stars, and black holes crashing into each other. Black holes are space objects with very powerful gravitational fields. Nothing can get away from them. All material is sucked in and trapped. Even light and other types of radiation are unable to escape. As they emit no light, black holes cannot be seen. Recording stars circling around these space objects is the best way to find them.

No one knew if gravitational waves really existed. They are often described

Learning English as a foreign language?

Newsademic.com

Recommended reading for EFL and ESL

as “ripples in space-time”. Picture a boat moving on a lake. The ripples it creates are like waves of gravity. Others talk about a part of space being shaken. If you shake a rope, the “shake” travels along it. This is like a gravitational wave. Yet gravitational waves go in all directions. They also travel at the speed of light. This is roughly 186,400 miles (300,000 kilometers) per second.

Gravitational waves squeeze and stretch space. They make the area between atoms expand and contract, or get smaller. If a gravitational wave passes through the Earth, everything (including you) gets slightly bigger and then smaller again. Yet the gravitational waves that reach our planet are tiny, or very weak. This is because they have traveled so far. Therefore the increase and decrease in size they cause is not noticed. However, if the Earth were much closer to an event that created the waves, everything (including you) would keep growing and shrinking in size until the waves passed.

The scientists who detected the gravitational waves work for an American project called LIGO. The name stands for Laser Interferometer Gravitational-Wave Observatory. There are two LIGO detectors. One is in Washington state and the other is in the state of Louisiana. The detectors, or observatories, are about 2,000 miles (3,220 kilometers) apart. Both are L-shaped. The legs of each L are 2.5 miles (four kilometers) in length. At the L’s corner, a laser beam is split in two. One half travels down each leg. There are mirrors at the end of the legs. These reflect the beams back to where they came from. Normally, the two beams arrive back at the corner at the same time.

However, if a gravitational wave passes through the legs, the beams

would be slightly squeezed and stretched. If this happens, they do not arrive back at the corner at exactly the same time. The LIGO equipment is very [sensitive](#). It can pick up differences in the laser beams that are a ten-thousandth of the width of a proton. Each atom has one or more protons in its nucleus, or central part.

The LIGO observatories were set up in 2002. Over the next eight years, they didn’t record a single gravitational wave. In 2010 a decision was made to upgrade the equipment. It took five years and cost \$200 million. The two detectors were switched on again last September. Within days the Louisiana detector registered a very slight difference in its laser beams. Then, one-hundredth of a second later, the same thing happened at the Washington site. The scientists suspected that this was a gravitational wave. Yet a lot of work had to be done to make sure.

Five months later the scientists were able to confirm that they had recorded gravitational waves. So these waves of gravity do exist. The scientists believe that the recorded waves were created by two black holes crashing and merging into each other. From the waves’ measurements, the scientists worked out that this happened 1.3 billion light years away. Each black hole was about 30 times the mass of the Sun. The collision created an even larger black hole. The enormous explosion turned about three suns’ worth of mass into gravitational waves. These traveled, or rippled, through the cosmos at the speed of light.

Nobody really knows why the Universe came into existence. Most researchers think that the “Big Bang Theory” probably best explains how it began. In 1929, an American

astronomer called Edwin Hubble (1889 – 1953) discovered that the Universe is getting bigger all the time. Working backwards, this means that it started as a single tiny point and then began to expand. If the Big Bang Theory is correct, the Universe is around 13.7 billion years old.



*Aerial view of LIGO detector in Washington state*

The name “Big Bang” makes it sound as if there was a gigantic explosion. This is misleading. It was not an explosion but “an expansion of space”. Think of a very small balloon. Imagine that the balloon is the Universe. It gradually gets bigger and bigger in all directions. However, unlike the balloon, no extra “air” is being “blown” into the Universe. Looking at distant parts of the Universe is like looking back in time. For instance, the LIGO detected an event that happened over one billion years ago. The gravitational waves from this explosion took 1.3 billion years to reach the Earth.

Telescopes in use today can only detect, or “see”, light. Yet, no light comes from 99% of the cosmos. Gravitational wave observatories, like LIGO, can now be used as a type of telescope. There are plans to build similar detectors in Japan, India and Italy. Working together, these could create one giant telescope. It would be able to “see” or record events in the dark Universe that happened many billions of years ago. Some even believe that gravitational wave detectors could peer almost all the way back to the Big Bang. ■

## NORTHERN SEA ROUTE STUDY

In recent years many people have predicted that more and more ships will use the Northern Sea Route (NSR). They argued that this Arctic Sea route would be a shortcut for vessels sailing between big seaports in China, Japan and South Korea, and the largest ports in Northern Europe.

A business school in Denmark has just completed a study. It compared the advantages and disadvantages of the NSR and the Suez Canal Route (SCR). This canal is in Egypt. It connects the Red Sea and the Mediterranean Sea. Nowadays, the Suez Canal is a very busy waterway. It was completed in 1869.

Most shipping companies want to save money. The business school's study claims that using the NSR still costs more than the SCR. This, the school says, is likely to be true for at least another 20 years. The NSR goes along Russia's northern coastline. The Russian government has tried to encourage ship owners to use it. Yet, in recent years, the number of ships using the NSR has decreased.

Today, ships transport cargo in big metal boxes called containers. Using large cranes, these are easy to load and unload. Thousands of container ships cross the world's oceans every year. China is the world's biggest exporter of goods. Many container ships sail between its ports and the larger seaports in northern Europe.

The main container ports in China are: Hong Kong, Shanghai, Dalian, and Qingdao. Other busy

seaports in nearby countries include Yokohama, in Japan, and Pusan, in South Korea. Ships from all these places frequently sail to northern Europe. There, the main seaports are: Rotterdam, in the Netherlands, Hamburg, in Germany, Antwerp, in Belgium, and Felixstowe, in Britain.

The distance from China to northern Europe via the NSR is shorter than the SCR.

The difference is at least 2,500 miles (4,000 kilometers). Ships using the NSR can reduce the time it takes to complete the journey by 12 to 14 days. Large container ships' engines burn oil. Therefore another advantage of the NSR is that shipping companies use less fuel. This reduces the transport costs.

However, the NSR cannot be used throughout the year. Now, it is possible to make the voyage between July and November. For the remainder of the year the route is usually blocked by ice. Temperatures in this part of the world have been rising. Therefore, in the future, the NSR may be open for a longer period. When ships do use the NSR, Russian icebreakers often accompany them. These vessels are designed to clear, or break, a path through thick sea ice. Container ships following behind can then use these paths.

Ships sailing from China to northern Europe, via the Suez Canal, pass through the Strait of Malacca. They then travel across the Indian Ocean and into the Red Sea. After using the Suez Canal, the ships sail the length of the Mediterranean Sea and around Spain and France. This route

is open throughout the year. Yet, as the Suez Canal is very busy, ships may need to wait for several days before they can enter the waterway.

The business school's study was done to help ship owners. When building new ships, they have to decide on the right design. Ships using the NSR need to be made stronger, or ice-reinforced. Open-water ships are less expensive to make. The business school created a computer model. It includes many different variables, or things that can change. Some of these variables are: the cost of building the ship, the price of oil, distance, average speed, canal charges, crew costs, icebreaker charges, repairs, and insurance.



Container ship using the NSR (The Arctic Institute)

Currently, the price of oil is very low. The business school's model shows that using the SCR is less expensive. However, this could change if the price of oil becomes more expensive and the NSR is ice-free for a longer time each year. ■

## VELLUM DECISION

The House of Lords is part of Britain's parliament. On February 9, it announced that all new acts (or laws or legislation) would now be printed on a special type of paper. Traditionally, acts passed by the parliament are printed on parchment, or vellum.

Parchment was first used as a type of paper thousands of years ago. It is made from animal skin.

The skin from calves, sheep, goats, and deer can be used to make parchment. The skin is washed and then soaked in a special liquid for many days. This removes most of the animal hair. Afterwards the skin is stretched across a wooden frame. The parchment maker then scrapes both sides with a knife as the skin dries. This gets rid of any remaining hair and makes the parchment the same thickness. Therefore making a small amount of parchment can take several weeks. Parchment made from calfskin is usually called vellum. This name comes from an old French word that means calf.

Long ago all books were handwritten and made of parchment. In England all laws made by parliament were recorded on long pieces of vellum. These were rolled up to be stored. Vellum is very [durable](#). It can last for thousands of years.



*The Acts of Parliament storeroom at the Palace of Westminster, in London, the capital of Britain*

Some of Britain's most famous historical documents were written on vellum. The Domesday Book and Magna Carta are examples. The Domesday Book was produced in 1068. It is a record of all the towns, villages and farmland in England. Magna Carta is a Latin phrase. It means "Great Charter". King John of England put his seal on Magna Carta. The charter lists many rules. A group of wealthy landowners forced the king to

agree to them in 1215. Many historians say that Magna Carta was the world's first constitution. This is the set of rules by which a country is governed.

