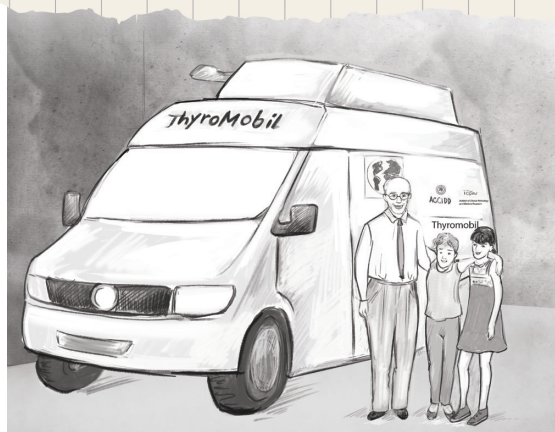


Aussie
STEM Stars

CRESWELL EASTMAN

The man who saved a million brains

Written by Penny Tangey



Teacher Notes

written by

Vanessa Ryan-Rendall

PUBLISHED BY

WILD
DINGO
PRESS



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ABOUT THE SERIES

Aussie STEM Stars is a fresh and unique series for children and young teens aged 10–13 years that focuses on our Australian STEM heroes. Each book is written by an award-winning children’s author and follows the real-life stories of Australia’s top scientists and inventors, chosen on the basis of their pioneering work. Themes explored in the series include childhood, school, family and formative experiences, what inspired them to pursue their chosen path, how they persevered in the face of challenges and what they have contributed to science in Australia.

Reason for studying this book

Wild Dingo Press publisher Catherine Lewis is excited about their publication. ‘These disciplines are more important than ever as we look to our inventors and innovators to solve contemporary problems facing humanity and the planet. Our **Aussie STEM Stars** series uses narrative non-fiction as a tool for educating children - making it as fun and interesting as fiction books in this market. Our writers are passionate about doing justice to their chosen subjects - and their lives - providing teachers, parents and librarians a wonderful series aimed at encouraging children to develop an interest in STEM at a young age.’

About the author

Penny Tangey writes humorous books for young people. Her most recent book, *As Fast As I Can*, won The Griffith University Children’s Book Award at the 2020 Queensland Literary Awards and the Readings Children’s Book Prize 2021.

Penny studied arts/science at Melbourne University, majoring in chemistry and Indonesian.

While at university, Penny performed stand-up comedy, including in the Melbourne Comedy Festival. Penny works as a researcher for television quiz shows *Hard Quiz* and *The Chase*, but she’s still terrible at trivia. She is currently studying information management to become a librarian.

About our STEM Star: Prof. Creswell Eastman

Creswell Eastman spent his early childhood on the coast of northern New South Wales at Evans Head before going to the Marist Brothers boarding school in Bowral for his secondary schooling. He studied Medicine at the University of Sydney and later, completed a PhD in medical research. His research on villagers in remote parts of Sarawak where a large percentage of people had goitres, led to his discovery that the cause was lack of iodine in their food and water. He and his co-researcher worked out a way to prevent the disorder – simply adding tiny amounts of iodine to the water.

After researching populations in many countries including Tibet, China and Australia, Creswell has made it his life's work to abolish Iodine Deficiency Disorder because it can cause severe physical and mental disabilities including lower IQs in children whose mothers have IDD. He and his team developed the test for measuring iodine levels which is now routine for pregnant women to have. Their work has quite literally ensured that now millions, in fact, *billions* of children around the world are born with fully functioning healthy bodies and brains so they can have better life opportunities.

OUTCOMES

Australian Curriculum

KEY FOCUS AREAS

Literacy Stages 2–4

Science Stage 2–4

HASS Stages 2–3

OUTCOMES

NSW Curriculum

KEY FOCUS AREAS

Literacy Stages 2–4

Science Stage 2–4

HASS Stages 2–3

BEFORE YOU BEGIN READING THIS BOOK

Front cover

- What do you know about Creswell Eastman?
- What do you know about brains and how they work?

Back Cover

- Read the Blurb
- What can you gather about this book from the blurb?
- Why do we need blurbs for all types of books?

Before you start reading

- Highlight quote on **page v**:

*Never see problems as too large and difficult;
always break them down.*
— Creswell Eastman

Write this quote on a poster as a class or small group. Ask students to write ideas around the quote as to what it might mean to them. Add to this poster as the book is studied.

- Outline the glossary at the back and how to use it.
- Who is the author of this book? Explore other books and pieces of writing Penny Tangey has written and discuss why she may have been asked to write this book.
- What is the difference between a biography and an autobiography? Explore what this book is and why it is a biography and not an autobiography. Discuss the importance of the STEM Stars series.
- Learn more about Iodine Deficiency Disorder and why Creswell needed to make abolishing this his life's work.
- What do you know about brains and how they work?

KEY PROJECTS

Key project 1: The brain

Create your own research project on the brain. This could involve labelling the different parts of the brain, what different parts of the brain do and how the brain can be affected in different ways. Explore diseases or problems that can occur in the brain and how this affects everyday life for the people affected.

Key project 2: Vitamins and minerals

Which vitamins and minerals are vital for healthy human life? Research the various vitamins and minerals that humans need and how they can get them. Design a weekly meal and lifestyle plan for people in your country and in another country, to ensure that they are aware of how they can get the nutrients they need to be healthy. Consider how different age groups can access these nutrients, also.

