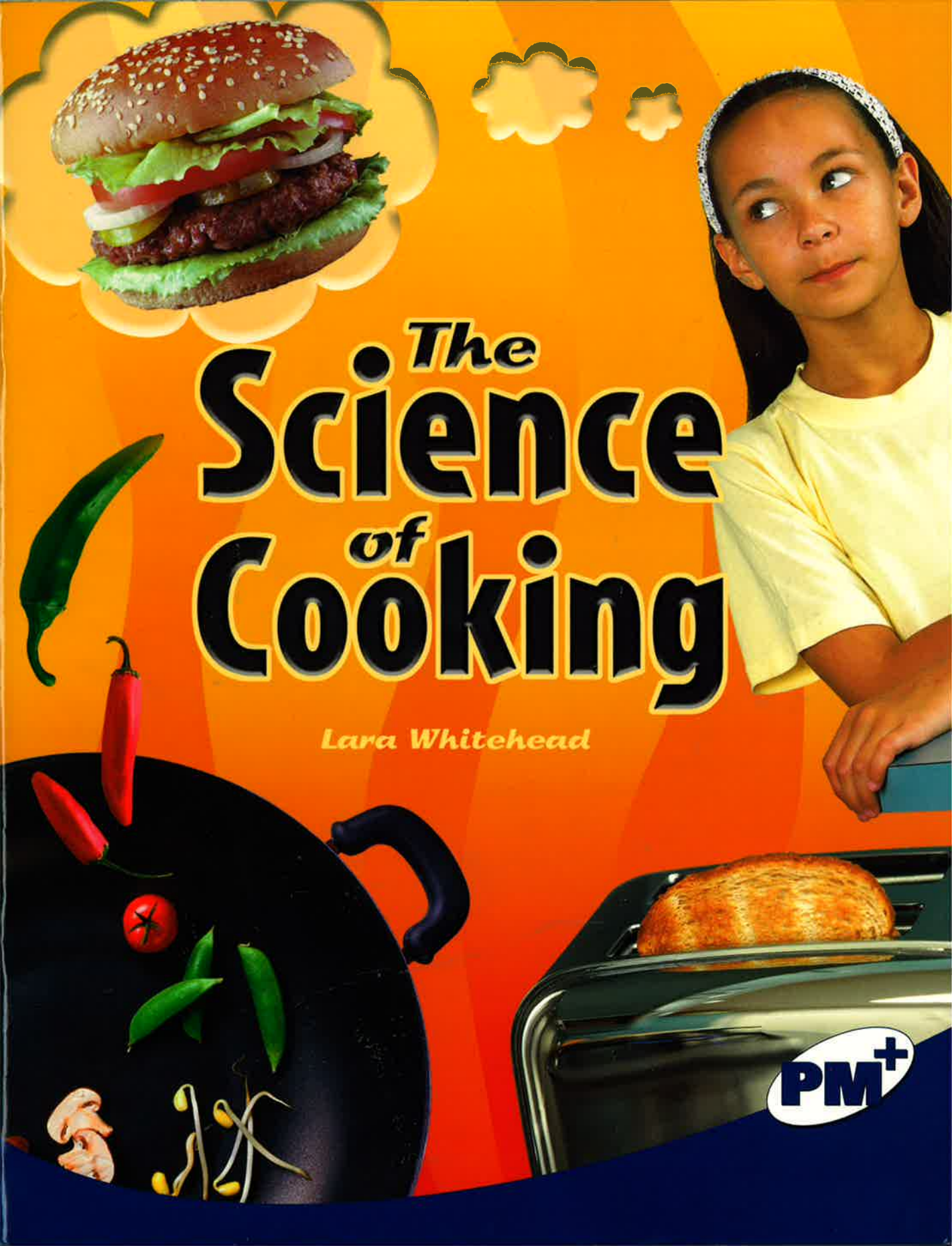

The Science of Cooking
Lara Whitehead
PM+

For teachers' inspection ONLY

Contents

Chapter 1	The Art and Science of Cooking	4
Chapter 2	Cooking in History	6
Chapter 3	Heat It Up!	10
	Burnt toast	10
	Rock muffins	12
	Green eggs	14
Chapter 4	The Mystery of the Bread Roll Murders	16
Chapter 5	Yeasty Beasties	22
Chapter 6	Beware the Lurking Bacteria	24
	Smelly dishcloths and spoiled dinners	24
	Rotten foods	25
	Food poisoning	26
Chapter 7	Notes from a Health Inspector	28
Chapter 8	"Dear Abbey"	30
Glossary and Further Reading		32
Index		33



For teachers' inspection ONLY

Chapter 1

The Art and Science of Cooking

Imagine the smell of freshly baked chocolate cake, or the whiff of chopped garlic and onion sizzling in a pan on the stove.