Paper was invented in China over two thousand years ago. Papermaking slowly spread around the world. It was first used in the Middle East around the year 700. By the 1400s paper was being made in most European countries. As paper was quicker and less expensive to make, it soon replaced parchment.



*The Palace of Westminster, in London*

However, in England, important documents continued to be written or printed on vellum. The elected members of Britain's parliament meet at the Palace of Westminster, in London, the country's capital city. The parliament has two "houses", the House of Commons (usually called the Commons) and the House of Lords (usually called the Lords). The Commons is the lower house and the Lords the upper. Most people in the House of Lords are appointed. None are elected. The Lords' job is to check all legislation that is passed by the Commons.

In the Palace of Westminster there is a room where all the Acts of Parliament are stored. The older ones were written on rolls of vellum. Nowadays, new laws are drafted on paper. Then, after the law is finalized, two copies are printed in booklets made from vellum.

The House of Lords wanted to stop using vellum to save money. It said that archive paper would be used for new laws. This paper lasts for about 500 years. Many people complained. David Cameron is the prime minister of Britain. A few days after the House of Lords' announcement, a person who works for Mr. Cameron's office declared that vellum would still be used. The prime minister's office would now pay for it. Only one company still makes vellum in Britain. Its boss said that the prime minister's office had made a sensible decision. □

## YEAR OF THE MONKEY

Millions of people around the world celebrated Chinese New Year on February 8. Chinese New Year is also known as the Spring Festival or Lunar New Year. The festival is an important time in China. Chinese people who live in many other parts of the world also celebrate the start of the New Year.

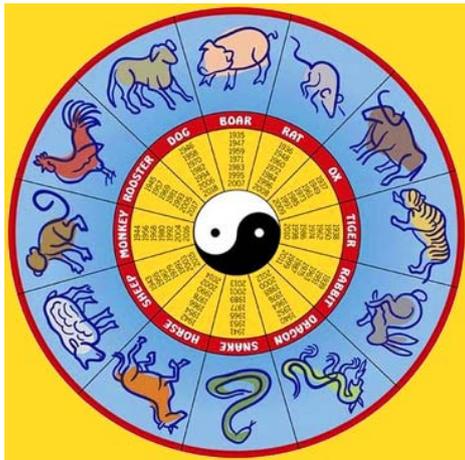
Today, most people use the international, or Gregorian, calendar. The Chinese calendar is based on the cycles of the Moon. These lunar calendars do not match up exactly with the international one. Therefore, in the international calendar the date of the Spring Festival changes each year. For example, the Year of the Goat began on February 19, 2015. Next year is the Year of the Rooster (or Chicken). It starts on January 28, 2017.

The Chinese calendar (or Chinese or animal zodiac) has a 12-year cycle. An animal represents each year. The cycle begins with the Year of the Rat. The Monkey is the ninth of the calendar's 12 animals. Each year's animal is associated

with one of the five “elements”: metal, water, wood, fire, and earth. This year the “fire” monkey takes over from the “wood” goat. The elements change after two years. Next year the “fire” rooster replaces the “fire” monkey.

Nobody knows why these 12 animals are used. One legend says that Buddha organized a race. The first animal to touch his foot would win. At first, the tiger was in front. Yet it soon tired. The ox then overtook the tiger. The rat was hiding in the ox’s tail. As the ox got near to Buddha, the rat ran along its back. It then jumped off the ox’s nose to win the race.

After the race Buddha decided that the years would follow the order in which the animals finished. First is the Rat. The Ox is second. They are followed by: Tiger, Hare (or Rabbit), Dragon, Snake, Horse, Goat (or Sheep), Monkey, Rooster, Dog, and Pig.



Chinese zodiac

Traditionally, the Chinese New Year holiday marks the end of winter. The Spring Festival lasts for 15 days, or until the first full Moon. There are different celebrations on each day. Many Chinese families clean their houses on the evening before the New Year holiday begins. This is meant to “sweep away” bad luck. A

clean house is supposed to welcome “good fortune”. In China red is the color of celebration and [prosperity](#), or wealth. Children receive gifts of small, sealed red envelopes. These contain money from relatives.

In China most factory workers in large cities live far from their families in the countryside. Many big factories have nearby blocks, or dormitories. This is where their workers live. Most people who work in factories are allowed one week’s holiday for the New Year.



For many factory workers, the Spring Festival is the only time in the year that they go home to visit their families. Therefore, at the start and end of the holiday, millions of people travel on trains and buses. It is the largest movement of people all at one time anywhere in the world. About 20 million people live and work in Beijing, China’s capital. Over New Year, about one-third of them leave the city.

In China people are believed to have similar characters to the animal of the year of their birth. Those born in the Year of the Goat are said to be peace-loving and kind. However, there is a myth about people born during this year. It says that many will never find happiness. For this reason some couples try to make sure that their children are not born in the Year of the Goat. “Monkeys” are supposed to be strong and lively. Many people therefore expect more babies to be born in China this year. ■

## POPE-PATRIARCH MEETING

Two religious leaders met in Havana, the capital of Cuba, on February 12. Pope Francis and Patriarch Kirill greeted each other at the city’s airport. It was a historic meeting. The pope leads the Roman Catholic Church. The patriarch is head of the Russian Orthodox Church. This was the first time that the leaders of these religions had met since their churches divided almost 1,000 years ago.

Two of Jesus Christ’s early followers led the early Christian movement. Christians believe that Jesus is the Son of God. St Paul became the greatest preacher of this Christian movement. He is believed to have lived between the years 5 and 57 CE. St Paul’s beliefs are known as Pauline Christianity. In 313 CE, the Roman Empire declared that Pauline Christianity was an official, or [legitimate](#), religion. In 380 CE it became the Empire’s official religion. Then, it became known as Roman Catholicism, or the Roman Catholic Church.

For the next 700 years all Christians were Catholics. In 1054 there was a split, or [schism](#). It was between the Roman Catholic Church and what became known as the Eastern Orthodox Church. In the early 1500s there was another split, or divide. This is called the Protestant Reformation. Its leader was Martin Luther (1483 – 1586). He was a German theologian, or person who studies religious beliefs.

Protestants believe that all God’s teachings are written in the Bible. They call it “the Word of God”. Catholics believe that their traditions and beliefs are just as important as the Bible. For example, Catholics pray to saints and believe in purgatory. Yet neither is mentioned in the Bible. Catholics say that purgatory

is the place to where the souls of sinners go after they die.

Christianity now has three main traditions: Roman Catholic, Protestant and Orthodox. Today, in the world, there are 1.2 billion Catholics, 700 million Protestants and 300 million followers of the Orthodox Church. There are 15 separate Orthodox Churches. All are equal. They include: Russian Orthodox, Greek Orthodox, Ukrainian Orthodox, Bulgarian Orthodox, the Church of Alexandria (in Egypt), and Syrian Orthodox. With 160 million followers, the Russian Orthodox Church is much bigger than the other 14.



*Patriarch Kirill (left) and Pope Francis (right)*

In recent years, leaders of the Orthodox Church in Russia have worked closely with the Russian government. The Catholic Church has its own state. Called the Vatican, it is a separate city within the city of Rome, Italy's capital. Therefore leaders of the Roman Catholic Church are independent. They do not work for, or with, any government.

The split between the Roman Catholic and Orthodox Churches happened because of different beliefs. Their followers have a different understanding of the Holy Trinity. For Christians this is the relationship between the Father (God), Son (Jesus) and Holy Spirit (or Holy Ghost). The Orthodox and Catholic Churches also disagree

about the date of Easter. Christians believe that this was when Jesus was crucified, or killed, and then rose from the dead. Today, Orthodox priests can marry, but Catholic priests choose not to.

Former popes have met with leaders of other Orthodox Churches before. Yet there had never been a meeting with the leader of the Russian Orthodox Church. Pope Francis and Patriarch Kirill spoke with each other for about two hours. Pope Francis was on his way to Mexico. Patriarch Kirill was visiting Cuba and then traveling to Brazil and Paraguay, in South America. The first words that Pope Francis said were "at last" and "we are brothers". Patriarch Kirill, who is also known as the Patriarch of Moscow and All Russia, said "now things are easier". ■

## MISSING OSPREY FOUND

Four years ago a young osprey was tagged in Scotland, in the north of Britain. Wildlife officials named the bird "Blue YD". The osprey's tag included a tiny tracking device. Unfortunately, it soon failed, or stopped working. The bird disappeared and nobody knew what happened to it. Yet, recently, Blue YD was spotted. The osprey was on a sandy beach, in Senegal, in West Africa. The distance between Scotland and Senegal is about 3,000 miles (4,830 kilometers).

