

A Slice of Science

Issue 5

Welcome to your fortnightly science newsletter: 'A Slice of Science!' Here you will find fun experiments that you can try at home, science jokes and interesting science facts. You will also learn about a scientist and about some careers/jobs that involve science.

Careers in Science

Animal Trainer



An animal trainer could...

Keep zoo animals healthy by training them to allow veterinary examinations.



Help rescue lost hikers by training search and rescue dogs to track a person's scent.



Condition a police horse to not get spooked when near loud noises, bright lights, fire, or smoke.



Train a guide dog to help deaf or blind people so that they can live more independent lives.



Do you have a favourite pet food advert or animal movie in which the animals do something really cool or cute? Animal trainers are responsible for these amazing animal performances. Animal trainers get involved in much more than the fun world of entertainment, though; they are also involved in the serious business of training animals for search and rescue missions, bomb and drug detection, criminal capture, and service to help people with disabilities.

Subjects to Study: Biology, chemistry, English.

On-the-job training is the most common way animal trainers learn their work; however, employers generally prefer to hire people who have experience with animals.

Animal trainers need patience, sensitivity, problem-solving ability, and experience in animal obedience. They also need tact and communication skills. Successful marine mammal trainers should also have good public speaking skills, as seminars and presentations are a large part of the job. Usually four or five trainers work with a group of animals at one time; therefore, each trainer should be able to work as part of a team. Marine mammal trainers must also be good swimmers; certification in SCUBA is a plus.



STEM PERSON
OF THE
WEEK

Christopher Toth Facility Scientist

Chris works in a research laboratory deep underground. He uses sensitive detectors to search for new particles. Chris needs to be a good communicator as he works with scientists from all over the world. The detectors can sometimes break, so he needs to be both organised and patient to fix them.

Communicator

Communicators are good at sharing information and ideas with other people.

Organised

Organised people are good at planning to make sure they finish things.

Patient

If you are patient, you are able to stay calm when faced with problems.



STEM PERSON
OF THE
WEEK

Dr Kate Winter Polar Geologist

Kate investigates how ice flows in one of the most extreme environments in the world. She is imaginative and passionate about her work, travelling to Antarctica to use high-tech equipment to measure the movement of rocks within the ice. She needs to be tenacious when doing experiments in very cold temperatures.

Imaginative

If you are imaginative, you can think of new and interesting ideas.

Passionate

Passionate people have strong feelings about things that interest them.

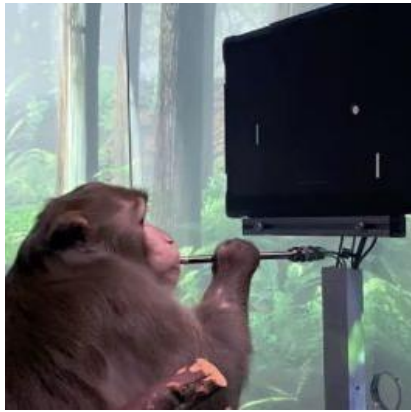
Tenacious

If you are tenacious, you are able to stick with something difficult until it is finished.

Science in the News

Monkey Plays Video Games With His Mind!

NFK EDITORS - APRIL 20, 2021



A company called Neuralink has shared a video which appears to show a monkey playing a video game. That's fairly unusual, but what makes the video even stranger is that the monkey is playing the video game with just its mind.

Neuralink is a company owned by Elon Musk, who also owns the car company Tesla and the rocket company SpaceX. Neuralink is working to develop devices that could allow people to control things using just their brains.

It sounds like something from a science fiction movie, but Neuralink is already showing progress in doing similar work with other animals, like pigs.

The monkey in the video is called Pager, and he's a rhesus macaque. Pager has two of Neuralink's special "Link" devices inside his brain. The devices were planted in Pager's brain by a surgeon. These devices are connected to 2,048 wires which lead to the parts of Pager's brain that control movements of the arms and hands.

Scientists taught Pager to play a video game. They used a banana smoothie as a special treat to reward him when he played the game correctly. Soon, Pager was eager to play well in order to get more smoothie.

At first, Pager controlled the video game using a joystick which is a normal gaming controller. But as Pager played, his Link devices wirelessly sent out information about the signals his brain was using to control his arms and hands. Neuralink's scientists recorded all of these signals.

Then, they used computers to match up the signals from Pager's brain to the movements that his hands were actually doing. This was challenging work and the scientists counted on artificial intelligence (AI) to help them decode Pager's brain signals.

The final step was to have a computer make moves in the video game as if Pager had actually moved the joystick. If Pager thought about moving the joystick up, the computer would send an "up" signal to the video game.

