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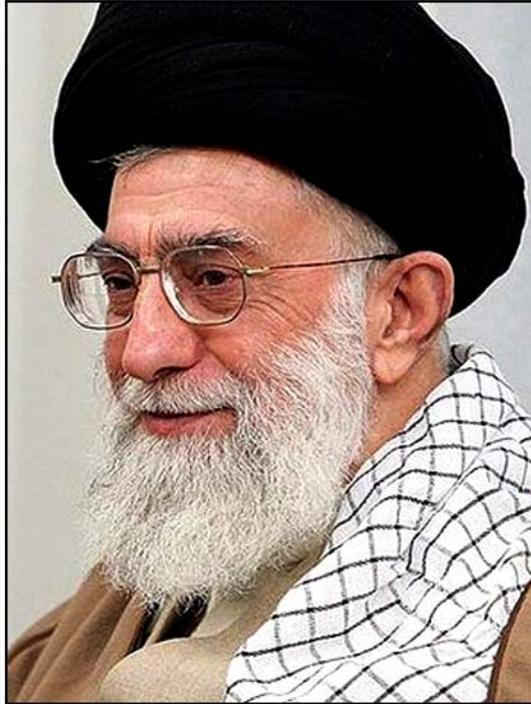
Issue Number 266

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Saudi Arabia's leader, King Salman



Supreme Leader of Iran, Ali Khamenei

## SAUDI ARABIA AND IRAN

On January 2, officials in Saudi Arabia announced that 47 people had been executed. The executions took place in several different prisons. The officials said that those who had been put to death were militants, terrorists and criminals. They explained that each of them had been found guilty of serious crimes and given the death sentence several years ago.

One of the executed men was a Shia Muslim religious leader called Sheikh Nimr al-Nimr. He was arrested in 2012. Sheikh Nimr was a cleric. He was imprisoned after leading several protests in the eastern part of Saudi Arabia. Sheikh Nimr criticized the country's king and said that other leaders should be elected. Most people in Saudi Arabia, including the royal family, are Sunni Muslims.

Soon after Sheikh Nimr's execution was announced, street protests were held

in several Shia Muslim nations. Iran is the biggest Shia country. In Tehran, Iran's capital city, a crowd broke into Saudi Arabia's embassy. Some of the embassy buildings were set on fire. Iran's leaders said that they were angry about the execution.

Saudi Arabia announced that it was withdrawing its ambassador from Iran. This is known as "breaking off diplomatic ties". Iranian diplomats working in Saudi Arabia were told to leave. When countries have serious disagreements it is not unusual for them to withdraw their ambassadors. This is a gesture, or sign, to show that a country is very unhappy with something that another country has done. Other Sunni-led countries, such as Bahrain, Kuwait and the United Arab Emirates (UAE), declared that they had also broken off diplomatic ties with Iran. These countries have always worked closely with Saudi Arabia.

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Abdulaziz bin Saud (1876 – 1953) set up the Kingdom of Saudi Arabia in 1932. The country is often called the “Desert Kingdom”. In the early 1930s Saudi Arabia was one of the poorest nations in the world. This suddenly changed in 1938. Then, large underground oil fields were discovered. Nowadays, Saudi Arabia is one of the world’s biggest oil producers. It makes large amounts of money selling oil to other countries. Traditionally, Saudi Arabia has been a “friend” of the U.S. and most European countries.

Abdulaziz had 23 wives. He had many children including 45 sons. Since Abdulaziz’s death, all Saudi Arabia’s kings have been his sons. King Salman bin Abdulaziz is the country’s current monarch. He took over after the previous king, who was his half-brother, died 12 months ago. The Saudi royal family is very large. Abdulaziz’s male grandchildren hold many important government positions.

Saudi Arabia is an absolute monarchy. This means that its king makes all the important decisions. He is the leader of the government as well as being the country’s head of state. Saudis follow the strict Islamic laws of the Wahhabi [sect](#). This is a form of Sunni Islam. Except for their face, hands and feet, women must cover their bodies. They are not supposed to drive and are not allowed to do many things on their own.

Mecca and Medina are both in Saudi Arabia. These are Islam’s holiest cities. Muhammad was born in Mecca. Muslims believe that he was God’s messenger. Mecca is the site of the annual pilgrimage called the Hajj. All Muslims are supposed to travel to Mecca for the Hajj at least once in their lives. Muhammad died in Medina and was buried in the city.

The divide, or split, between Sunni and Shia Muslims began after Muhammad’s death nearly 1,400 years ago. After he died, there was a disagreement about who should lead the Muslim nation. Those who eventually became Sunnis believed that this person should be chosen or elected. Those who were later called Shias disagreed. They wanted the leadership to pass to one of Muhammad’s relatives. Now, about 85% of the world’s 1.6 billion Muslims are Sunnis. Most Shia Muslims live in Iran and southern Iraq. Syria, Yemen, Lebanon, and Bahrain also have big Shia communities.



Modern-day Iran was the center of the ancient Persian Empire. Iran used to have a royal family. For hundreds of years the country’s king (known as the shah) ruled the country. The last shah was friendly with western countries such as the U.S. and Britain.

In the 1970s many Iranian people were unhappy with the shah. He wanted to modernize Iran. Yet the country’s religious leaders disapproved of what the shah wanted to do. In 1979 there was a revolution. The shah was deposed. Ayatollah Khomeini (1902 – 1989) took over. He was an important Shia Muslim cleric. Khomeini was given the title “Supreme Leader”. Today’s rivalry between Saudi Arabia and Iran be-

gan when Khomeini became Iran’s new leader.

When Khomeini died, Ali Khamenei, another Shia Muslim cleric, took over as the new Supreme Leader. Iran has a president and elections are held every four years. The Supreme Leader is the country’s head of state. He leads a group of people called the Guardian Council. This group is very powerful. The Supreme Leader appoints most of the Guardian Council’s 12 members. For this reason, many people think that the Supreme Leader, and not the president, runs Iran.

In recent years Iran has had many arguments with the U.S. and members of the European Union. These countries claimed that Iran was developing nuclear weapons. Iran always said that this was not true. It insisted that it only wanted to make electricity from nuclear power. The U.S. and the EU imposed [sanctions](#). This meant that it was difficult for Iran to trade with other countries and sell its oil. Last year, Iran made an agreement with the U.S. and the EU. As part of this agreement, Iran will stop its nuclear experiments for ten years. The sanctions will be gradually lifted. This arrangement angered Saudi Arabia’s leaders.

Currently, there are wars in Syria and Yemen. The Islamic State (IS), an extreme militant Muslim group, is occupying large parts of Syria and Iraq. In Syria and Yemen, Sunni and Shia Muslim groups oppose each other. In both countries Saudi Arabia is helping Sunni groups and Iran is supporting the Shias. The latest diplomatic arguments between Saudi Arabia and Iran mean that these wars are unlikely to end soon. ■

## EBOLA OUTBREAK ENDS?

The World Health Organization (WHO) made an important announcement on December 29. It confirmed that Guinea was now “Ebola-free”. This meant that no new cases of the disease had been reported in the country for 42 days. Guinea, Sierra Leone and Liberia were all badly affected by the Ebola virus. Guinea is the last of the three to be declared free of the deadly disease.



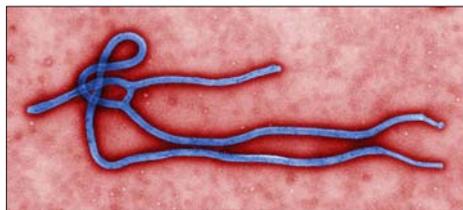
There are several types, or strains, of Ebola. The virus' name comes from the Ebola River in the Democratic Republic of Congo (DRC). This was where the first outbreak of the disease was recorded in 1976. At that time, the DRC was called Zaire. Since then people have died from the Ebola virus in Uganda and Sudan. The recent outbreak in West Africa was the worst. Around 28,600 people had the disease in Guinea, Sierra Leone and Liberia. About 11,300 of them died. Ten percent of the deaths were people who worked in the hospitals and other treatment centers.

Ebola is often described as one of the “world's most deadly diseases”. It is highly infectious. This means that it can pass easily from one person to another. Nobody knows where the virus comes from. It probably lives inside fruit bats. However, it does not seem to affect these creatures. The virus can be passed to

other animals such as chimpanzees, gorillas, monkeys, forest antelope, and porcupines. Humans can catch Ebola from these animals, which also become ill and die.

The first symptoms of Ebola happen about three weeks after a person has been infected. They include a sore throat, muscle pain, headaches, weakness, and fever. Unfortunately, these symptoms are similar to those of other tropical diseases such as malaria, typhoid and meningitis. Vomiting, diarrhea, kidney and liver problems follow the early symptoms. There may also be both internal and external bleeding. The Ebola virus can only be confirmed after special tests have been done in a laboratory.