Ospreys are raptors, or birds of prey. They are also known as fish eagles, or fish hawks. Fully-grown ospreys are about 24 inches (60 centimeters) long. The feathers on the upper parts of their bodies are brown. Those on the lower parts are a grayish-white. The bird's head is white except for a black-brown line around its eyes.

These raptors usually build their nests in the tops of tall trees. The female lays between two and four eggs over a period of one month. Each hatches about five weeks after it was laid. Both the male and female feed the chicks. The first chick to hatch usually has a better chance of surviving. This is because it will steal food from the smaller, weaker chicks.



*Osprey after successfully catching a fish*

Ospreys eat fish. Occasionally, they may catch animals such as mice, rabbits, lizards, and smaller birds. Ospreys are expert fishermen. They will fly high above a river or lake. When they see a fish near the surface, the birds dive down to the water. Their sharp claws, or talons, grab the fish. These then hold the fish securely, as the bird returns to its nest.

The birds live near large lakes and rivers. They can be found on all the world's continents except Antarctica. Those that live in North America fly to South America for the winter months. Ospreys in Europe go to Africa. The ones in Australia do not migrate.

Today, Ospreys are not endangered. However, in the 1950s and 1960s their numbers declined. It was discovered that a pesticide, or chemical mixture, called DDT affected the birds. Farmers used DDT spray to kill insects that damaged their crops. Later, DDT was thought to cause many wildlife problems as well as cancers in humans.

By the early 1970s most countries had banned its use. After the DDT ban, osprey numbers increased.

By 1916 there were no ospreys in Britain. The birds were hunted and collectors stole many of their eggs. In 1954 a pair of ospreys arrived in Scotland. They probably came from Norway or Sweden. The birds then returned to their nest each year. A special operation was organized to protect them. Barbed wire was used to stop egg collectors. The two ospreys were watched day and night. Slowly, their numbers in Britain increased. Now, there are thought to be 240 breeding pairs in the country. Most have been tagged.

Ospreys become adults, or are able to breed, after three or four years. Wildlife officials say that it is not unusual for younger birds to stay in Africa and not return to northern Europe. Blue YD is now four years old. The officials therefore hope that, this summer, the bird will return to Scotland. ■

## UNDERSTANDING LOCUSTS

A team of researchers from Britain and Australia have completed a study on locusts. They have created a computer model. This helps to predict how large swarms of locusts behave.

Locusts are a type of grasshopper. They are found in most parts of the world. Normally, locusts act and behave like grasshoppers. They eat plants and stay on the ground. The insects use their powerful back legs to jump long distances. There are several types of locust. The ones that cause most problems are the desert locust and the plague locust.

These insects live in drier parts of the world such as North Africa, the Middle East, and parts of Asia and Australia. Both can grow to a length of 2.75 inches (seven centimeters).

In certain conditions locusts behave very differently. This normally happens when a drought is followed by heavy rain. Seeds that have been dormant, or not growing for a long time, suddenly come to life. The locusts then begin to breed much more easily. Females lay their eggs just under the ground. These soon hatch and the number of locusts quickly increases. This is often described as a population explosion. The adults begin to change. Their color turns bright yellow or black. The locusts' eyes, back legs and wings all get bigger. Now, they are able to fly. Large numbers of locusts will all take off together. These are known as swarms or "plagues of locusts".



Locust swarm (FAO)

These swarms, or plagues, can be made up of billions of locusts. A swarm can cover hundreds of square miles. It can travel 80 miles (130 kilometers) in one day. Swarming locusts eat all the plants in their path. Each insect can eat its own weight in plants every day. Locust swarms destroy food crops. When this happens in places like North Africa it causes food shortages and [starvation](#). When the swarm runs out of food the locusts

separate. Then, they change back to being grasshopper-like. Locusts have short life spans. They live for only five or six months.

Newly hatched locusts are called nymphs. At this stage of their life cycle, the insects cannot fly. If there are millions of nymphs on the ground a swarm is likely to happen. Nowadays, governments try to kill large groups of nymphs before they become adults. Aircraft are used to spray a pesticide above the nymphs. This falls to the ground and kills them.



Desert locusts (Pascal Terjan)

The researchers discovered that small groups of locusts do not communicate with each other. They fly in different directions. Yet when there are five or six in a group, they start to fly in the same way. Sometimes, several locusts in a larger group will change direction. All the locusts in the group then do the same. The researchers say that each insect interacts, or communicates, with the other locusts flying next to it. If a single locust meets two others flying in a different direction, it will fly alongside them. Some large groups of fish and birds act in a similar way.

The researchers want to use their computer model to find ways of breaking up locust swarms. [Disrupting](#) how they communicate and the order in which they fly are possibilities. ■

## VALENTINE'S DAY

Valentine's Day is on February 14. Also known as St Valentine's Day, this is a day associated with romantic love. In many countries people give Valentine cards to their husbands, wives, partners, boyfriends, and girlfriends on February 14. Many also exchange gifts of jewelry, chocolates and flowers. Red roses are popular.

No one really knows how Valentine's Day started. The day is one of many feast days in the Christian calendar. This type of feast is not a large meal. A feast day is one that is [dedicated](#) to a saint. It is usually the day on which they died. In the Christian faith, a patron saint is in charge, or responsible, for something. This could be a country, a city, a group, an activity (such as mining or traveling) or even an illness. St Valentine is the patron saint of engaged couples, marriages, love, beekeepers, and plague. The plague is an illness that killed tens of thousands of people hundreds of years ago.

There seems to have been at least two St Valentines. The Roman emperor Claudius the Second ordered the execution of two men named Valentine. They were killed during different years in the 3rd century. Yet both died on February 14. In one story Valentine was arrested for giving food to prisoners. His jailer, or the person in charge of the prison, had a blind daughter. In the story, Valentine helps her to see again. The jailer then agrees to become a Christian. One version says that Valentine fell in love with the girl. Before he was executed, he sent her a note. It ended with the words "from your Valentine".

Another legend says that Valentine angered the Roman emperor.

The emperor had banned young men in Rome from getting married. He thought that single men would be much better soldiers. Valentine was arrested and killed because he arranged secret weddings.



Image of St. Valentine

There was a [pagan](#) Roman festival in the middle of February. During this festival, goats and dogs were [sacrificed](#). Young men would then hit young women with skins taken from the dead animals. This was supposed to increase the women's fertility, or their chances of having children. Around 500 CE, the pope, or leader of the Roman Catholic Church, wanted to stop this festival. He renamed it St Valentine's Day. However, historians say that all of these stories and legends are not likely to be true.

Geoffrey Chaucer (1343 – 1400) was an early English poet. He seems to have been the first person to write about Valentine's Day. In 1415 a

French nobleman sent a Valentine's note to his wife. He did this after being captured by the English at the Battle of Agincourt. William Shakespeare (1564 – 1616) is a famous English playwright. *Hamlet* is one of his better-known plays. In the play a woman called Ophelia talks about Valentine's Day

By the late 1700s, some people in Britain were sending love-notes to others on Valentine's Day. As posting letters became less expensive, more people sent Valentine notes. By the 1830s factories in Britain were printing Valentine's Day cards. The first Valentine's Day cards in the U.S. were made in 1847. In 1913 Hallmark, a large greeting cards company, began promoting Valentine's Day.

Nowadays, over one billion cards are sent on Valentine's Day. Christmas is the only time of the year when more cards are mailed, or delivered. Valentine's Day is now popular in many countries. However, in several non-Christian nations, such as India and Pakistan, some religious leaders want to ban it. ■

## THE ICE MAIDEN

The Altai Republic is a part of Russia. It is in Siberia, close to the borders with China, Kazakhstan and Mongolia. In 1993 a team of archaeologists dug up an ancient burial mound in Altai. They discovered the well-preserved body of a young woman. Parts of her skin are covered in tattoos. The woman died about 2,500 years ago. Today, she is known as the Ice Maiden or Altai princess.

The Ice Maiden was taken to the Russian city of Novosibirsk. There, her body could be scientifically

studied. The Teles people are an ethnic group that live in the Altai Mountains. They believe in ancestor worship and the spirit world. The Teles' leaders want the Ice Maiden to be reburied where she was found. They claim that she guarded the gates to the underworld, or hell. The Teles claim that bad things have happened since the Ice Maiden's body was taken away. They say these include: forest fires, high winds, floods, more earthquakes, illnesses, and suicides.

Gorno-Altai is the largest city in the Altai Republic. The Teles took their complaint to the city authorities. A court was then asked to make a decision. A few years ago, the Ice Maiden was returned to Gorno-Altai. Her body is kept in the city's museum. It has not been put on public display. Scientists who have studied the Ice Maiden's body argued that it should not be reburied. Recently, the court made its decision. It declared that the Altai princess's body now belongs to the museum. This means that it will not be reburied.