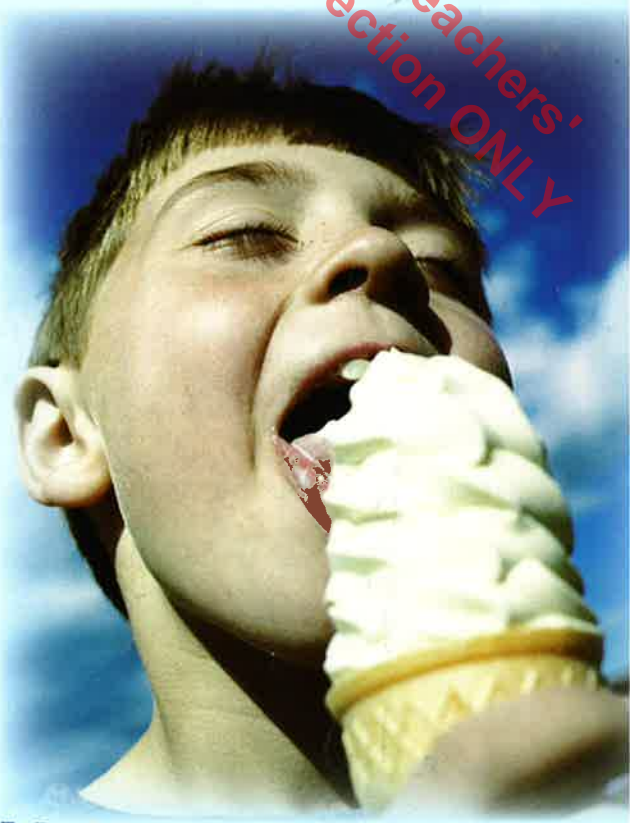


Now imagine the smell of sour milk in the back of the refrigerator.

Foods can taste terrific or smell terrible, all depending on how well they have been cooked and preserved.