Even though Neuralink's work right now focuses on animals and video games, there's a very serious purpose behind it. Neuralink wants to make it possible for humans who have lost the ability to control their bodies to interact with the world around them.

Mr. Musk says that in the near future Neuralink hopes to allow a paralyzed person to control a smartphone just by thinking. He believes they'll be able to do it faster than someone who is using their hands. The next step would be to allow them to control a computer.

FLOATING PING-PONG BALLS

The brief

Make two ping-pong balls float in the air flow of a hair dryer at the same time, without hitting each other.

The method

1. Switch on your hairdryer, making sure it is on the cool setting.
2. Hold it with the nozzle pointing upwards.
3. Place one of the ping-pong balls into the stream of air.
4. Try and place another ball into the same stream of air – on top of the first ball.

Materials

Two ping-pong balls
A hairdryer
(on cool setting)



How does it work?

The hair dryer produces a high velocity stream of air with low pressure. The surrounding air is at a higher pressure which keeps the ball inside the stream. When the upward force of the air equals the weight of the ping-pong ball the ball is said to be in 'equilibrium'.

The theory at work here is Bernoulli's principle. This is an equation linking air pressure, velocity and density with particle weight.



EXPANDING GASES

Designed by David,
Senior mechanical engineer
at Dyson

The brief

Find out what happens when gases are heated up or cooled down.

The method

1. Fill two bowls – one with cold water the other with hot water.
2. Put the bottle into cold water.
3. Fit a balloon to the neck of the bottle.
4. Now place the bottle into the hot water.
5. Watch the balloon expand.

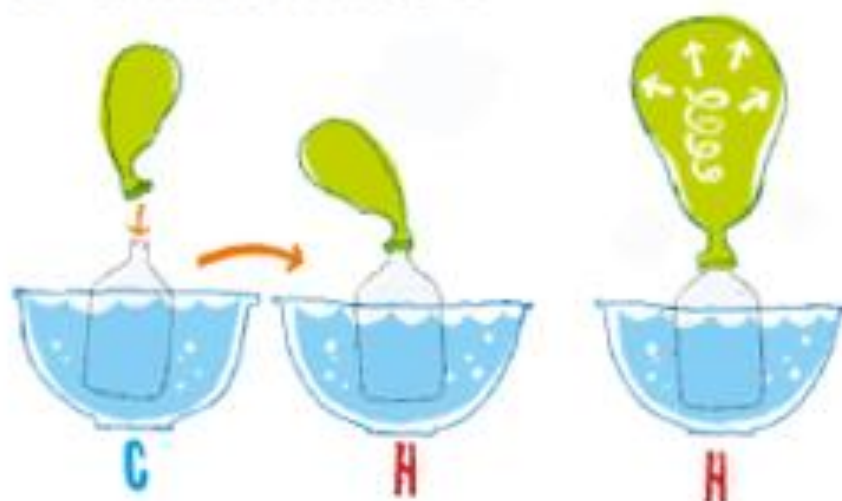
Materials

Two bowls

Cold water, hot water
(with adult supervision)

A sturdy plastic bottle

A balloon



How does it work?

Gas expands when it is heated. The rule is, if the pressure of a gas remains constant, the volume of the gas will increase as the temperature increases. So if the temperature increases, the gas takes up more space. This is known as Charles' Law. The principle was first formulated by the French physicist Jacques Alexandre Cesar Charles in 1787.

Design icons

Steam engines heat up air and allow it to expand in cylinders to drive wheels.



Science Jokes

1. How did the astronaut serve dinner in outer space?
2. How do you stop an astronaut's baby from crying?
3. What do you call a fish without an eye?

Super Scientists Gallery

If you would like to be featured in our gallery, please send a photo/s of yourself completing a science experiment or a science related activity to your class teacher via Class Dojo or Tapestry.



Fun Science facts

- Cutting onions releases a gas which causes a stinging sensation when it comes into contact with your eyes. Your body produces tears to dilute the irritant and remove it from your eyes.
- Pumpkins are usually labelled as vegetables but they contain seeds so they are technically a fruit.
- Butterflies taste food by standing on top of it! Their taste receptors are in their feet unlike humans who have most on their tongue.
- Most of the dust in your home is actually dead skin! Yuck!
- The trickiest tongue twister in the English language is apparently "Sixth sick sheik's sixth sheep's sick". Give it a try and see for yourself.

Thank you for reading A Slice of Science!

If you have any ideas for what you would like to see in this newsletter, or if you would like to be involved in some way, then please speak to your class teacher, Miss Alladice or Miss Egan.

Joke Answers

1. On flying saucers!
2. You rocket!
3. Fsh!