*The Ice Maiden*

The Ice Maiden was about 25 years old when she died. Scientists think that she had breast cancer. She had also had a bad fall. DNA tests show that the woman was not related to the people who live in this part of the world today. The Ice Maiden is thought to have belonged to a tribe of **nomads** called the Pazyryk

people. Herodotus described these people. He is a famous Ancient Greek historian who lived around 450 BCE.

After the Ice Maiden was buried, her tomb became flooded. The water froze. It remained frozen until the archaeologists dug into the burial mound. This meant that the Ice Maiden's body and everything in the tomb did not rot or decay. The burial mound contained many items. Six horses were buried near the princess. She was placed inside a large tree trunk, which had been hollowed out. There were small tables in the tomb. A meal of horse meat, mutton (sheep) and a yogurt-like drink was placed on them. The woman was wearing clothes made from wool and silk. She also wore a large headdress. This was almost three feet (90 centimeters) tall.

The Ice Maiden's body art is said to be the most well-preserved and **intricate** example of ancient tattoos in the world. A man's body with similar tattoos was found in another burial mound. He is believed to have been a tribal chief. Scientists do not know how these ancient people created such perfect tattoos. ■

## NATO IN THE AEGEAN

Jens Stoltenberg is the secretary-general, or leader, of NATO. On February 11, a special NATO conference was held in Brussels, the capital of Belgium. After the meeting, Mr. Stoltenberg, who is a former prime minister of Norway, made an announcement. He said that a fleet of NATO navy ships would be sent to the Aegean Sea.

The Aegean Sea is the part of the Mediterranean between Greece and Turkey. There are many Greek

islands in the Aegean. The NATO fleet is to help Greece and Turkey control the number of migrants that are now landing on some of these islands. This is the first time that NATO has **intervened** in what's now called the European migrant crisis.



NATO stands for "North Atlantic Treaty Organization". It is a military alliance. NATO was set up by the U.S. soon after the end of the Second World War in 1945. At first, NATO had seven member nations. Apart from the U.S. and Canada, all were in Europe. Now, 28 countries are members of NATO. Turkey joined the alliance in 1952. Most European countries, including Greece, are NATO members. NATO members agree to send military forces to help if other NATO countries are attacked, or threatened with attack.

The European migrant crisis began about 12 months ago. Then, tens of thousands of people began arriving on Greek islands close to Turkey's coast. Many of the migrants were from Syria. Most were trying to get away from the fighting in their country. The war in Syria has lasted for five years. Few people think that it will end soon.

Millions of Syrians are now living in large tented camps in Turkey, Lebanon and Jordan. Many of

those trying to get to Greece have been living in camps in Turkey for several years. Other migrants who have been traveling to Greece come from Afghanistan, Iraq, Bangladesh, and Pakistan. These people hope to find jobs in European Union (EU) countries and improve their lives.

At first, some EU countries welcomed the migrants. Angela Merkel, the German chancellor, declared that her country would accept 800,000 migrants. Not everybody was happy with her decision. In 2015 about one million migrants traveled to Germany. Many others went to Austria and Sweden. Most people thought that fewer migrants would try to make the journey from Turkey during the winter months. Yet, at least 2,000 people are still landing on Greek islands every day.



NATO secretary general, Jens Stoltenberg

Germany and most other EU countries have now decided to control the numbers. Now migrants arriving in Greece will have to be properly registered. Then, they will have to stay in Greece while a decision is made about their future. Those made homeless by the fighting in Syria may be allowed to move to an EU country. Those just hoping for a job and a better life are likely to be sent back to Turkey.

To get to the Greek islands, the migrants pay people smugglers for a place on a small boat. Some of these boats have sunk. Many people have drowned. Most of the migrants

are young men. Yet some older people and couples with children have also been making the journey. The NATO ships will come from several member countries. They will try to stop the people smugglers arranging these sea crossings. The EU has also agreed to pay Turkey a large amount of money. This is to be spent on improving the refugee, or migrant, camps in Turkey. Turkish police officers have been ordered to stop the people smuggling operations.

Camps for the migrants have been set up on the Greek islands of Kos, Lesbos, Chios, Leros, and Samos. These are to be used to register the migrants that do arrive. Many Greeks living on these islands are unhappy about the camps. Traditionally, these places have been popular with European holidaymakers. Many people on the islands work in the holiday business. They fear that people will no longer want to visit their islands, because of the migrant problem. ■

## MINERAL CATALOG

More than 5,200 minerals have been recorded. Some are very common. Others can be found only in a few places. Mineralogists, or scientists who study minerals, from the U.S. have completed a new mineral catalog. It lists the Earth's 2,550 rarest minerals. Each exists in fewer than five places.

Minerals and rocks are different. Minerals are inorganic substances that occur naturally. They are made of non-living particles. Minerals are usually solid and have a geometric shape, or crystal structure. They are the same substance all the way through. Rocks are made of minerals but minerals are not made of rock.

All rocks contain at least two minerals. So when two or more minerals come together they form a rock.

Cakes are made from a number of **ingredients**. If a rock were a cake, its ingredients would be minerals. Quartz is the Earth's most abundant, or common, mineral. The most widespread rock is basalt. Nowadays, about 100 new minerals are found every year.



Examples of minerals

A mineral can be made from one chemical element. Yet most consist of two or more. Diamond is a mineral. It is made from carbon, or one element. Diamond is also the hardest natural substance in the world. Fluorite, another mineral, is made from a mixture, or compound, of calcium and fluorine. Gold is one of the most valuable minerals. It is very soft.

Silicates are minerals that contain oxygen and silicon. About 90% of the Earth's crust is made from silicates. Nearly all the minerals in the crust are made from eight elements. These are: oxygen, silicon, aluminum, iron, calcium, sodium, potassium, and magnesium. As well as quartz, other common minerals are: feldspar, bauxite, cobalt, talc, and pyrite. Gems are pieces of rare minerals, which are cut and polished. Cut diamonds, emeralds, rubies, and sapphires, are examples.

The very rare minerals form only in certain conditions. The temperature and pressure may have to be exactly right. Some fall apart if they get wet, or if the Sun shines on them. The scientists who created the new list say that fingerite is an example of one of these rare, unusual minerals. It is found only on the slopes of one volcano in El Salvador. Fingerite is made from an exact amount of vanadium and copper. If either of these amounts changes slightly, a different mineral is formed. What's more, in the rain, fingerite washes away.

The new rare mineral catalog will allow other scientists to learn where the rarest minerals exist. It also lists their possible quantities and which ones may be useful for certain technologies. ■

## VAN GOGH'S BEDROOM

The Art [Institute](#) of Chicago, in the U.S., has organized a new exhibition. The art museum owns a famous picture that was painted by Vincent van Gogh. It's called *Bedroom in Arles*. Van Gogh painted three very similar pictures. The other two are owned by museums in the Netherlands and France. These two pictures have been loaned to the Chicago museum for its exhibition. This is only the second time that all three pictures have been together since van Gogh died.

Vincent van Gogh (1853 – 1890) came from the Netherlands. He was an unusual artist for his day. Van Gogh liked to use very bright colors, especially yellows. During his lifetime van Gogh was not well known. He suffered from [anxiety](#) and mental health problems. Art experts say that van Gogh's work



First (L), second (C) and third (R) 'Bedroom in Arles' paintings by Vincent van Gogh

[influenced](#) many famous artists who lived after him.

Today, van Gogh's paintings are worth millions of dollars. Yet, during his lifetime he never sold any of his pictures. Van Gogh had little money. His brother, Theo, lived in Paris, the capital of France. They frequently wrote letters to each other. Van Gogh relied on his brother for money and help with his mental problems.

Van Gogh spent the last years of his life in the city of Arles, in the south of France. He moved there for the warmer weather. The artist hoped that it would improve his health. Van Gogh was friendly with a French artist called Paul Gauguin (1848 – 1903). Gauguin went to visit van Gogh in Arles. One day the two men argued. Gauguin left and moved into a nearby hotel. Later, van Gogh used a razor to cut off a part of his own ear.



How the second version of van Gogh's "Bedroom in Arles" may have looked (Art Institute of Chicago)

Van Gogh painted the three pictures of his bedroom in Arles between 1888 and 1889. The first was painted before he cut his ear. The

second was completed after he had attacked himself and spent time in hospital. This is the painting that the Chicago museum owns. Today, all the paintings look very similar. However, the Chicago museum suspected that the colors of its painting had faded.

Museum officials analyzed the picture using a special type of X-ray equipment. They discovered that many of the painting's colors used to be much darker. For example, the walls and door now look blue. Yet van Gogh painted them in a purple color. Hundreds of years ago artists usually made their own paints. The first "manufactured" paint in squeezable tubes was produced in the 1840s. This meant that it was easy for artists to buy the paints they needed. As he had little money, van Gogh normally bought the least expensive paint. He wrote about buying cheap paints in a letter he sent to Theo. Over time, these paints were more likely to fade.

