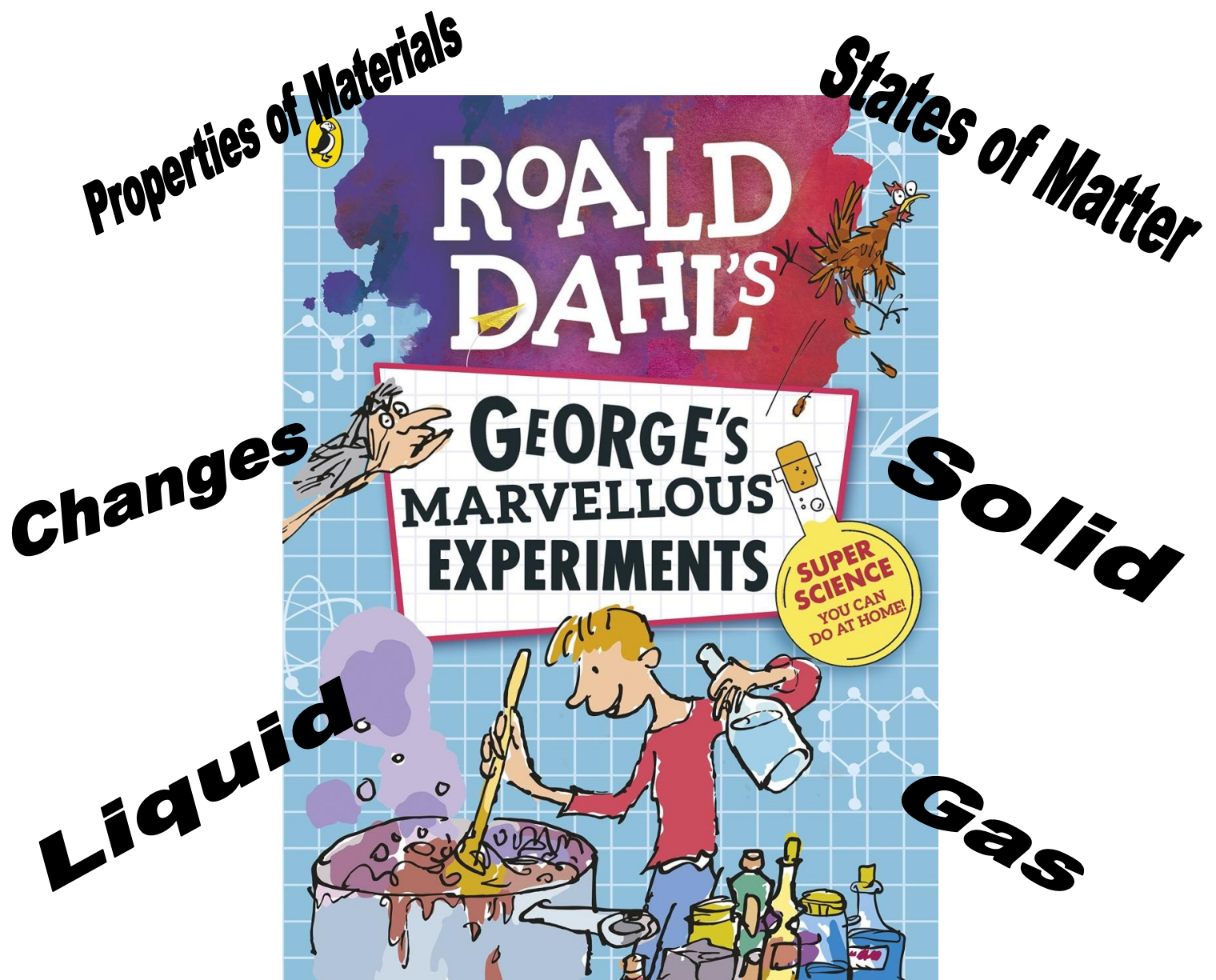




And

ROALD DAHL'S SENSATIONAL WORLD OF SCIENCE

Have a go at a range of these Science Activities based
on Properties of Materials, Changes and States of
Matter:

PART B

Range of Fun experiments linked to this topic which are
based on a wide range of Roald Dahl books.

PART B

Fabulously Roald Dahl Inspired Experiments:

Watch and follow along with the following experiments all to do with George's Marvellous medicine:

How to make a volcano - make a big eruption like granny!

<https://www.youtube.com/watch?v=tTP1LJl4BTk>

How to make a lava lamp all gooey and colourful like all things he put in medicine!

<https://www.youtube.com/watch?v=Yv5xBDBQQSU>

How to Blow up a balloon, just like Granny gets blown up!