The disease is mainly spread by body fluids that contain the virus. Health care workers must wear special gloves and gowns. They also have to use face masks and goggles. This stops any droplets from coughs and sneezes getting into the mouth, nose and eyes. People who get the disease need to be isolated quickly, or kept away from others.



*Ebola virus seen through a microscope*

The Ebola outbreak in West Africa began in Guinea two years ago. It then appeared in Sierra Leone and Liberia. There were 20 deaths in Nigeria. However, there, medical workers managed to quickly contain the disease. Several medical workers from other countries became ill with Ebola after they returned home. Most survived, but four people died in the U.S.

Pharmaceutical, or drug, companies in the U.S. and Britain made some experimental vaccines. The WHO decided to use these before the normal testing, or trials, had been done. This work usually takes at least two years. The vaccines seemed to help. Yet it was difficult to produce them quickly and in large amounts. Now, drug companies in several countries are trying to find a cure for Ebola.

The WHO declared Sierra Leone to be Ebola-free at the beginning of November. Liberia was declared to be free of the disease one month later. The WHO congratulated the people of Guinea. However, it warned that the virus could return. People in all three countries have been told to report **suspicious** deaths. Everyone must get members of their family or friends to go to a treatment center if they have any Ebola-like symptoms. ■

## THE EARTH'S PERIHELION

All planets in the Solar System orbit, or go around the Sun. Yet these orbital paths are not perfect circles. Each planet's orbit, including the Earth's, is oval shaped, or an ellipse. Therefore, all the planets have a closest and farthest point from the Sun. Respectively, these are known as their perihelion and aphelion.

It takes the Earth one year to go around, or orbit, the Sun. The Earth's perihelion was on January 2. So this was the day on which the Earth was nearest to the Sun. The Earth's aphelion, or farthest point from the Sun, will be on July 4. The names perihelion and aphelion come from Ancient Greek words. “Peri” means “near” and “apo” is “away”. “Helios” is the Greek word for the Sun.

Perihelion and aphelion are similar to the words perigee and apogee. The Moon orbits the Earth. Its path around the planet is also oval shaped. When the Moon is at its closest point to the Earth it is at its (lunar) perigee. The (lunar) apogee is when the Moon is farthest away.

At its perihelion the Earth is about 91.4 million miles (147 million kilometers) from the Sun. On July 4, this distance will be 94.5 million miles (152 million kilometers). So the difference is about 3.1 million miles (five million kilometers).

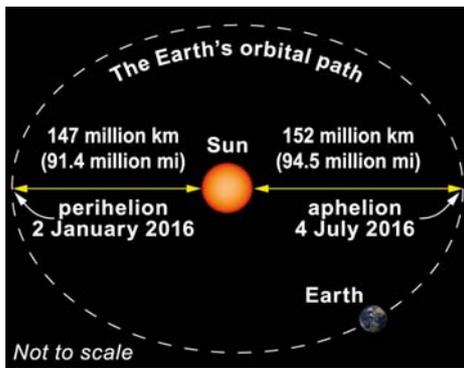


Diagram of how the Earth orbits the Sun

Currently, the Earth's perihelion is close to the shortest day in the northern hemisphere. This was on December 22. (This day was the longest day in the southern hemisphere.) Some people think it is strange that the Earth is closest to the Sun in the middle of winter (in the northern hemisphere). This is a [coincidence](#). The planet's tilt and not its closest or farthest point from the Sun govern the Earth's seasons.

As it orbits the Sun, the Earth spins on its axis. This is an imaginary line. It runs through the center of the Earth from the North Pole to the South Pole. The Earth's axis is at an angle of 23.4 degrees. Different parts of the planet get different amounts of sunlight as it goes around the Sun. This explains the seasons and the differing hours of

daylight and darkness throughout the year.

The Earth's northern and southern hemispheres tilt, or angle, towards the Sun at different times of the year. When a hemisphere tilts away from the Sun the weather is colder and the days are shorter. When the same hemisphere tilts towards the Sun, the opposite happens. The weather is warmer and the days are longer.

However, the Earth's axis is not fixed. It wobbles like a spinning top. The planet's axis slowly "traces" or "draws" a circle. It takes about 26,000 years to go all the way around this circle. This circular "movement" is called precession. Over the years, because of precession, the date of the Earth's perihelion and aphelion move. The speed at which this happens is about one day every 58 years. Therefore, the Earth will not always be closest to the Sun at the beginning of January. In roughly 11,000 years' time the Earth's perihelion will be in June, or mid summer in the northern hemisphere. ■

## POLAR GIGANTISM

Sea spiders are found in all the world's oceans. Most are quite small. However, those that live in really cold waters near the North and South Poles are far bigger. Many marine creatures found in polar waters are bigger than they are in warmer parts of the oceans. Several crab, lobster, worm and sponge species are examples. This [phenomenon](#) is called "polar gigantism".

Nobody knows what causes polar gigantism. There are a number of theories. Many suspect that it is connected to the amount of oxygen in the seawater. Researchers from the

U.S. have recently been studying polar sea spiders. They believe that these creatures may help them solve the polar gigantism mystery.



Southern Ocean giant sea spider

All land spiders are a type of animal called arachnids. These creatures have no wings, eight legs and two main body parts. Unlike insects, spiders do not have antennae. Like land spiders, most sea spiders have eight legs. The scientific name for sea spiders is pycnogonids. They belong to a larger group (or phylum) called arthropods. Arthropods are invertebrates. This means that they have no backbone. Their bodies have an exoskeleton, or a hard outer layer.

There are over 1,300 sea spider species. Most live in shallow water. Yet some are found 4.3 miles (seven kilometers) below the sea's surface. The smallest ones are only 0.04 inches (one millimeter) across. Some polar sea spiders have a leg span of 35 inches (90 centimeters). These sea spiders look as if they are all legs and no body. It can be difficult to work out which end of the sea spider is its head. The creatures have a proboscis. This is a long tube-like mouth. Sea spiders use their proboscis to suck food, or nutrients, from soft-bodied sea creatures such as anemones. The spiders do not kill the anemones.

The American researchers collected some sea spiders from Antarctica. They had to drill a hole

through a thick layer of ice. Wearing special underwater suits and using air tanks, the researchers dived to the bottom of the sea. The seawater temperature where they picked up the spiders was  $-1.8^{\circ}\text{C}$  ( $29^{\circ}\text{F}$ ). The researchers took the sea spiders back to their laboratory. There, they carried out several experiments.

Cold water contains more oxygen than warm water. However, because of the cold temperatures, creatures that live in polar waters have a very slow metabolic rate. This is a chemical process that takes place inside all living things. It controls growth, energy production and the removal of waste. Sea spiders do not have lungs or gills. They absorb oxygen from the sea by what's known as **diffusion**. Oxygen moves from where there is a lot of it (seawater) to where there isn't much (the spider's body). If there is extra oxygen in the water, diffusion is more effective, or successful. This might explain why the sea spiders are so big.

In the laboratory, the spiders were put in tanks of seawater. The researchers then altered the amount of oxygen in the water and its temperature. The large sea spiders did badly, or suffered, when there was less oxygen. This seems to suggest that the amount of oxygen in colder seawater is a reason for polar gigantism.

However, the researchers did not disprove the other theories. One says that marine creatures have evolved to be larger in polar regions as there are fewer predators. Another suggests that extra silica in the water is the reason for the gigantism. Marine creatures use silica to make their shells and exoskeletons. A third theory states that the creatures have simply moved from much deeper parts of the ocean. There, gigantism is more common. ■

## TRAINING GOANNAS

Researchers working in Australia say that they have found a new way to protect some animals from poisonous toads. The researchers have completed an 18-month experiment. During this experiment they managed to train some yellow-spotted monitors not to eat cane toads.



*Cane toad*

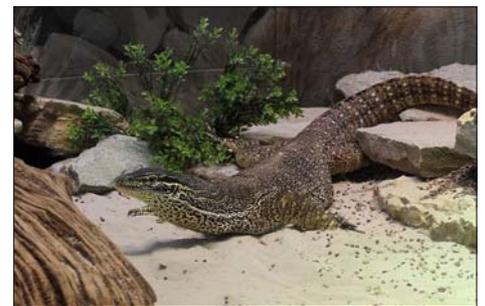
In Australia, cane toads are an invasive species. They come from Central and South America. One of the things they eat is the cane beetle. This insect can badly damage sugar cane crops. In the 1930s farmers growing sugar cane in Australia were having problems with cane beetles. Some cane toads were brought to the country to control the insects. The toads were released on sugar cane farms in north east Australia.