The museum officials suspect that van Gogh used darker colors in the second painting because of his state of mind. They have created a copy of the picture as van Gogh may have painted it. This picture is a part of the museum's exhibition.

Van Gogh continued to suffer from mental problems. In 1890, he went to a field and shot himself in the chest. The artist died a few days later, aged 37. ■

## MANATEES GATHERING

Three Sisters Springs is in the state of Florida, in the U.S.. This is a natural inlet close to the coast. Here, warmer water comes up from deep below the seabed. Normally, people are able to swim, dive and use small boats at the springs. However, recently, officials declared that the springs would be closed for at least one week. This was because over 400 manatees had crowded into the inlet.



Manatees

Manatees are also known as sea cows. They are large **aquatic** mammals. Manatees are herbivores, or plant-eaters. They mainly feed on underwater grasses, algae and weeds. Manatees live in rivers, shallow coastal waters, and **estuaries** around Florida. Adults are around ten feet (three meters) long when fully-grown. They can weigh as much as 1,200 pounds (545 kilograms).

As they are mammals, manatees need to come to the surface to breathe. If resting, manatees can stay under the water for about 15 minutes. When swimming, they need to take a breath of air every three or four minutes. Often the only part of a manatee that can be seen is its nose sticking out of the water.

Even though manatees are big animals, they swim gracefully. The animals are “powered” by their strong tails. They also have two

front flippers. Manatees never leave the water. Mothers help their newborn calves to the surface to take their first breath of air. The babies are able to swim when they are only about one hour old. Many manatees live alone. Some swim in pairs or groups of about five animals.

Manatees are an endangered species. Around Florida, they are protected. It’s now thought that about 6,000 manatees live along Florida’s coastline. Each year a number of manatees are killed by boats. Another problem is cold water. Manatees can migrate over long distances. Yet many stay in the waters around Florida because of their warm temperatures. Marine scientists say that manatees can die if the water they’re in is too cold. They lose fat, which is important for keeping them warm. This problem is known as “cold stress”. Manatees prefer water temperatures of at least 68°F (20°C). If they have to travel away from warm water to find food, they are more likely to suffer from cold stress.

Some human developments are helpful to manatees. For example, several large factories in Florida use seawater to cool their equipment. This water becomes slightly warmer from being used in this way. Manatee populations often gather around the places where factories pump the warmer water back into rivers.

In recent weeks the weather in Florida has been colder than usual. The manatees crowded into the Three Sisters Springs to keep warm. However, here, there is not much for them to feed on. Each manatee can eat one-tenth of its own huge body weight in 24 hours. Officials explained that once the animals start to feel hungry, they would leave the inlet.

Although people are not allowed to swim in the Three Sisters Springs, they can visit to watch the manatees. Seeing so many manatees all in one place is very unusual. ■

## PURPLE SOCKS

American researchers have discovered four new worm-like sea creatures. They belong to a group of organisms called *Xenoturbella*. The creatures are purple. The researchers nicknamed them “purple socks”. This is because they look like socks that have been thrown on the ground. The researchers have been trying to work out how these creatures are related to other animals.



Purple sock (MBARI)

The first *Xenoturbella* was discovered near Sweden over 60 years ago. It is about 1.6 inches (four centimeters) long. The largest of the newly discovered ones is five times as big. Some of the new *Xenoturbella* live in deep water. They were found 12,100 feet (3,700 meters) below the surface. The researchers spotted the sock-like organisms when using an ROV (remotely operated vehicle). They sent the vehicle down to the seabed to film what was feeding on a dead whale’s body.

For many years the sock-like creature found near Sweden was the only one known to exist. Now that four others have been recorded, the researchers want to place the creatures in the evolutionary tree, or tree of life. The tree of life is a diagram. It is a simple way of showing how all the world's animals are related. The diagram highlights the animals that have common ancestors. It also shows when the ancestors split into different species. Each species has its own branch on the tree.

Evolutionary theory suggests that all life on the Earth came from a common ancestor billions of years ago. Some organisms became separate species quickly. Others did so more recently. For instance, dogs are believed to have separated from wolves around 40,000 years ago. One of the first people to draw a tree of life was Charles Darwin

(1809 – 1892). He was a naturalist from Britain. Naturalists are people who study plants and animals. They mainly do this by observation. Darwin became famous for his book about evolution. Called *On the Origin of Species*, it was published in 1859.

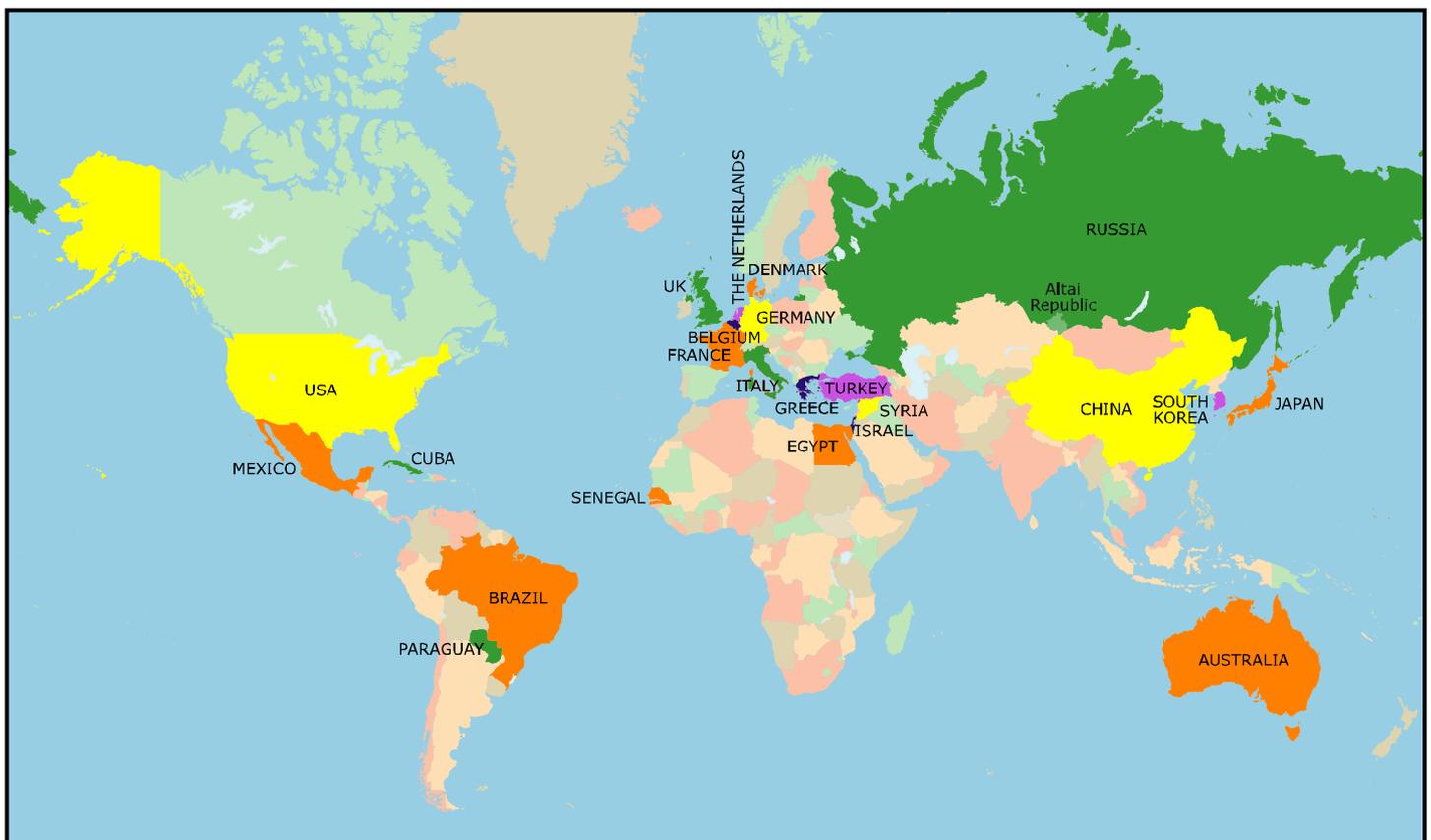
The first DNA study of the “Swedish” *Xenoturbella* suggested it was a type of mollusk. This group of animals includes: slugs, snails, clams, oysters, and octopuses. Later, the DNA study was shown to be incorrect. The mollusk DNA came from something the *Xenoturbella* ate.

Scientists then thought that purple socks might have evolved like flatworms. These creatures are descended from more complex sea animals. As they evolved, flatworms gradually changed into simpler creatures. Yet recent DNA tests show that purple socks have not become

simpler over time. They do not seem to be related to any known animal.