For teachers' inspection ONLY

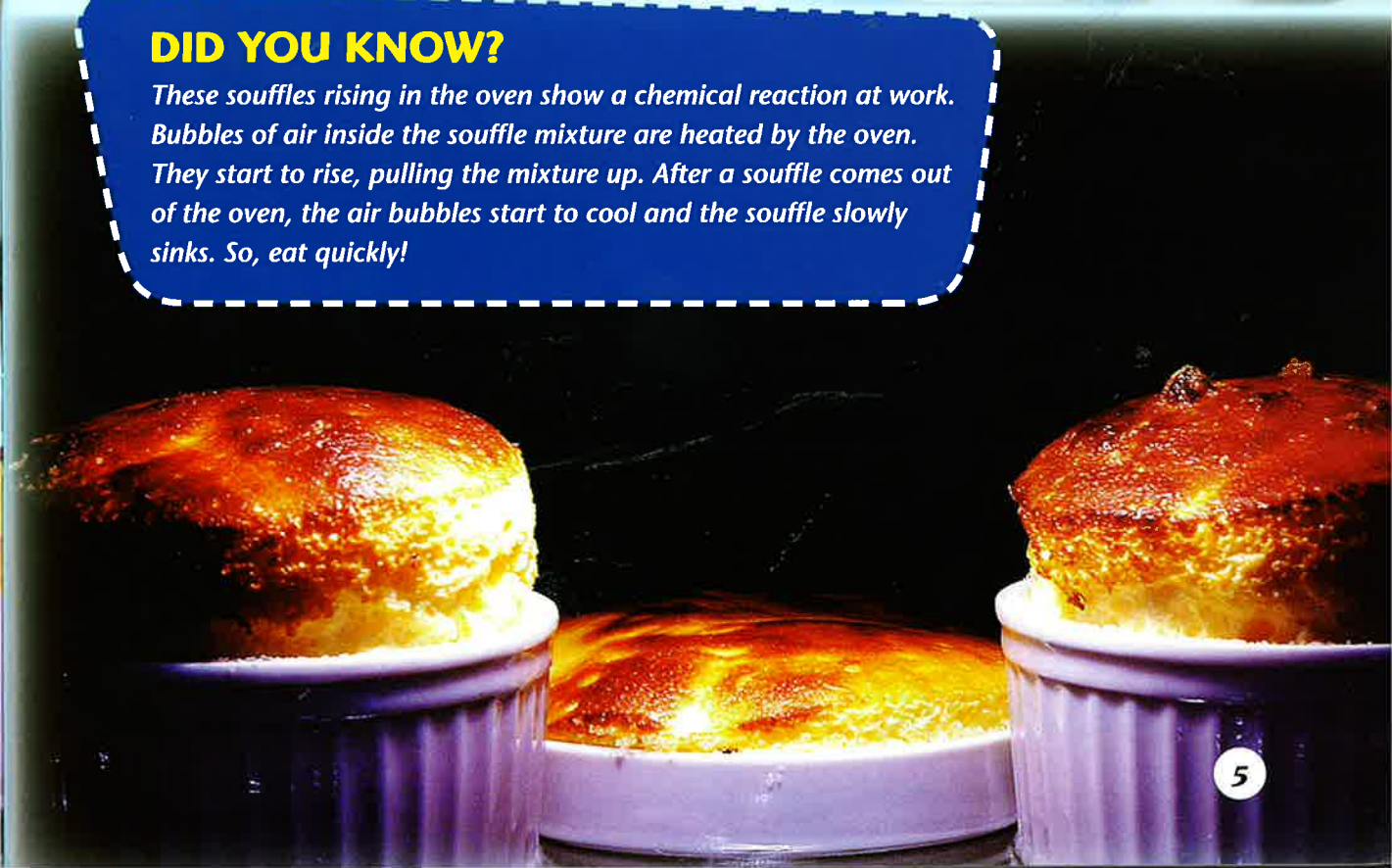
Although cooking is often called an art, it is also a science. Cooking makes a chemical **reaction**, or change, occur in the food, like when a pan of raw eggs gradually turns into soft, delicious scrambled eggs. In this case, the chemical reaction occurs when the heat from the stove passes through the bottom of the pan and makes the runny raw eggs become solid. Other chemical reactions happen when a cake rises in the oven or a milk mixture freezes and becomes ice cream.



You are eating a chemical reaction when you lick an ice cream.

DID YOU KNOW?

These souffles rising in the oven show a chemical reaction at work. Bubbles of air inside the souffle mixture are heated by the oven. They start to rise, pulling the mixture up. After a souffle comes out of the oven, the air bubbles start to cool and the souffle slowly sinks. So, eat quickly!



For teachers' inspection ONLY

Chapter 2

Cooking in History

The earliest humans didn't cook their food, they simply ate it raw. Along with uncooked fruits and nuts, they ate raw insects, fish and **game.**

At some time in early history, people learned how to make fire. This discovery meant that they could roast their meat over an open fire, which made the meat easier to chew and taste better. When pottery was invented, people used pots to boil water and cook food. They could make soups and boil eggs, meat and vegetables.

Humans continued to use open fires to cook their food for thousands of years.



Humans use fire

500,000 BC



Invention of pottery in the Middle East

6000 BC

For teachers' inspection ONLY

Slowly fireplaces and simple stone or clay ovens were invented. This made baking possible. In some parts of the world, such as China, fuel for fires was hard to find. Because of this, the Chinese learned to cook their food very quickly. They used a round-bottomed pan called a wok. These meals were cooked over a very small, hot fire.

The Chinese also invented cast iron ovens long before any other people. They built large, hot blast furnaces using the local clay soil. These furnaces were able to heat the iron ore to very high temperatures, which are needed to produce cast iron. Next, they poured the iron into sand moulds to make the first cast iron ovens.





Wok invented in China

Chinese begin making cast iron ovens

Europeans begin making cast iron ovens

5 BC **200 AD** **1400s**

For teachers' inspection ONLY

In the 18th century, oven designs began to change. The British scientist Benjamin Thompson invented a closed-top cooking range. For the first time, the cook could control the amount of air flowing through the **fire box**. This new system allowed better control of the oven temperature. But, the newly designed ovens still needed fire to make heat.

In the 19th century, people began using other sources of heat for cooking. The use of natural gas and, later, the invention of electricity, brought about the modern oven.



Gas stoves become available

1856



Electric stoves become available

1900