The decision was a bad mistake. Unfortunately, the cane toads didn't just eat the cane beetles. They began to eat many other creatures as well. As they multiplied, the cane toads ate much of the food that native animals feed on. The toads produce a toxin, or poison, from glands on their skin. Other animals can die from this toxin if they bite or try to eat them.

The food and climate in Australia suit cane toads. They have no natural predators in the country. The toads' numbers have quickly

increased. Female cane toads produce as many as 35,000 eggs twice each year. Adult toads can weigh as much as one kilogram (2.2 pounds). Now, there are over 200 million cane toads in Australia. Since they arrived, the toads have "traveled" a distance of 1,865 miles (3,000 kilometers). Each year the toads spread another 25 to 37 miles (40 to 60 kilometers) inland.

In Australia monitor lizards are known as goannas. There are many monitor lizard species. At least 25 of them are found in Australia. One is called the yellow-spotted monitor. This goanna grows to a length of 4.6 feet (1.4 meters). The lizard's back is a grayish brown. Its throat and underside are a yellow color with dark spots. These goannas are found in northern Australia. They eat small animals, carrion, or the flesh of dead animals, and crocodile and turtle eggs. The lizards have sharp claws. They use them to climb trees and dig burrows.



*Yellow-spotted monitor lizard (Greg Hume)*

Yellow-spotted monitors used to be very common in northern Australia. Yet where cane toads have arrived, their populations have declined by 90%. When the cane toads appear, the goannas try to eat them. The toads' deadly toxin quickly kills the lizards.

For their experiment, the researchers found 16 goannas. They were in an area within which the toads had yet to arrive. Using a long

fishing rod, the researchers placed younger, smaller cane toads close to the lizards. The goannas ate them. They did not die, but were very sick. The researchers then tracked these goannas for a number of months. They also tracked 31 others that were not fed young toads.

When the cane toads arrived in the area, the researchers checked what had happened to the goannas. The ones that were not fed young toads, or were “untrained”, died within three months. More than half of the 16 that were “trained”, or fed toads, survived. The researchers say that these goannas remember that cane toads make them ill. Therefore they did not try to eat them again. The researchers believe that other animal species poisoned by the toads could also be “taught” not to touch them. ■

## FOUR NEW ELEMENTS

Four new elements are to be added to the Periodic Table. The International Union of Pure and Applied Chemistry (IUPAC) made the announcement on December 30. The IUPAC is an international organization. It was set up about 100 years ago. One of the IUPAC’s jobs is to [verify](#) and name new discoveries in chemistry.

Elements are made from tiny particles called atoms. Examples of well-known elements are: oxygen, nitrogen, carbon, iron, copper, and gold. Each has its own unique type of atom. At the center of an atom is a nucleus. This is made from even tinier particles called protons and neutrons. Around the nucleus is a cloud of different particles. These are electrons. Atoms of different elements have different numbers of protons, neutrons and

electrons. The number of protons in the element’s nucleus is its “atomic number”.

**Periodic table**  
(New elements shown in red)

Around 150 years ago Dmitri Mendeleev (1834 – 1907) thought of a way of listing, or arranging, the elements. Mendeleev, who was a Russian scientist, called his arrangement the “periodic table”. It showed that some of the elements’ [properties](#) occur in a regular pattern.

Not all the elements had been discovered when Mendeleev created his periodic table. However, his chart was an important guide, or pointer, for scientists searching for new elements. The table helped to predict the properties of ones that had yet to be discovered. As each new element was found, it was added to Mendeleev’s original periodic table.

At the beginning of the 1900s, scientists worked out the inner [structure](#) of the atom. They realized that Mendeleev’s periodic table also arranged the elements in order of their atomic numbers. When the Russian scientist produced his periodic table he could not have known this.

Most elements are found naturally on the Earth. One of the lightest is hydrogen. Its atomic number is one. An atom of helium has two protons. Therefore its atomic number is two. The heaviest naturally occurring element is uranium. Its atomic number is 92. Scientists in the U.S. created the first man-made,

or synthetic, element in 1940. It has 93 protons and was given the name “neptunium”. Since then, scientists have synthetically created 15 more elements.

Man-made elements with an atomic number greater than 104 are known as “super-heavy”. These are created with a large, long device known as a particle accelerator. It fires different atoms at each other at very high speed. After colliding, or smashing into one another, the nuclei may fuse, or join, to form a new element. These experiments have to be done many times before nuclei fuse successfully.



Particle accelerator in Germany

The four new elements’ atomic numbers are 113, 115, 117, and 118. Element 113 was “made” by scientists in Japan. A joint Russian and American scientific team created the other three. Like other super-heavy elements, the nuclei of these four elements are very unstable. This means that they exist for less than a second before falling apart, or decaying. As a nucleus decays, it releases energy. Scientists work out the size of the decaying nucleus by measuring the amount of energy released.

When scientists claim that they have created a new element, it is given a [temporary](#) name. These

names come from Latin words for numbers. So, for example, 113's temporary name is ununtrium: un (one) un (one) tri (three) - um. The IUPAC then gets different researchers to make sure that the new element exists. This confirmation work can take several years. The four new elements were therefore first created three or four years ago.

Other researchers have now proven that elements 113, 115, 117, and 118 exist. The IUPAC has now asked the scientists who discovered them to suggest possible names. It will then decide which are to be used. New elements' names must be associated with: mythology, a mineral, a building (such as a university or laboratory), a scientist, or a country, town or city.

The last "new" elements were named about five years ago. Then, 114 became flerovium (Fl) and 116 was named livermorium (Lv). ■

## DUBAI FIRE

The Address Downtown Dubai is a building with 63 floors. Inside are many **residential** apartments and a large hotel. On the evening of December 31, or New Year's Eve, a fire broke out on the 20th floor. The blaze quickly spread to other parts of the building. The speed of the flames surprised many people. Everyone was evacuated from the building. There were no **fatalities**. However, 14 people were injured.

Dubai is one of seven emirates that make up the United Arab Emirates (UAE). The others are Abu Dhabi, Sharjah, Ajman, Umm al-Quwain, Ras al-Khaimah, and Fujairah. Abu Dhabi is the largest emirate. It is estimated to have about

nine percent of the world's known oil supplies. So, of the seven, it is also the wealthiest.

Sheikh Mohammed bin Rashid Al Maktoum is the emir, or ruler, of Dubai. The emirate has few oil and natural gas fields. In the early 1990s, Sheikh Mohammed decided to turn Dubai into a wealthy international modern city. Large building projects were started. This construction work included offices, apartments, big shopping malls, luxury houses, roads, and a modern railway. One of these building projects was the Burj Khalifa. Completed six years ago, it is the world's tallest building. Some floors of the Burj Khalifa are residential, but much of the building is used for company offices.



*Fire at the Address Downtown Dubai building, the Burj Khalifa is the lit up building on the left*

Many people now describe Dubai as a "global city". It is home to about 2.5 million people. Only 15% come from the UAE. Most of the population is expatriate, or people from other countries. Some families from India moved to the emirate several generations ago. Over 100,000 people from Britain live in Dubai. Many have bought apartments in the city. There are over 250,000 foreign laborers in the city. Most of them come from Asian countries such as India, Pakistan and Bangladesh. They work as laborers on the many building sites.

Last year plans were announced to build the world's tallest residential

tower, or skyscraper, in Dubai. There are probably more tall skyscrapers in Dubai than any other city. There are at least 19 buildings in the emirate that are taller than the Address building.

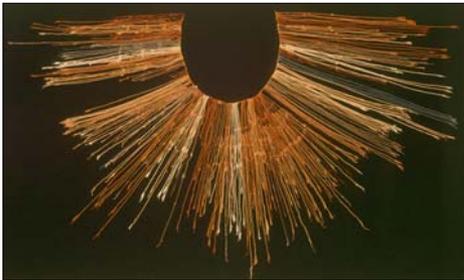
Dubai is well known for its New Year's Eve fireworks. The pyrotechnic display is centered on the Burj Khalifa. On New Year's Eve, the Address building's hotel was full. Some rooms in the hotel have the best views of the firework show. Many people who live and work in Dubai gathered in an area close to the building to see the display. They watched as strong winds helped the flames to quickly spread up the outside of the skyscraper. Firefighters took several hours to control the fire. Most people expected the firework display to be canceled. However, officials decided that the pyrotechnic show would go ahead.

Sheikh Mohammed visited the fire damaged building on January 2. He praised the firefighters who fought the blaze. An investigation will now be held to try to find out what caused the fire. Officials will also want to know why it spread so quickly.