The researchers don't know how or what purple socks eat. Their mouths are very small and they have no teeth. What's more, purple socks have eyes and no brain. They also lack a proper stomach. Strangely, the creatures' mouths are used to take in food and expel waste. The sock-like organisms are asexual. This means that they can produce their own offspring. They do not need to mate.

The researchers believe that, unlike flatworms, purple socks did not evolve from more complex forms of life. They think the creatures have always been simple. There was no reason for them to evolve into anything else. If true, purple socks have not changed for hundreds of thousands of years. Therefore, in the tree of life, *Xenoturbella* must be somewhere near the base, or lower trunk. ■



This map shows countries to which news stories refer in this issue. Visit [www.newsademic.com](http://www.newsademic.com) for more detailed world maps.

## ANTARCTIC METEORITES

Many meteorites have been found either in dry deserts or in Antarctica. This is because they are easier to spot in these places. Meteorites either contain a small amount of iron (rocky) or are mainly made of iron (iron-rich). Researchers have been puzzled why nearly all meteorites found in Antarctica are rocky. Scientists working at a British university now think that they know why.



*Searching for meteorites in Antarctica (R. Score)*

Meteors are pieces of space rock. They can be many different sizes. Meteors become very hot and burn up as they fall through the Earth's atmosphere. If this happens after the Sun has gone down, a bright trail of light can be seen in the night sky. This is known as a "shooting star". If a meteor falls to the surface of the Earth before it has completely burned up, it's called a meteorite.

Most meteorites originally came from the asteroid belt. This is between Mars and Jupiter. The asteroid belt is a region of space where there are many bits of rock, or rubble. These were "leftover" when the planets in our Solar System formed billions of years ago. This ring, or belt, of bits of rock stretches all the way around the Sun. Pieces of rock in the asteroid belt range from a few miles wide to the size of a piece of dust.

In the past large asteroids or space rocks hit the other rocky planets:

Mercury, Venus, and Mars. They also crashed into the Moon. The force of these impacts threw rocks high up beyond the planet's gravitational field. Most meteorites found on the Earth traveled from the asteroid belt. Yet some came from Mercury, Venus, Mars, and the Moon.

Meteorites that come from the asteroid belt are usually about four billion years old. This is because they cooled and turned into rock soon after the formation of the Solar System. Mercury, Venus, Mars, and the Moon were volcanically active for far longer. So, meteorites from these places are much younger.

Large ice sheets cover Antarctica. Ice streams form part of the ice sheets. They move towards the sea very slowly. Meteorites that fall on Antarctica become buried in ice. They are carried towards the sea by the ice streams. This can take thousands of years. Many meteorites that land in Antarctica are therefore lost in the sea.

However, there are a few places where meteorites are gathered together by the ice streams. What's more, they appear on top of the ice. These places are known as "stranding zones". Antarctica is divided into East Antarctica and West Antarctica. They are separated by a mountain range called the Transantarctic Mountains. Some ice streams in East Antarctica meet this mountain range. Here, strong winds strip away the top layer of ice. This exposes the meteorites. Thus, over thousands of years, hundreds of meteorites can collect at the stranding zones.

The scientists think that there are many iron-rich meteorites at these stranding zones, but they are under the ice. They set up an experiment. The scientists froze a rocky and an iron-rich meteorite inside a big block of ice. Both were about

the same size. A lamp above the ice block acted like the Sun. The iron-rich meteorite absorbed more heat than the rocky one. It therefore slowly sank deeper into the ice.

The scientists believe that the ice streams take many iron-rich meteorites to the stranding zones. Yet as the wind strips away the ice, these meteorites are warmed by the Sun. Then, they sink back into the ice. If the scientists are right, there could be a layer of iron-rich meteorites about 30 inches (75 centimeters) below the ice at the stranding zones. The scientists now plan to use metal detectors to look for them. ■

## WOMEN AT THE WALL

Women of the Wall is an organization based in Israel. It was set up over 25 years ago. The organization's supporters have been campaigning to allow women to pray alongside men at the Western Wall. Recently, the government of Israel made a historic decision. It declared that a special area next to the Western Wall would now be set up. Here, men and women would be able to pray side-by-side.



*The Western Wall and the Dome of the Rock in the old city of Jerusalem*

Jerusalem is an important city for the three great monotheistic faiths: Islam, Judaism and Christianity. People who follow these religions

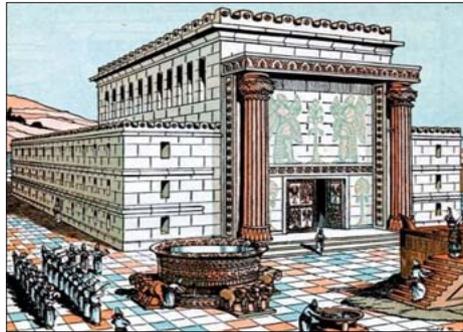
all worship one God. The Western Wall (also known as the Kotel) is in the old city of Jerusalem. For Jewish people it is a very sacred place. Each year Jews from all over the world visit the Western Wall. They believe that it is the closest place to where Solomon's Temple once stood, at which they can pray.

The Temple of Solomon was a Jewish temple. King Solomon was the son of King David. Both kings are important figures in the Jewish religion. Historians say that King Solomon built a huge stone temple in Jerusalem around 800 BCE. The building is described in the Hebrew Bible and the Old Testament of the Christian Bible. These old texts list the temple's dimensions and what it was used for.

The Temple of Solomon was built to house the Ark of the Covenant. This is believed to have been a large chest. Inside were several stone tablets. These were the tablets on which God is supposed to have written or carved the Ten Commandments. These are rules by which followers of the Jewish and Christian faiths are meant to lead their lives. The texts say that the Ark of the Covenant has special or mystical powers.

Around 400 years after the Temple of Solomon was built, the Babylonians attacked Jerusalem. The temple was set on fire and destroyed. The Ark of the Covenant disappeared. What happened to it is still a mystery. About 70 years after the destruction of Solomon's Temple, another was built to replace it. This building is known as the Second Temple. In 70 CE, after a Jewish revolt, the Romans destroyed the Second Temple and most of Jerusalem. Nothing now remains of either temple building.

The Second Temple was built on a large man-made flat area known as Temple Mount. Each side of this area was supported by a strong retaining wall. Jewish people believe that the Kotel was one of these walls.



Artist's impression of what the Temple of Solomon, in Jerusalem, may have looked like

Today, Temple Mount is in the Muslim part of Jerusalem. Muslims call it the Noble [Sanctuary](#). It is the site of a shrine called the Dome on the Rock and the al-Aqsa Mosque. The Dome on the Rock was completed in 691 CE. Some Islamic scholars believe that it was built on the place where the Prophet Muhammad went up to heaven. Others say that he ascended to heaven from the al-Aqsa Mosque. Jewish people believe that the Dome on the Rock was the original site of what they call the Holy of Holies. This was the part of Solomon's Temple in which the Ark of the Covenant was kept.

Thousands of Jews pray at the Western Wall every day. Many place handwritten prayers in the cracks between the ancient stones. In recent years, two areas were set up next to the wall. One is for men and the other women. Now, there will be a third. Both men and women will be able to use this area.

Traditionally prayer at the Western Wall has been controlled by ultra-Orthodox Jews. Ultra-Orthodox

men and boys wear white shirts, dark suits and black hats. They spend nearly all of their time studying the Jewish religion. Ultra-Orthodox Jews believe that men and women should not be allowed to pray at the wall together. ■

## BACTERIA EYES

Bacteria have existed for millions of years. These tiny microbes are found almost everywhere. They live in the deepest oceans, on the highest mountains and inside humans and other living things. Some bacteria are even found in acidic hot springs. Here, nothing else survives. Scientists working at a German university now believe that one type of bacteria can do something clever. Its single cell acts like an eye, so it can "see".



Cyanobacteria on freshwater pond (Christian Fischer)

The scientists made their discovery by accident. They were studying a microbe called *Synechocystis*. It belongs to a group called Cyanobacteria. These organisms are known to have existed for at least 2.7 billion years. All living things are made up of cells. There are more than ten trillion cells in a human body. Yet bacteria only have one.

*Synechocystis* is a type of pond slime. It creates a thin green film, or covering, on rocks and on the surface of fresh water. It's known that Cyanobacteria move, or travel,

towards the light. Like plants, the single-celled organism uses sunlight to turn carbon dioxide and water into starches and sugars. This is called photosynthesis. Therefore, to multiply, these bacteria need to be able to detect light.

When the scientists shone a light on the pond slime, the tiny cells moved towards it. The scientists expected this to happen. Then, they saw something unusual. Part of the cell, on the other side from where the light was shining, lit up. After this happened, the bacteria began to move away from the “bright light”. By doing this, they were moving towards the shining light.

The bacteria have small, hair-like **protrusions** around the outside of their single cells. These tiny hairs are called “pili”. The bacteria use their pili to move. The hairs hold on to whatever surface the bacteria are on and pull the cells forwards. These bacteria cannot swim. They use their pili to move across the surface of the water.