<https://www.youtube.com/watch?v=vGyXsrYNc2E>



**George's marvellous
fizzy experiment**

You will need: *baking soda* • *lemons, limes or oranges* •
 small muffin tray • *a tablespoon* •
 small cups/containers to hold fruit

Cut and squeeze the juice from each different fruit into separate containers. Pour half a tablespoon of baking soda into each of the sections of your muffin tray. Pour a bit of juice in to the baking soda and watch the reaction.

Can you see and hear the fizz?



A small cartoon character of George is visible in the top right corner of the poster.

What's going on? Why is it fizzing?

THE ALL-YELLOW EGG

WHAT TO DO:

WHAT YOU'LL NEED:

- An egg (uncooked)
- A pair of tights
- Elastic bands
- Water
- A pot

George's medicine doesn't just send Grandma through the roof, it transforms chickens to ten times their normal size – and it does something extraordinary to their eggs as well! **Now it's your turn.** Everyone knows that once you take the shell off a boiled egg it's white on the outside and yellow on the inside. But did you know **you can turn the whole egg yellow?** Let's get cracking.

1



Place the **uncooked egg** in **one leg** of the tights, around **halfway down**. **Cut off** the **elastic bands** on either side of the egg so it can't roll around.

2



Using **two hands**, hold the tights at **either end**, leaving **several centimetres** between your hands and the egg.

3



Move both hands in **small circles**, spinning the egg in front of you. Continue until your arms get tired for for about four or five minutes!

4



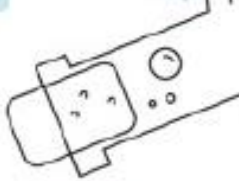
Ask a grown-up to **boil the egg** for around **14 minutes**, then peel and marvel at your completely yellow egg.



WHAT'S HAPPENING HERE:

Spinning the egg creates something called **centrifugal force**, which **forces the centre of the object** in this case, the **side of the egg** towards the outside. This means the yolk and white together – so once you **hard-boil** the egg has turned completely yellow. And it's all **science!**

WHAT IF?



What happens if you only **boil the egg** for **four minutes**? Can you find another way to mix the yolk and white the same effect together to achieve

FOAMING FIZZY POTION

When George made his marvellous medicine, it **frothed** and **fizzed** and **foamed** as if it were alive! Now you can recreate that same effect for yourself and concoct something that looks like a **weird magic potion**.

WHAT YOU'LL NEED:

- Bicarbonate of soda
- Washing-up liquid
- Lemon juice
- Food colouring (optional)
- A plastic cup or mug

WHAT TO DO:

1



Put a **teaspoon** of the **bicarbonate of soda** into the cup. Any cup will do, but tall, narrow ones work best.

2



Add a **squirt** of washing-up liquid.

3



Stir to mix together. If it's tricky to stir with a spoon, try using a long drinking straw. If you want your magic potion to be **colourful** (and who wouldn't?) add some **food colouring**. Not too much - a couple of drops will do.

4



Squeeze or pour in a small amount of **lemon juice**. **Continue stirring while you pour.** As you stir, **bubbles** will form and start to fill the cup!

5



Add more **lemon juice** and **soda** until the **frothy mixture** bubbles up over the top!

WHAT IF?

Try using another citrus fruit juice like **lime** or **orange**. Do they have the same effect?

What happens if you use a **large bowl** instead of a glass?

WHAT'S HAPPENING HERE:

The bicarbonate of soda, when mixed with the lemon juice, is creating carbon dioxide gas. As this fizzes up in the washing-up liquid, it creates lots of soapy bubbles - see, science IS magic!

POP A BALLOON

INSPIRED BY ROALD DAHL'S

GEORGE'S MARVELLOUS MEDICINE

Toolkit

- A bottle of fizzy drink
- A packet of popping candy
- A balloon
- A small funnel (you can always make your own using card)

About this activity

George's medicine makes his granny grow through the roof – and that's just the start... if only blowing up balloons was that easy! Don't worry though – science has a solution that'll save your aching lungs!

Watch out!

Be careful that no one is allergic to balloons before you get started. This experiment can get rather messy so ensure your workspace and clothes are well protected.

Part 1

Make your boogie gloop

Pour the popping candy into your uninflated balloons. This is where the funnel comes in handy.

Take the lid off your fizzy drink bottle and stretch the hole of the balloon over the top of the bottle, making sure none of the popping candy falls into the liquid. The balloon needs to be securely attached (this is a bit fiddly, so you may need help).

Part 2

Pop the balloon

Tip the balloon up so the popping candy falls into the drink. The balloon will inflate before your very eyes, without you having to huff or puff even once!

Part 3

Experiment

What happens if you use a different sized bottle, or a different type of fizzy drink? Try different amounts of the popping candy mixture to see how big you can get the balloon.