There have been two other fires in tall buildings in Dubai in recent years. Some high buildings in the emirate, such as the Address, have large panels fixed to the outside walls. Called cladding, these panels are made from two sheets of aluminum. The sheets have a layer of a special type of plastic between them. Some people suspect that this plastic caught fire. This might explain why the flames spread so quickly on the outside of the building. If this did happen, similar cladding on other buildings may have to be replaced. ■

## INCA QUIPUS

Researchers in Peru have discovered nearly 30 Inca quipus. All are about 500 years old. The Incas used quipus to keep numerical records. They were a type of accounting or bookkeeping device. It's known how the Incas used quipus for counting. However, the non-numerical information they represent is not understood. The researchers believe that their recent discovery will help them to work this out.



*Inca quipu*

Quipus (they are also called *khipus* or *talking knots*) were made from strings, or threads, of wool. One end of each string was attached to a main cord. One quipu could have as many as 2,000 strings. Knots were tied on each string. The position of the knot on a string represented a number or if it was to be added or subtracted. The Incas used a decimal system, so they counted in tens. Some strings were a different color. Knots were also tied in different ways. What the colors and the different knots mean is not known.

The Inca civilization was centered on modern-day Peru. At its most powerful, the Inca Empire included parts of what we now call Colombia, Ecuador, Peru, Bolivia, Chile, and Argentina. By the early 1500s European explorers and soldiers had crossed the Atlantic Ocean and arrived in North and South America. Spanish soldiers, known as Conquistadors,

heard rumours of cities built of gold. They wanted to find the cities and take the gold back to Spain.

The Spanish Conquistador Francisco Pizarro was given permission by the Queen of Spain to attack the Incas. He arrived in Peru with fewer than 200 men in 1532. He and his soldiers easily defeated the Inca armies. They had better weapons. The soldiers rode horses, which the Incas had not seen before. Many Incas died of diseases that the Conquistadors brought with them. They included: smallpox, tuberculosis (TB), measles, and influenza (flu). These quickly spread throughout the Inca Empire. The Incas had no immunity to them, as the diseases were new to this part of the world. Eventually, the Spanish destroyed the Inca's civilization and took over most of their lands.

The Incas were very organized. They built a system of storehouses. These were used to store food, such as maize (or corn), beans, grain, potatoes, peanuts, and chili peppers. Weapons, tools, wool and clothing were also kept in these buildings. Officials carefully recorded the items that were put in, and taken out of, the storehouses.

Inca storehouses were usually built high up on the steep sides of mountains. Here, it was cooler and there was more wind. This helped to preserve the food. Also, if they were attacked, the buildings could be easily defended. Local people filled the storehouses when they had extra crops. They could use what was kept in them if there was trouble. This could be when crops failed, or in times of bad weather and war.

So far, over 800 quipus have been discovered. Many were found in graves. These were probably the

resting places of officials, or recorders, who used them. The recently discovered quipus were found at a site called Incahuasi. It is about 100 miles (160 kilometers) from Lima, Peru's capital city. For the first time the quipus were found in storage houses. The string records were buried under the remains of the foods that they might have been used to count.



*Ruins of an Inca storehouse*

The researchers are now studying the quipus and where they were found. They hope to find out what the color of the strings and the different knots meant. For example, green strings may have been used for beans, and red strings for potatoes. Alternatively, a certain type of knot may represent beans or potatoes. ■

## BIRTHDAY DIPLOMACY

Nawaz Sharif is the prime minister of Pakistan. On December 25, he celebrated his 66th birthday. This year Mr. Sharif had a surprise visitor. India's prime minister, Narendra Modi, telephoned the Pakistani leader on his birthday. He asked if he could "drop by". Mr. Sharif agreed.

Mr. Modi had been in Kabul, Afghanistan's capital city. There, he made a speech to the country's parliament. Mr. Modi then had to fly back to India. The plane would

cross Pakistan. Mr. Modi decided to call Mr. Sharif. His aircraft was given permission to land. Mr. Sharif met the Indian prime minister at the airport. They traveled by helicopter to Mr. Sharif's home near Lahore. This is one of Pakistan's largest cities.



Nawaz Sharif, prime minister of Pakistan, and India's prime minister, Narendra Modi, at their recent meeting.

The two leaders talked for about one hour. They had briefly spoken with each other at the United Nations Climate Change meeting at the end of November. This was held in Paris, the capital of France. Mr. Modi gave Mr. Sharif a gift. It was a pink turban. Mr. Sharif wore it at his granddaughter's wedding, which took place the following day.

India, Pakistan and Bangladesh were once all part of a large British colony known as "India". The British ruled this part of the world for over 300 years. After the end of the Second World War (1939 – 1945) the government of Britain decided that it could not control India any longer. There had been an increasing number of demonstrations in the colony. Those who took part in the protests said that the British should leave. They wanted India to be an independent nation.

In 1947 the British government agreed that the colony would be split into two separate countries. India was the largest, where most people were Hindu. The other, Pakistan, had a Muslim majority. At

that time Pakistan also included an area called East Pakistan. This part of Pakistan became a separate nation in 1971. Its name then changed to Bangladesh. Since independence, Pakistan and India have been rivals. The two countries have had frequent arguments and fought three wars against each other.

Many of the disagreements are about Kashmir. In 1947 the region of Kashmir was divided between the two countries. The northern area became part of Pakistan. Almost 100% of people living there are Muslims. The southern area became part of India. Many Hindus live in southern Kashmir. Yet it is also home to many Muslims. Some want the whole of Kashmir to be part of Pakistan. The disputed dividing line, or border, between the two parts of Kashmir is usually called the "Line of Control".



India has often accused Pakistani senior military commanders of supporting Islamic militant groups in the part of Kashmir it controls. India insists that one of these groups organized and carried out an attack on Mumbai, one of India's largest cities, in 2008. The attack, in which more than 160 people were killed, almost caused another war between the two countries.

Mr. Sharif and Mr. Modi's meeting was unusual. Normally

these occasions are planned many months in advance. What's more, the last time an Indian prime minister visited Pakistan was 12 years ago. Some people described the quickly arranged meeting as "birthday diplomacy". After the meeting, Mr. Modi and Mr. Sharif said that talks to end their countries' rivalry would begin.

However, on January 2, six armed men attacked an Indian air force base at Pathankot. This town is near the Indian-Pakistani border and India-controlled Kashmir. After a two-day gun battle, the six men were killed. They are believed to have been members of a Pakistani Islamic militant group. Many people think that the attack was carried out to stop the peace talks that Mr. Modi and Mr. Sharif plan to arrange. Both leaders **condemned** the attack. They insisted that it would not affect the forthcoming talks. ■

## CHINA'S SECOND AIRCRAFT CARRIER

On December 31, a government official spoke with news reporters. He confirmed that China had started building the country's second aircraft carrier. For many months military experts have suspected that China was building a new large navy ship. They said that work on the ship could be seen in satellite pictures of Dalian. This Chinese port city is in the Chinese province of *Liaoning*.

Aircraft carriers are huge vessels. They are designed so that warplanes can take off and land on them. As there is not much room on a carrier, landing fast jets on these ships is difficult. Most perform what's called an "arrested landing". A

strong cable is put across the ship's deck, or landing area. As it touches down, a hook on the back of the plane (known as a tailhook) catches the cable. As the plane continues to move forward, the cable quickly brings it to a stop.



Liaoning aircraft carrier in Dalian (Simon Yang)

Aircraft carriers are not used on their own. Several smaller navy ships must accompany them. These carry supplies and are able to defend the carrier from enemy planes. An aircraft carrier and its support vessels is often called a "carrier fleet". Carrier fleets are expensive to build and operate. This is why not many countries have them.

With at least 12, the U.S. has the most aircraft carriers. Other countries that have one or two carriers include: India, Italy, Spain, France, Russia, Brazil, and Thailand. Aircraft carriers can sail anywhere in the world. They are often used as a symbol of military power. It is not unusual for American leaders to send a carrier fleet to a part of the world where they think a military force might be needed.

China's first aircraft carrier is called the *Liaoning*. The ship is named after the Chinese province. China bought the vessel from Ukraine. Then, the aircraft carrier was called the *Varyag*. The ship had not been completed. It was not fitted with engines or weapons. China agreed to buy the body, or hull, of the ship. Building

work on the *Varyag* had started in 1985. Then, Ukraine was part of the Russian-led Soviet Union. However, the Soviet Union began to break up in 1991. Ukraine became a separate country. In 1998 the Ukrainian government accepted China's offer to buy the incomplete ship.

The *Varyag* was towed to the Chinese port of Dalian. Three years later China admitted that it planned to complete the aircraft carrier. The ship was renamed the *Liaoning*. It completed its first sea trials at the end of 2011. About one year later, Chinese J-15 fighter-bombers began using the carrier for takeoffs and landings.