After they had watched the bacteria moving, the scientists did several experiments. They used more powerful microscopes to look at the bacteria and different types of light. These experiments showed that the single cells “focused” the incoming light on the far side of the cell. It is this focusing that creates the bright lights the scientists observed. The bacteria then know to move in a direction away from the bright light they make.

These bacteria are 0.0001 inches (three micrometers, or 0.003 millimeters) across. Yet their cells are acting in the same way that an eye does. The bacteria cannot see images like a human eye. However, it can work out what is light and dark. When different forms of life develop

similar things it is often called parallel evolution, or **convergent** evolution. Sharks and dolphins are an example of this. A shark is a fish and a dolphin is a mammal. Yet, both have evolved to be good swimmers. This explains why they look similar.

The scientists are sure that the bacteria’s single cells are acting like a simple eye. If true, these organisms are probably the smallest and oldest examples of “eyes” in the world. The scientists now plan to find out if other bacteria can see in the same way. Not all bacteria are round like an eye. Some are cigar-shaped, or long and thin. **□**

## MICHELANGELO’S HANDS

Michelangelo was an Italian **Renaissance** painter, sculptor, poet, engineer, and architect. Some people think that he was “the greatest artist of all time”. A medical researcher has been studying pictures of Michelangelo, historical documents and the artist’s own letters. He now believes that Michelangelo suffered from a disease, which affected the bones and joints in his hands.

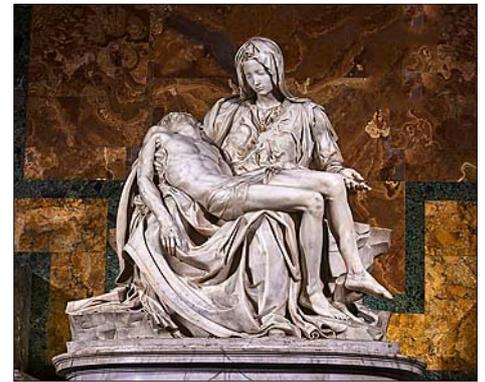


Sistine Chapel ceiling painted by Michelangelo

The artist was born in 1475. It’s known that he continued to work until a few days before his death, aged 88, in 1564. For the final 15 years of his life, Michelangelo had deformed and twisted hands.

Several of Michelangelo’s paintings and sculptures are some of the world’s most famous works of art. Two of his best-known sculptures are called *David* and *Pietà*.

Michelangelo began the sculpture of *David* when he was only 26 years old. Art experts say that the 17 feet (5.2-meter) tall statue is the most perfect figure of a male nude ever made. It is carved from a single block of marble. This is a type of hard, white colored stone. Marble is often used for sculptures or as a building material.



Michelangelo's Pietà

Originally the statue was to be one of many that would stand along the edge of the roof of the cathedral in the city of Florence. The statue is of a hero from a well-known Christian Bible story. In the story David kills a much bigger man, or giant. He does this with a small stone thrown from a sling. By the time the statue was finished, it weighed 6.1 tons. It was too heavy to stand on the cathedral’s roof. A decision was made to put it on a plinth outside Florence’s town hall. It stayed there for nearly 400 years.

By 1873 officials had become worried that the statue was being damaged by rain and air pollution. It was moved into Florence’s Accademia Gallery. A replica, or copy, was set up in its place outside the town hall. Today, tens of thousands

of people visit the gallery in Florence every year to see the statue.

Michelangelo's *Pietà* is another statue. He completed it within two years. *Pietà* means "pity" in Italian. A *Pietà* (pronounced pee-ey-tah) is a sculpture of the Virgin Mary holding the body of the dead Jesus Christ. Christians believe that Jesus is the Son of God and that Mary was his mother. Today, this statue is in the Vatican, the headquarters of the Roman Catholic Church.

Michelangelo painted the ceiling of the Sistine Chapel. This chapel is in the Vatican. The pope, or leader of the Roman Catholic faith, lives in the Vatican. The Sistine Chapel is part of his private residence. It took Michelangelo just over four years to paint the ceiling. Several assistants helped him. The ceiling's central panels are pictures of nine scenes from Genesis. This is the first book of the Bible. One scene, called *The Creation of Adam*, is very famous. In the painting the fingers of "God" and "man" can be seen. They are only a few inches apart.

The medical researcher believes that Michelangelo had osteoarthritis. This disease affects bone [cartilage](#). Cartilage is a substance found in the joints. It helps the bones to move against each other. Osteoarthritis often affects the joints in the hands. The cartilage breaks down. A person's joints swell and using the hands becomes painful.

Michelangelo spent much of his life using a hammer and chisel. The researcher thinks that this may have been the reason for the disorder. In later life, Michelangelo's osteoarthritis would have been very painful. However, the researcher says that if the artist had not kept using his hands, they may have become useless long before he died. ■

## HAIRY PANIC

Wangaratta is a city in Australia. Recently, some people who live in the city have had a problem with a type of plant. The fast-growing plant's scientific name is *Panicum effusum*. Yet most Australians call it "hairy panic" or "blow away grass".



A house surrounded by hairy panic

The grass-like plant grows in many places in central parts of Australia. It reaches a height of 28 inches (70 centimeters). Hairy panic can quickly spread over a large area. Then, if the weather is very dry it will become a type of tumbleweed. Tumbleweed plants have an unusual way of spreading their seeds. First, they become dry and brittle. Then the plants separate from their roots. They are blown along by the wind. Some tumbleweed grow in a round ball-like shape. If there is a strong wind, they can travel long distances and move very fast.

Hairy panic is not a round shape. It grows long spikes to which the plants' seeds are attached. The spikes become dry and fluffy. Then, they break off from the rest of the plant. The spikes, which are very light, are easily blown in the wind. Large "clouds" of the plants' spikes join together. The spikes are then blown away. Hairy panic can cover fields and roads. If it hits a barrier, such as a wall or building, the spikes form huge piles.

The weed has affected about 30 houses in one part of Wangaratta. If windows or doors are left open, hairy panic can quickly fill up a room or garage. It also piles up against fences. Getting to and from outside doors can be difficult. Cleaning up the tumbleweed is difficult and takes a long time. If a house owner clears it all away, more might return the following day. Hairy panic can be a fire hazard. If it catches fire, the flames can quickly spread. People are warned not to drive cars along roads covered in hairy panic. This is because hot exhausts can set it alight.



Hairy panic plant

The people who had to clean up the mess in Wangaratta blamed local landowners. They said that nearby fields and paddocks should be kept clear of the plant, especially in dry weather. Some complained to the local city authorities. They said that there was not much they could do as they could not control the wind. Some street cleaners were sent to help clear up the mess. ■

## BESIEGED TOWNS IN SYRIA

On February 17, convoys of large trucks arrived in five parts of Syria. The trucks were organized by the United Nations (U.N.) and the Arab Red Crescent. They were carrying large amounts of food and medicine. The aid was delivered to hundreds of thousands of Syrian civilians who have been besieged, or surrounded, for several months.



World powers, led by the U.S. and Russia, have been trying to arrange a ceasefire in Syria. John Kerry, the U.S.'s secretary of state, made an announcement on the February 11. Then, he was attending a conference in southern Germany. Mr. Kerry declared that a ceasefire would begin in a week's time. Yet further announcements by Bashar al-Assad, the president of Syria, and opposition group leaders meant that a truce was unlikely. However, they did not try to stop the aid deliveries.

The war in Syria began five years ago. Over 250,000 people have died in the conflict. Millions of Syrians have been forced to leave their homes. Many are now living in large camps in Lebanon, Turkey and Jordan. At first, groups within the country wanted to depose Mr. al-Assad. His family and many members of the country's government are Alawites. This small religious group is connected to the Shia branch of

the Islamic faith. Most Syrians are Sunni Muslims.

The first opposition groups to set up in Syria want Mr. al-Assad to stand down. They say that Syrians should be allowed to elect their leaders. To begin with, the fighting was between these groups and the Syrian army. They are known as the moderate opposition, or moderate rebels. At the beginning of the war, the U.S., Britain, and France declared their support for the moderate rebels. They also said that Mr. al-Assad must leave the country.

However, the moderate rebels were never strong enough to defeat the Syrian army. As fighting continued, more opposition groups set up in Syria. These are Islamic militants. They want to take over Syria and impose strict religious laws. The members of these groups are Sunni Muslims. They dislike the Shias. It's believed that some Sunni countries, such as Saudi Arabia and Qatar, have been secretly supporting these groups. They do this by providing money and weapons. The U.S., Britain, and France oppose these militant groups.