Next steps

If George has inspired you, share your experiment with [@Roald_Dahl](https://twitter.com/Roald_Dahl) on Twitter and Facebook [#MarvellousScience](https://www.facebook.com/MarvellousScience)

You can find even more marvellous experiments inside the new George's Marvellous Experiments book, released February 2017!

Plus there's a free wondercrump doorhanger inside the 2017 edition of George's Marvellous Medicine – perfect for young inventors everywhere!





George's marvellous underwater fireworks

You will need: water - 2 clear containers - oil - food colouring
a pipette

Pour water into one of your containers and oil into the other. Using a pipette, put a few drops of each colour food colouring into the oil. Mix the colours together and pour the oily mixture into your container of water.

Watch the fireworks of colour drop down through the water.



Why is this happening?

Make your own Fizzy Sherbet and go Fizzing like Grandma!

Fizzy Sherbet

Make your own sherbet: place 1 level spoonful of bicarbonate of soda, 1 heaped spoonful of citric acid and 3 level spoonfuls of icing sugar into a clean cup. Mix it very well. In your mouth the ingredients react together to produce carbon dioxide – so it tastes fizzy. Experiment with different amounts of each ingredient.

Willy Wonka's Wonderful Ice Cream in a Bag!

Believe it or not you can make ice cream without a freezer - don't believe me have a go:



Think and talk about...

- What do you see happening to the ingredients?
- What do you think the salt is doing? How could you find out more?
- How does the finished product compare with shop-bought ice cream?

Investigate...

- Can you make the ice cream freeze faster? Try altering the amount of salt or how much you shake the mixture.
- Try different ingredients – do they behave in the same way?

Follow these steps...



- 1** Pour half a cup of flavoured milk into the small zip-lock bag and seal it tight.

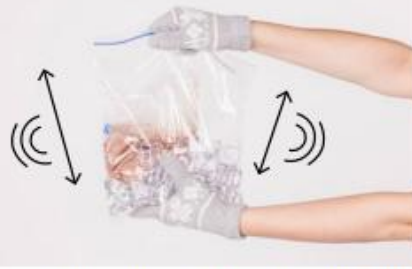


- 2** Put a generous amount of ice into the large zip-lock bag, then add 6 tablespoons of salt. The salt lowers the freezing point of the ice, and you will see the ice begin to melt.

Seal it



- 3** Place the small zip-lock bag inside the large bag with the ice and salt, and seal the large bag.



- 4** Put on some gloves (so your hands don't get cold) and start to gently shake and squeeze the bag.

- 5** After five minutes of shaking, carefully take the small bag out and taste your ice cream!

Top tip: Be careful not to spill any of the salty ice water or mix it with your ice cream as you get it out of the bag.



Science in your world

In freezing weather, lorries are sent out to spread salt on the roads and pavements, to help melt ice and snow and make it safer to walk and drive around.



What's the Science behind it, what do you think is going on?

Charlie and the Chocolate Factory Chocolate Fun!:

What temperature does different chocolate melt at?

Or How long does it take different chocolate to melt?

Does the shape of the chocolate make a difference to the way it melt?

Can we design packaging that prevents melting?



Have fun designing an experiment to test one of these questions
or a question of your own:

Willy Wonka's Giant Gummy Bears



You will need: gummy bears - water - bowl



Add water to the bowl so it is half full.
Then add a few gummy bears to the bowl of water. Leave them to soak.
Check after a couple hours and compare their sizes to the original gummy bears.



Why has this happened?

Oompa Loompa Crisp Packets



You will need: a keyring - empty crisp packet - access to an oven
soap & water - greaseproof paper

Empty out your crisps into another bag (or eat them). Then wash out your crisp packet with soap and water. Put your packet on greaseproof paper and fold the greaseproof paper over the top of the crisp packet, so it is covered. Place on a baking tray. Ask an adult to set the oven to 170 degrees and put the baking tray in the oven for 2-3 minutes. Let your packet cool down and then use a hole puncher to attach the keyring.



What has happened to the size?





Scrumptious Skittles

You will need: water skittles paper plate

Place your skittles onto the paper plate, try to alternate the colours. Carefully pour water onto the plate, if the skittles move, just push them back into place quickly.

Watch the special effects!



Why did this 'special effect' happen? What's the Science behind it?



Matilda's Magic Milk

You will need: whole milk - a cotton bud - washing up liquid - food colouring - a paper plate

Pour milk onto your paper plate and then place a few drops of food colouring over the milk. Dip the cotton bud into some washing up liquid. Place the cotton bud directly onto the food colouring.

Watch the colour magic!



What's going on?