The new aircraft carrier is yet to be named. Unlike the *Liaoning*, it will all be built in China. The government official did not say when the new ship would be completed. However, he did explain that it was designed for the J-15 warplanes.

There are many small, uninhabited islands in the South China Sea. Chinese leaders insist that nearly all of them are part of China. Over the last 18 months, China has used dredging ships to increase the size of some islands. Several buildings, harbors and landing strips for aircraft have been built on them. Recently, American navy ships sailed close to some of the enlarged islands. Air force planes flew overhead. This annoyed China's leaders.

Other countries such as the Philippines, Vietnam, Malaysia and Brunei also claim to own some of the islands. These countries are worried that China's navy is becoming too powerful. Aircraft carriers can be used to threaten or attack other countries. Yet China insists that its navy ships would be used only for peaceful purposes. ■

## NEW LANTERNSHARK

A team of American marine scientists have found a new type of shark. So far, they have caught eight [specimens](#). All were found in the eastern Pacific Ocean off the coasts of two Central American countries, Nicaragua and Panama. The new shark is not big and dangerous. One of the eight is a fully-grown adult. Its length is 20 inches (51.5 centimeters).

Many people think that whales and sharks are similar. This is not true. Whales are mammals and sharks are a type of fish. Sharks do not have bones like mammals. Their skeletons are made of cartilage. This is the same softer-than-bone material, or tissue, found in human noses and ears.



Ninja lanternshark (V. E. Vásquez)

There are over 500 shark species. They have a wide range of sizes. Whale sharks are the biggest. These marine creatures are the world's largest fish. Whale sharks are about 39 feet (12 meters) long. They feed on plankton, or tiny marine organisms, and fish eggs. The sharks are not dangerous.

Whale sharks are the largest of the three plankton-eating sharks. The others are megamouth sharks and basking sharks. Water flows into these sharks' mouths and then out through their gills. The gills have comb-like filters. These stop

any plankton or fish eggs passing through. The trapped food is then swallowed. Marine creatures that eat in this way are called filter feeders.

The smallest shark in the world is the dwarf lanternshark. Its length is about six inches (15.25 centimeters). These fish have only been found off the coasts of Colombia and Venezuela. They feed on small shrimp-like creatures called krill. The new shark found by the American marine scientists is a type of lanternshark.

Lanternsharks are quite small. They can “glow in the dark”. The fish have small “dots” on their bodies. Called photophores, the tiny dots emit light. This explains the “lantern” in the sharks’ name. Some lanternsharks use this light to attract their prey. It also helps them to avoid predators that swim below them. When these predators look upwards, the glowing light hides the shark’s silhouette, or shadow.

The scientists say that the new shark has fewer photophores than other lanternsharks. They think that it does not use its glow to attract other fish. However, it does glow enough to hide its shadow. The shark has sharp teeth and emerald-colored eyes. It is black with small white markings around its mouth and eyes. The sharks seem to live at depths below 2,800 feet (854 meters).

The scientists have called the new shark the *ninja* lanternshark. The *ninja* name comes from Japan. Hundreds of years ago *ninja* were Japanese spies or secret [assassins](#). They dressed in black. Nowadays, *ninja* are imaginary figures with superhuman powers that appear in movies and comics. The shark’s scientific name is *Etmopterus benchleyi*. It has been named after Peter Benchley (1940 – 2006). He wrote *Jaws*.

This bestselling book was made into a popular movie in 1975. In the story, a large man-eating shark attacks people who swim in the sea near a small American town. ■

## NON-MELT CHOCOLATE

Barry Callebaut is one of the world’s largest chocolate companies. The company’s headquarters is in Switzerland. It has offices and chocolate factories in 30 other countries. At the end of December, Barry Callebaut’s boss announced that the company had begun selling a new type of chocolate. It is “heat-resistant”. The new chocolate melts at a higher temperature.



Cacao tree with pods (Luis Ovalles)

Two chocolate companies merged, or joined, in 1996 to form the Barry Callebaut Company. One was from France and the other was based in Belgium. The French company was called Cacao Barry. (Chocolate is made from cacao beans.) Charles Barry set it up in 1842. The Belgian company’s name

was Callebaut. It was founded in 1850. At first, Callebaut made beer. The company began to manufacture chocolate in the early 1900s. Soon afterwards it ceased to brew beer and became a chocolate maker.

Barry Callebaut is what’s known as a wholesaler. Most of the chocolate it manufactures is sold to other chocolate or [confectionery](#) makers. These include big companies such as Hershey’s, in the U.S., and Nestlé, from Switzerland. Many of Barry Callebaut’s customers are smaller organizations that use chocolate. Examples are: bakeries, dessert makers, shops that sell chocolates as well as café, restaurant and hotel groups.

Chocolate is made from the seeds of the cacao tree. This tree originally grew only in parts of Central America and the Amazon region, in South America. Cacao trees grow to a height of 20 feet (six meters). The trees produce pods. Each one contains 30 to 40 seeds. (Even though they are seeds, they are known as cocoa beans.) The pods are about six to 12 inches (15 to 30 centimeters) long. It takes about 10 to 12 pods to produce one pound (454 grams) of cocoa.

The Spanish arrived in Central America in the early 1500s. They were the first Europeans to travel to this part of the world. Then, the Aztecs ruled the area. The Spanish noticed that important Aztecs were given a chocolate drink during special ceremonies. Yet the ordinary people did not drink it. The Aztecs also used cocoa seeds as a type of money.

The Spanish took cocoa beans back to Europe. Chocolate drinks were made from them. Later, Europeans began to use the beans to make a solid form of chocolate. In more recent times, cacao trees were planted in other countries. Today,

the world's biggest producers of cocoa beans are the Ivory Coast (Côte d'Ivoire) and Ghana, in West Africa. At least 70% of all the cocoa beans grown in the world come from these two countries. Brazil and Ecuador are the main growers in South America.



Chocolate melts at around 93°F (34°C). It is the only type of food that does this. The temperature of the human body is roughly 98.6°F (37°C). This explains why chocolate “melts in the mouth” or becomes sticky when held in the hand. Barry Callebaut's new heat-resistant chocolate will not melt until it is over 100°F (38°C). This is just above body temperature. It has taken the company several years to create its new chocolate. One of the problems, the company says, was making it taste the same.

People who live in countries with warmer weather eat less chocolate than those in cooler climates. People in Switzerland, Germany and Austria eat the most chocolate. In hotter places chocolate is harder to transport and store. Barry Callebaut hopes that its new heat resistant chocolate will become popular in the Middle East, southern China and other warmer parts of the world. ■

## 2016

The year of 2016 began on January 1. In the Gregorian, or international calendar, 2016 is the 21st century's 16th year. It is also the 16th year of the third millennium.

This year is a leap year. It has 366 days instead of 365. A leap year usually happens every four years. The extra day is added at the end of February. So in leap years February has 29 days instead of the normal 28.

2016 is an American presidential election year. The Republicans and the Democrats are the two main political parties in the U.S. Members of both parties must choose who will represent them in this year's election. The person selected is known as the party's nominee. The election will not be held until November 8. Yet the nominee selection process goes on for five months.

Each of America's 50 states holds a vote to choose their preferred Republican and Democratic nominee. These votes are called a “caucus” or a “primary”. The name depends on how the votes are counted. Voting is held on different days in different states. The state of Iowa is the first to vote. Its caucus is on February 1. The last states vote at the beginning of June.

At the end of August and the beginning of September, the two parties will each hold a big meeting called a convention. At the convention the results from each state are added together. The name of the person who will represent his or her party in the presidential election is formally announced. This long process of selecting each party's nominee and the presidential election is often described as “the race for the White House”. The White House is in Washington DC, the U.S.'s capital

city. It is the home of the American president.

The United Nations (U.N.) often chooses a theme for each year. 2015 was the International Year of Light and Light-based Technologies. The U.N. has declared that 2016 is the International Year of Pulses. Pulses are edible seeds that grow in pods. They include: dry peas, lentils, dry beans, and chickpeas. Pulses are an important part of a healthy diet. During 2016, the U.N. will promote the advantages of eating these foods.

Ban Ki-moon is the secretary-general, or leader, of the U.N. His second five-year term as the U.N.'s leader comes to an end on December 31. Therefore, a new U.N. secretary-general will have to be appointed in 2016. The U.N. Security Council's five permanent members normally choose this person. These are the U.S., Russia, China, France, and Britain.

Two large sporting events will take place in 2016. France will host the European soccer championship, or Euro 2016, in June and July. The 2016 Summer Olympic Games are to be held in Rio de Janeiro, in Brazil, in August. Both of these sporting events take place every four years.