*Aid trucks in Syria (Syrian Arab Red Crescent)*

About three years ago an organization called the Islamic State (IS) appeared in northeast Syria. It set up its headquarters in the city of Raqqa. This organization is also known as ISIS and ISIL. It has about 30,000 armed supporters. Most are Sunni Muslims. They treat people from

other religions and Shia Muslims very harshly. The IS leaders want to take over all of the Middle East. Everyone would have to follow strict Islamic laws.

Traditionally, Russia has supported Syria and the al-Assad family. Last September, it sent planes, attack helicopters and soldiers to Syria. Vladimir Putin, Russia's president, said that his forces would help the Syrian army defeat all opposition groups in Syria including the IS. Iran and Hezbollah are also helping the Syrian army. Hezbollah is based in southern Lebanon. It is a Shia political and military organization. Recently, Russian planes have been supporting the Syrian army near the city of Aleppo. Kurdish groups have also become involved in the fighting in northern Syria.

Most people think that the war in Syria is unlikely to end soon. With so many different groups and countries involved, it is difficult to arrange peace talks. The food and medicine was delivered to people who are trapped by both government and opposition forces. As the warring groups agreed to the aid deliveries, some people hope that they may now be willing to talk about a ceasefire. ■

## Newsademic.com

**Editor:** Rebecca Watson

**American Editor:** Chris Tarn

### Acknowledgements:

News story photographs by gettyimages

For further details about Newsademic

and subscription prices visit

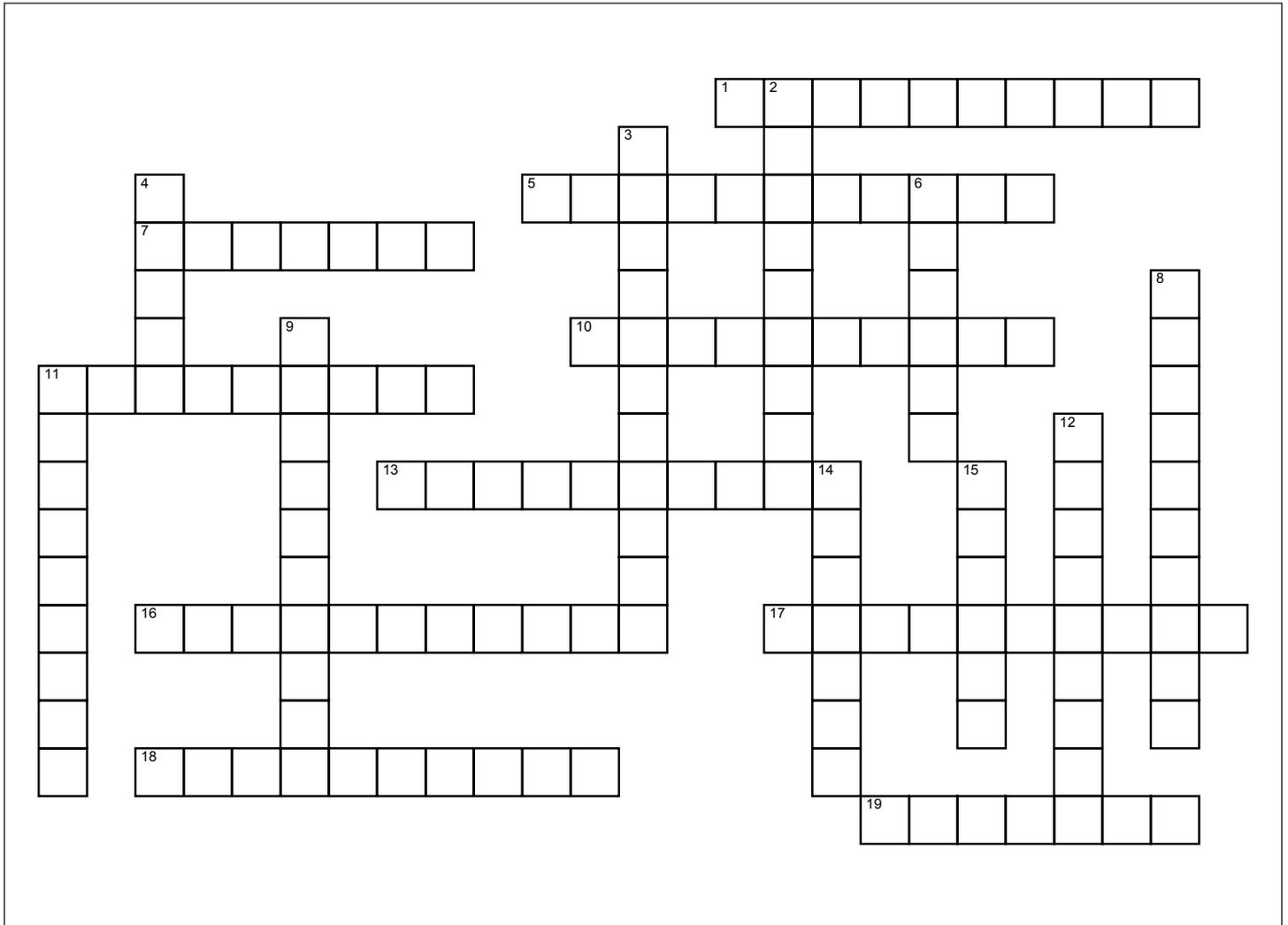
[www.newsademic.com](http://www.newsademic.com)

© Newsademic 2016

# ISSUE 269

## GLOSSARY PUZZLE

**INSTRUCTIONS:** ① Complete the crossword. The answers are highlighted in orange in the news stories. There are 25 words highlighted and you need 20 of them to complete the crossword. ② Once you have solved the crossword go to the word search on the next page ➡



### Across

- 1** *Verb* Delaying or stopping something from happening  
**5** *Adjective* Related to a period in European history between the 14th and 17th centuries during which there was a great revival of art, literature, and learning  
**7** *Adjective* Describes something that grows, lives or is found in water  
**10** *Adjective* Authorized or legal  
**11** *Adjective:* Describes equipment that can pick up or record tiny changes or sounds  
**13** *Verb* To have an effect on someone or something  
**16** *Noun Plural* Things that bulge or stick out or extend from something  
**17** *Verb* Killed an animal or person as an offering to a god or gods  
**18** *Adjective* Given extra or added strength  
**19** *Noun* Medical problem when someone always feels worried and frightened

### Down

- 2** *Noun* An organisation involved in scientific, educational or social work  
**3** *Noun Plural* Parts of a mixture or one of the things used in a recipe  
**4** *Adjective:* Describes a religion that worships many gods, especially one that existed before today's main religions  
**6** *Noun Plural* People who live by moving from place to place rather than having a fixed place to live  
**8** *Adjective* Coming closer together  
**9** *Noun* Lack of food during a long period, often leading to death  
**11** *Noun* The most holy part of a religious building  
**12** *Adjective* Describes things that have a lot of small parts or details arranged in a complicated way  
**14** *Adjective* Very long lasting  
**15** *Noun* A split or separation, especially in an organization

# ISSUE 269

## GLOSSARY PUZZLE *CONTINUED*

**INSTRUCTIONS:** ③ Find 19 of the 20 crossword answers in the word search. Words can go vertically, horizontally, diagonally and back to front. ④ After finding the 19 words write down the 20th (or missing) word under the puzzle.

E C N A S S I A N E R A J C T C R P  
 T F Q W C A S G B X O N F M K A U R  
 A H W G H E C M Q N Y X Z H Q H C O  
 M K O M I M J R P L P I P U D E S T  
 I Z V R S Z U Y I N I E A Y E N E R  
 T N Z D M N R Y T F B T O T C J N U  
 I Q T C D B O X H H I Y O D R N S S  
 G D S R N L Z I J C A C I F O C I I  
 E W Z Q I I G H T D K S E M F O T O  
 L T E X I C U E E A R I A D N D I N  
 H B U E W V A C U U V D Q J I U V S  
 A R S T B H N T P A S R H W E R E A  
 L S A D I E M T E N A G A P R A U Y  
 R T L G U T I P S Q E M K T A B B L  
 D F H L M N S Z B H Y D U V S L G X  
 F A F F G P G N C O N V E R G E N T  
 J N C I A E C L I K C B O L M S K K  
 I N G R E D I E N T S N W K B G L Z

Demics are tokens that Individual and Family Subscribers can earn. They are awarded for answering this Glossary Puzzle and/or the Daily News question – accessible by logged in users – correctly. Demics earned can be used by Family and Individual Subscribers in the Newsademic online store.



### GET EXTRA DEMICS\*

\* Only applies to those who have purchased a Newsademic Individual or Family Subscription

If you wish to earn additional Demics please email the missing word answer to: [subscriptions@newsademic.com](mailto:subscriptions@newsademic.com) Puzzle entries need to be submitted by 10pm on March 2, 2016 (GMT/UTC).\*

MISSING WORD ANSWER =

ISSUE 268 ANSWERS

I S O L A T E D