In May there is a transit of the planet Mercury. This is when Mercury is between the Earth and the Sun. During the transit, Mercury will appear as a small black dot traveling across the face of the Sun. The last transit of Mercury was ten years ago. NASA's Juno spacecraft is scheduled to reach Jupiter at the beginning of July.

The world's longest and deepest railway tunnel is expected to open in Switzerland on June 1. Called the Gotthard Base Tunnel, it is 35.4 miles (57 kilometers) long. ■

**JAVAN GREEN MAGPIES**

Magpies are types of birds. The Javan green magpie is now threatened with extinction. Many of these birds used to live on the island of Java. This is one of Indonesia's two biggest islands. It's now thought that only 100 Javan green magpies remain. Recently, six pairs of the birds were sent from Indonesia to a zoo in Britain. The zoo has offered to try to save the species. It has set up a special breeding program.

The Javan green magpie is brightly colored. Most of the bird's feathers are a vivid green. It has a black mask,

or black feathers around its eyes. The bill is bright red. Parts of the bird's wings are a chestnut brown. Javan green magpies are about 12.6 inches (32 centimeters) long. The birds are carnivores, or meat eaters. They feed on frogs, lizards and insects.



*Javan green magpie*

The Javan green magpies preferred habitat is the foothills, or lower slopes of mountains, which are covered in dense forest. In the last ten years, ornithologists, or scientists who study birds, have seen only one Javan green magpie in the wild.

One problem for the magpies is habitat loss. In recent years, many of the forested foothills in Indonesia have been cleared. However, the Indonesian custom of keeping pet birds is a much bigger danger. In Indonesia caged, or pet, birds are very popular. Birdcages can be seen hanging outside many houses, shops and restaurants.

Most people buy the caged birds from local markets. Some local people go out into the surrounding forest to trap the wild birds. Those with the brightest colors and best birdsong sell for the most money. Often the caged birds are not well looked after. When they die, the owner returns to the market to buy another. Over 30% of birds kept in cages in Indonesia have been caught in the wild. About one million wild birds are caught each year. Wildlife officials in Indonesia now visit local



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.

markets. They do this to buy, or rescue, the least common birds.

The rarer a bird becomes the more expensive it is to buy. Javan green magpies are now selling for very high prices. Two wildlife organizations in Indonesia have set up captive breeding programs for the birds. However, in recent months one of the buildings in which the birds are kept was broken into. The people who did this wanted to take the green magpies. This was why the Indonesian officials decided to send six pairs to a zoo in another country. There, the birds would be safe from the people who wanted to steal them.

Officials at the British zoo are not sure that their breeding programs will succeed. However, they are hopeful that they can help save the Javan green magpie from extinction. If they are successful, it will be many years before any birds are returned to Indonesia. ▣

## H-BOMB TEST

The United Nations (U.N.) Security Council held an emergency meeting on January 6. Representatives of the Security Council's 15 member countries discussed an announcement that was made by North Korea earlier that day. North Korean officials said that their country had successfully tested its first hydrogen bomb (or H-bomb). The test was carried out in a deep underground tunnel.

North and South Korea used to be one country. They became separate nations soon after the end of the Second World War. In the 1950s they fought a war against each other. Then, the U.N., with mainly American troops, helped the South. China supported the North. The three-year

war ended with a ceasefire in 1953. The border, or narrow strip of land, between the two countries is called the De-Militarized Zone (DMZ). The border areas on either side of the DMZ are heavily fortified.

Today, North and South Korea are very different countries. The South holds democratic elections for its politicians and president. Several big South Korean companies are world leaders in computer technology, shipbuilding and industrial design.

North Korea is often described as the world's last remaining Stalinist state. The word Stalinist comes from the former Russian leader Joseph Stalin (1878 – 1953). He became a dictator who controlled Russia under very strict rules. Stalin organized frequent purges. People who criticized him were often sent to prison, or sentenced to death.



North Korea's leader, Kim Jong-un

Members of one family have run North Korea since it became a separate nation. Kim Il-sung ruled the country for 46 years. After his death, his son, Kim Jong-il, took over. Kim Jong-il died four years ago. He was succeeded by one of his sons, Kim Jong-un. In North Korea there are hundreds of statues and huge portraits of Kim Il-sung. He is called the "Eternal Leader". His son, Kim Jong-il, is known as "Dear Leader". Not much is known about Kim Jong-un, but he is less than 40 years old.

North Korea spends most of its money on its large army. Many people who live outside Pyongyang, the capital city, do not have enough to eat. In the countryside there is no electric power.



It's difficult to know what life is like for people in North Korea. The state or government controls all the newspapers and television channels. News reports from other countries are blocked. Therefore the only news that North Koreans hear is what the government wants them to know. For example, people in North Korea believe that the U.S. is planning to invade their country. Many believe that North Koreans have been "brainwashed", or persuaded to believe that their leaders are god-like and never do anything wrong.

North Korea developed its first nuclear weapon over ten years ago. In the past it has carried out three underground atomic bomb tests. These were in 2006, 2009 and 2013. About one month ago, Kim Jong-un hinted that his country would be able to launch an H-bomb. Then, many weapons experts in other countries said that this was unlikely.

H-bombs are also known as thermonuclear devices. They are far more powerful than atomic bombs.

Both atomic bombs and H-bombs create a nuclear reaction. Atomic bombs use nuclear fission. The energy of these weapons is released when a heavier atom is split into two or several smaller atoms. Nuclear fusion takes place in an H-bomb. Two lighter atoms are “fused” or joined to create one heavier one. This is what happens inside the Sun. There, hydrogen atoms join to make a gas called helium. This releases a huge amount of energy.

The vibrations of the underground test were picked up by an American geological organization. It records earthquakes in many parts of the world. This shows that there was a large underground explosion in North Korea. However, many nuclear weapons experts in the U.S. and Europe do not think that North Korea has the technology to make an H-bomb. Some said that if it was an H-bomb test, the explosion should have been larger.

The U.N. Security Council declared that the test was a threat to international peace. It now plans to find ways of punishing North Korea. ■

## TURTLE STRANDINGS

Kemp’s ridley sea turtle is an endangered species. At this time of year many of these turtles wash up on Cape Cod’s beaches. Cape Cod is in the state of Massachusetts, in the northeastern part of the U.S. The stranded turtles are alive but unconscious. Groups of volunteers walk along the beaches every day to collect them.

The stranded turtles have followed the east coast of the U.S. Most are only a few years old. They feed on crabs. Adult Kemp’s ridley sea turtles are more likely to stay in the

warmer waters around Florida and in the Gulf of Mexico. If the younger turtles are still near the coast of Massachusetts in December or January they can become “stunned” by the cold water. Once they have been “cold-stunned”, they wash up on the beaches.

The volunteers wrap the turtles in old towels and put them inside cardboard boxes. The turtles are then sent to nearby aquariums where they are “warmed up”. Not all survive. Workers at the [aquariums](#) check that the turtles are healthy. Eventually, they are taken to Florida by plane or truck. There, the turtles are released into the warm seas.

The upper part of a turtle’s shell is called the carapace. The underneath part is the plastron. Adult Kemp’s ridley sea turtles are about 25.6 inches (65 centimeters) long. Their carapace is a light gray. The turtle’s plastron is a pale yellow or an off white color. The turtles spend much of the time under water. Yet they must come to the surface to breathe.



*Kemp's ridley turtle*

The female turtles have one main nesting, or egg-laying, site. It is a 16 mile (26-kilometer) long beach on the northeastern coast of Mexico. Some females lay their eggs on a nearby island, which is a part of Texas, in the U.S.

Normally, male Kemp’s ridley sea turtles never come out of the sea. The females do so only to lay their

eggs. They do this once every two or three years. The females have an unusual nesting behavior. Local people in Mexico call it the “arribada”. In Spanish this word means “arrival”. The females gather together in the shallow sea near the beach. Then, they all come out of the sea at the same time.



*Kemp's ridley turtle hatchling (USEPA)*

The female turtles drag themselves up onto the beach. They use their back legs to dig a hole, or pit, in the sand. Each female then lays between 50 and 200 eggs. The eggs are the same size as golf balls. The turtles cover the eggs with sand. They then use the undersides of their shells to flatten the sand. Finally, the females use their flippers to spread sand over the flattened area. This is to make sure that there are no signs of a nest. When this is finished, the females return to the sea. This “nesting” process takes between one and three hours.

The eggs hatch after two months. The baby turtles are called hatchlings. They dig themselves out of the sand during the night. They then set off for the sea. If any hatchlings are on the beach when the Sun rises, seabirds will eat them. Most of the small hatchlings never grow into adults. This is because many other sea creatures feed on them. In the late 1940s the number of nesting females in Mexico was around 90,000. Today, this figure is about 12,000.

This year, the volunteers in Massachusetts have found around 500 turtles. Last year around 1,200 were picked up. This was a record. Nobody knows why so many turtles were cold-stunned last year. ■

## SPACE X SUCCESS

In December the SpaceX Company succeeded in landing one of its Falcon 9 reusable booster rockets. It had had several failures in the past. The company believes that, in the future, the use of reusable rockets will make space launches and travel much less expensive.

Powerful rockets are needed to take small capsules into space. These capsules can carry astronauts, supplies or satellites. Some rockets have three parts, or stages. The lower stages include the huge engines, needed for lift off, and the liquid fuel that powers them.

After the rocket reaches a certain height, the lower stage separates. By this time most of the fuel it was carrying has been used. This part of the rocket then falls back to the Earth. Often it crashes into the sea. The rocket's second stage then takes the capsule beyond the pull of the Earth's gravity into space. Then, it too is released. Using launch rockets in this way is very wasteful. Machinery that costs millions of dollars is lost or destroyed after each launch.

Nowadays, supplies need to be taken to the International Space Station (ISS). The ISS goes around the Earth nearly 16 times each day. It circles, or orbits, at a height of roughly 248 miles (400 kilometers). Astronauts have lived on the ISS since 2000. There are usually six astronauts on the space station.

After six months or one year others replace them. Most are from the U.S. and Russia. Over the last four years astronauts have traveled to and from the ISS in Russian Soyuz space capsules.



*The Falcon 9's successful landing (SpaceX)*

The U.S. used to operate a number of space shuttles. These were "half" plane and "half" spaceship. The space shuttles could travel to the ISS and then back to the Earth. However, because of their age and the cost of maintenance, NASA (National Aeronautics and Space Administration) decided to "retire" the shuttles. They are therefore no longer in use. The last space shuttle flight was in 2011.

The money that NASA and the Russian space agency need comes from their governments. In the future NASA wants to pay private companies, such as SpaceX, to operate space "taxis" and "supply trucks" to the ISS. These private companies expect to make money from their space flights. Now, NASA does not have to organize

these flights. It therefore spends more time working on advanced space missions, such as traveling to Mars and beyond.

A wealthy American [entrepreneur](#) set up SpaceX in 2002. The company has a contract with NASA to send supplies to the ISS. This deal is worth \$1.6 billion. In 2012 SpaceX made history. One of its Dragon capsules arrived at, or docked with, the ISS. It was carrying supplies of food, water and equipment. This was the first time that a spacecraft built by a private company had docked with the ISS. Many people said that this spaceflight was "the start of the [commercialization](#) of space".

SpaceX's Falcon 9 rocket is the same height as a 23-story building. When it launched in December, the rocket reached a height of 125 miles (200 kilometers). Its Dragon capsule was carrying 11 satellites. All were successfully placed in low-Earth orbits. The reusable, or lower, part of the rocket then came back to the Earth. It landed upright. This stage has specially designed "landing legs". These are activated, or deployed, just before the rocket touches down.

The flight took ten minutes. The rocket landed about six miles (ten kilometers) from the place where it lifted off. SpaceX's offices are in California. Many of the company's workers watched the rocket lift off and return on large screens. As the reusable part of the rocket landed, they all clapped and cheered. ■

## DOCUMENTS DECLASSIFIED

On December 28, officials in France declared that an archive of 200,000 files had been declassified. This means that the documents in

these files will no longer be kept secret. People can apply to read them. The large archive contains records made by police and government departments between 1940 and 1944. This period is usually called Vichy France.

The Second World War began on September 1, 1939. On this day German forces invaded Poland. In the following days both Britain and France declared war on Germany. Poland was quickly defeated. The Germans then occupied Denmark and Norway. Then, Adolf Hitler, the German leader, ordered his military commanders to attack France. This attack began in May 1940. It is known as the Battle of France or the Fall of France.

The German army overwhelmed the French and British forces. The British withdrew across the English Channel. German soldiers reached Paris, the French capital city, in June. Marshal Philippe Pétain (1856 – 1951) became the French prime minister. He was 84 years old. Pétain had been a successful army general in the First World War (1914 – 1918). Many French people thought that he was a national hero.



Marshal Pétain meets Adolf Hitler in 1940

Pétain arranged for France to surrender. He made an agreement with Hitler. Germany would occupy northern and western France. The southern part of the country would be a “free zone”. Pétain and the

people he appointed would govern it. Paris was in the German area. Pétain decided to move his government to Vichy, a city in the center of the country. His government became known as Vichy France. It was supposed to be in control of all non-military matters in the country. Yet it had few powers in German occupied parts of France.

Before France surrendered, some French soldiers moved to Britain. There, they formed a small military force and a new government. When a government is set up in another country it's called a government-in-exile. The Americans and the British gave the military force weapons and equipment. It and the government-in-exile were named the Free French. Charles de Gaulle (1890 – 1970) led the organization. He is better known as General de Gaulle.

Many members of Vichy France agreed to work for, or **collaborate** with, the Germans. For example, they helped to round up and deport 76,000 Jewish people who lived in France. All were sent to concentration or death camps in Germany and Eastern Europe. Only a few survived. Many people believe that Pétain's Vichy government helped the Germans far more than it needed to.

Some French people organized attacks against the occupying Germans. This was dangerous. These people were known as the Resistance. Any Resistance member who was caught would be **tortured** and killed.

In June 1944 American, British, Canadian, Polish, and French forces landed on France's northern coastline. Within six months most of France had been **liberated**. Pétain moved to Germany. There, he was told to set up a French government-in-exile. However, Germany was defeated a few months later.

Pétain returned to France. General de Gaulle became the new French leader. Pétain was put on trial for **treason**. He was found guilty and spent the rest of his life in prison.



In the past some historians have been given permission to read the Vichy France files. Many people are now expected to search through the documents. Some want to find out what happened to Resistance members who were caught. Others are relatives of the people who were sent to the camps. They want to know how their family members were rounded up and deported. ■

## WHALING LOGBOOK RECORDS

Nowadays, each day's weather is accurately recorded all around the world. Scientists who study the Earth's climate are interested in old weather records. These can be compared with today's rainfall and temperature. These comparisons show if weather patterns in certain parts of the world have changed.

Researchers in the U.S. have recently been using some reliable records of what the weather was like in the 1800s. They have been studying logbooks written by sailors on whaling ships. These wooden

sailing ships used to travel the world's oceans to hunt and catch whales. Each ship kept a logbook. The ship's captain, or one of the crew, would write a daily log. This listed the number of whales seen and caught, the weather and a description of any sea ice. The logbooks also recorded daily life on the ship. They list what the sailors ate, how they behaved and if anyone needed to be punished.

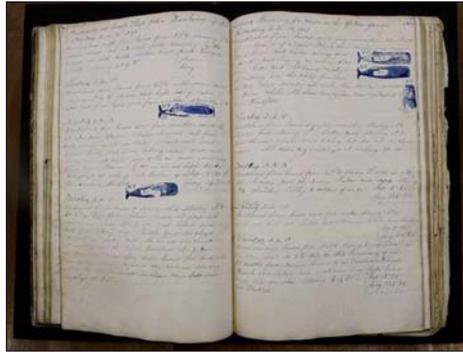
It's known that humans have caught whales for thousands of years. However, whaling became a very profitable business in the early 1800s. Hundreds of whaling ships set sail every year. Then, the bodies of whales could be used for many things. The whales' blubber, or fat, was used to make soap and some cosmetics, or makeup. The oil was burned in lamps. Whalebone was used for many things now made out of plastics. Whale meat could also be eaten.



American whaling ship built in 1841

By the 1930s whaling had become less profitable. Underground oil fields had been discovered, soap and makeup were being made from different substances. What's more, most of the whales had been caught. Not many were left in the oceans. The International Whaling

Commission (IWC) was set up in 1946. Its job was to make sure that the number of whales did not go below a certain level. However, in 1986, because whale numbers were so low, the IWC banned commercial whaling.



Log book for 1847 - 1851 from the whaling ship John Harland (Bedford Whaling Museum)

Today, whale hunting causes many arguments. People in some parts of the world are still allowed to kill a number of whales each year. For example, Inuit people in Greenland and parts of northern Canada use whales as a source of food. Countries such as Norway and Iceland catch a few whales each year. Japan continues to hunt certain types of whales in the Southern Ocean. It claims that this is for scientific studies.

In the 1800s many whaling ships were based in the towns of Nantucket and New Bedford. Both are in the state of Massachusetts on the U.S.'s northern Atlantic coast. Herman Melville (1819 – 1891) lived in Nantucket. As a young man he worked on whaling ships. Melville wrote a famous novel called Moby-Dick. Published in 1851, it tells the story of a sea captain obsessed with hunting down a giant white whale nicknamed Moby-Dick. In the novel the huge white whale eventually rams and sinks Captain Ahab's ship.

There is a whaling museum in New Bedford. Even though the

wooden whaling ships disappeared long ago, the museum has kept their logbooks. The museum has 2,600 of them. Typically, one logbook would be written for each voyage. Each logbook has an exact record of the whaling ships' position using longitude and latitude. These records are important for navigation. Longitude and latitude are imaginary lines on the surface of the Earth. Longitude lines go from the North Pole to the South Pole. Lines of latitude go around the globe, or planet, east to west. By using longitude and latitude, you can record any position on the Earth.

The researchers are interested in about 300 logbooks from the mid-1800s. These are from ships that sailed near or through the Bering Strait. At its narrowest point, this strait is 51 miles (82 kilometers) wide. It connects the Northern Pacific and Arctic Oceans. It also separates Russia's far east and the American state of Alaska. The whalers that traveled to this part of the world recorded the daily position of the sea ice. The researchers want to compare the sea ice around the Bering Strait 150 years ago with the amount of ice today. ■

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**American Editor:** Chris Tarn

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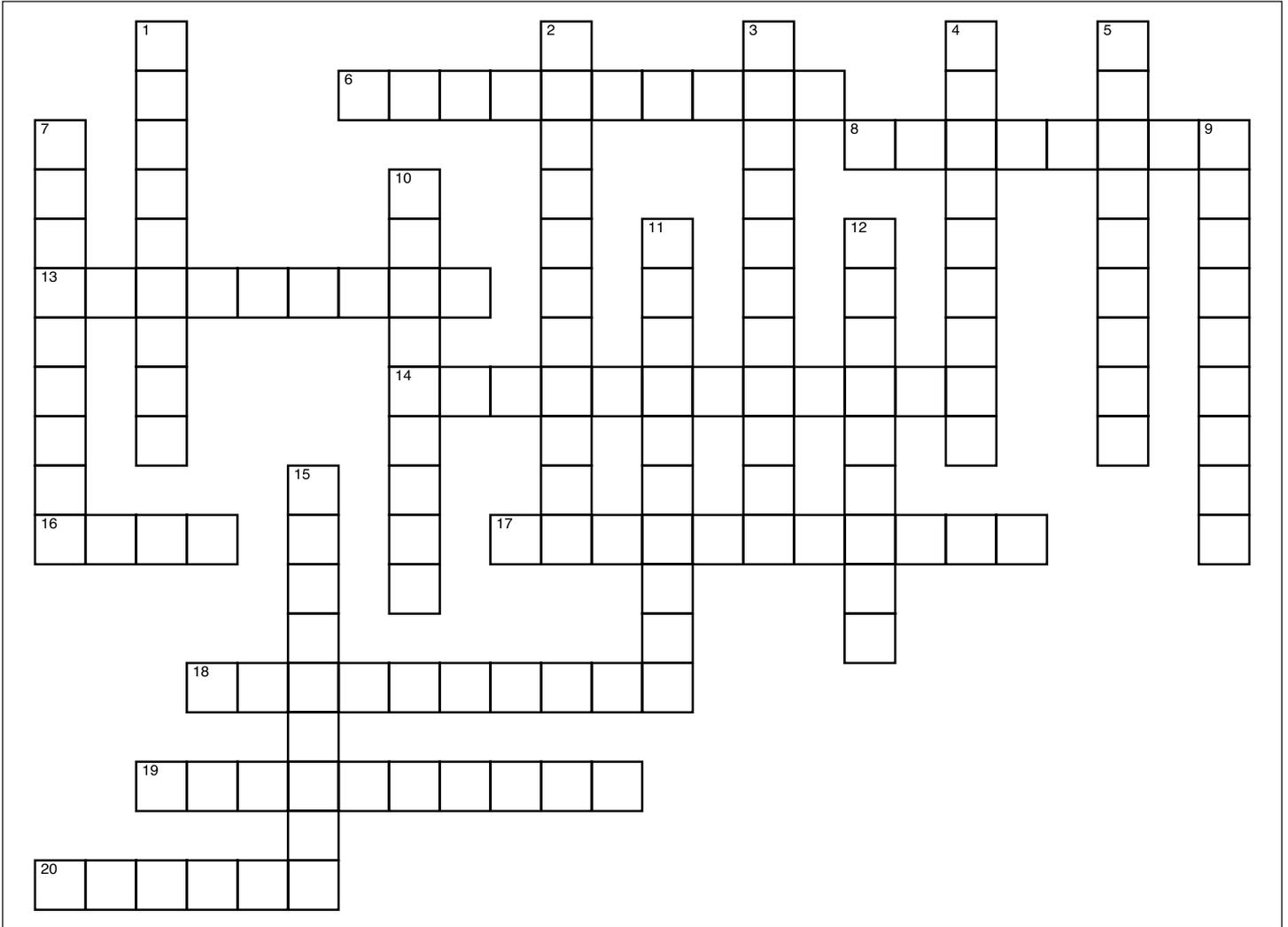
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# ISSUE 266

## 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**

- 6 *Noun* An unusual or remarkable event or occurrence
- 8 *Verb* Deliberately hurt a person in a very cruel way, especially as a punishment or in order to make them say or do something
- 13 *Noun Plural* People who are trained to deliberately kill or murder others, especially for political reasons
- 14 *Noun* Person who starts his or her own business
- 16 *Noun* A group of people whose religious beliefs are different from those of a larger group to which they belong
- 17 *Adjective* Describes a place or building where people live
- 18 *Noun Plural* The qualities of a substance or material, or the ways in which something can be used
- 19 *Noun Plural* Deaths caused by accidents, war, violence, or diseases
- 20 *Verb* To prove something is true or correct, or that it exists

**Down**

- 1 *Noun* The mixing of substances by the natural movement of their particles
- 2 *Verb* Agree to work with or cooperate traitorously with an enemy
- 3 *Noun* When two or more similar things happen at the same time or place, for unconnected reasons
- 4 *Noun* The way in which parts of an area, object, or system are organised or arranged
- 5 *Verb* Strengthened
- 7 *Noun Plural* Buildings with many large water tanks where people can go to look at fish and other water animals
- 9 *Noun* The business of making agreements and treaties among countries
- 10 *Verb* Strongly disapproved of something
- 11 *Adjective* Distrustful or suspect that something is wrong
- 12 *Verb* Set free or released
- 15 *Adjective* Only lasting for a time, not permanent

# ISSUE 266

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

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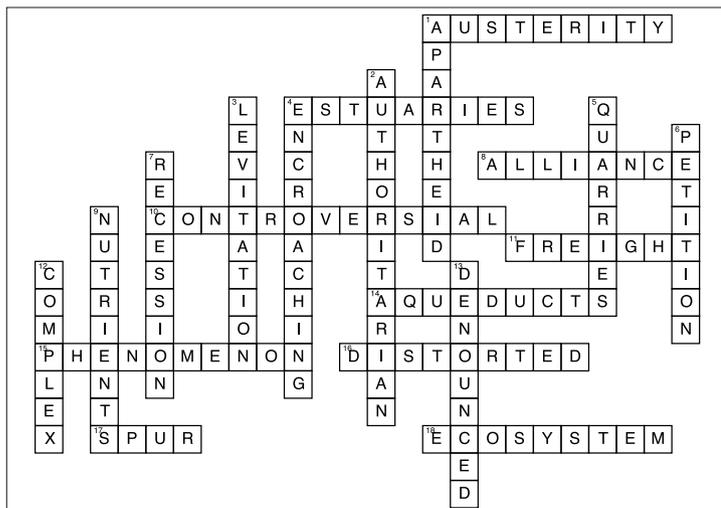


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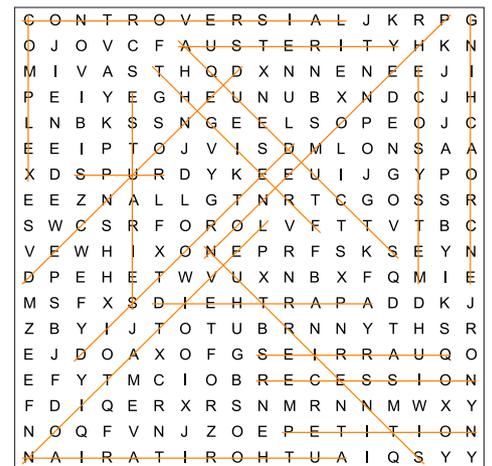
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MISSING WORD ANSWER =



ISSUE 265 ANSWERS



A L L I A N C E