Key project 3: Mapping

Plot the different places where Creswell visited, lived and worked as an adult. Outline what he experienced, how it may have affected his life, the differences he made and what he learnt.

Key project 4: Reflection on literature

Students can fill in this table as they read to record their ideas and feelings:

Chapter	
How did I feel during this chapter?	
How did Creswell Eastman feel? What did he do? List and describe any other key people who appear in each chapter and their role with Creswell.	
What real life events occurred? Find some evidence to show this using research from other sources.	
New language used	
How has the author made you feel? Think of the language used to create tension, happiness, wonder, anxiety.	

Reflect on this table after the book has been read

- How did your knowledge change throughout the book?
- How did your feelings change?
- Did how you see the characters change as you learnt more about them?
- What new vocabulary have you learned?

TEACHING AND LEARNING ACTIVITIES

Chapter 1

- Compare Creswell's classroom to yours. How is it different? The same?
- What do you know about Sisters like those at Cres's school? What do they do in Australia and the world now that they do not teach?
- Why do you think Cres's teacher asked him to come into the high-school maths classroom? Imagine the viewpoints of three characters – Cres, a high-school boy in that class, and the nun. How do they differ?
- Use a map to find out where Woodburn and Evans Head are.
- A nun who can teach boxing – did this match your ideas or stereotypes about nuns and women in the 1950s? How did you feel reading about Sister Patrick's skills?

Chapter 2

- What is an aerodrome? Is the Evans Head aerodrome still there today?
- How would you feel about living in a tent? Compare your feelings to how Creswell's mother felt. Why do you feel the same? Different?
- Choose one line from the description of Cres's fishing and beach trip that you think sums up how he felt that Saturday.
- Why would Albert be in a rare mood to talk about war?

Chapter 3

- Creswell had a job delivering newspapers by bike. What other jobs might people have done back in the 1950s that don't exist now?
- Explain what 'appendicitis' is in your own words.
- Explore what 'diethyl ether' is.
- What does 'engulf' mean? How can nausea engulf you?
- Use a map to find where Lismore is and if the Marist College still exists.

Chapter 4

- How have antibiotics changed the world?
- How do photos stir happy or sad emotions? Can they do both?
- What is a 'mantlepiece'? Do you have one at home?
- What is a 'scholarship' and how will it help Creswell's family?
- How would you feel if you won a scholarship to a boarding school?
- What is a 'vocation'? Does it still have the same meaning today as it did when Creswell was young?

Chapter 5

- From the description, sketch what you think Cres's new school looks like. How would you describe the entrance of your own school?
- What is a 'dormitory' and why would students live like this in a boarding school?
- We know how Creswell feels as he unpacks his bag. Write a short paragraph about how you think Meg feels as she walks towards the train station.
- Why would wasting food be a sin? How can we rephrase this so people still know that wasting food isn't a good thing to do?
- Do you think Brother William should have reacted the way he did? Why do you think he acted this way?
- Have you ever written a letter to someone and posted it? How long would it take to get to someone? Do you think getting something in the mail is as exciting now as it was in Creswell's schooldays?
- What are 'Roman numerals'? Why have they been used on a clock? You will need to research this?
- How do you think Creswell's experiences of Sydney affected him?
- Creswell's father dies in this chapter. How did it make you feel? What language used by the author helps you understand how Creswell feels about his father's life and his death?

Chapter 6

- Why do you think the author missed out a few years of Creswell's time at school?
- Creswell mentions different scientific terms: Bunsen burner, glass-stoppered solutions, titration and chemistry. Write out some definitions and draw images of what these might look like in a school science classroom.
- How important is Creswell seeing Dr Dwyer? Think of the various ways this doctor supported Cres through his visits.

- Why was joining the priesthood considered a noble choice?
- What does 'hypocrisy' mean?

Chapter 7

- Now at university, Creswell is staying with a family. How does this make him feel about living away from his own family?
- Write down the various descriptions of Sydney University that help you gain a better picture of where Creswell is studying.
- Creswell stood up to the doctor about something he believed in. Have you ever stood up for something you believed in? How can this be a positive and a negative experience?
- Creswell studied long and hard to become qualified as a Specialist Physician. What sort of traits does someone need to achieve this?

Chapter 8

- Where is London in comparison to Australia? How long does it take to get there and what is the time difference?
- How many children does Creswell have? Who is his wife and when did we meet her?
- Did you find the analogy of musical chairs helpful to understand what Creswell was working on? Why are analogies helpful for difficult concepts?
- Creswell thinks about the planes and how they lift off into the air. When did Creswell think about this earlier in the story?
- How was visiting his mother an important part of Creswell's life?
- Why did many people think Cres shouldn't move to Canberra?
- Create a timeline of how Creswell has made it to where he is now, at the end of chapter 8. Show the key academic experiences, influential people and important events that have led him on this path.

Chapter 9

- Why is iodine important?
- How did Cres feel on the boat? What was the language that helped you understand this?
- Find Sarawak on a map.
- How are the river and the jungle described? Rewrite this description from Creswell's perspective, considering how he felt when he stepped onto the boat.

- Why was the house in the village raised on stilts with gaps between the floorboards? Why would they want a house that is raised and allows food to fall through the cracks and air to float up?
- What is a 'head-hunter', literally and figuratively?

Chapter 10

- What are 'goitres'?
- How do you feel knowing that iodine is in your milk?
- Between which years was Bob Hawke the Australian Prime Minister? Why was this phone call life changing?
- Why do some of these health projects take years to take off?
- How do the WHO and UNICEF help people around the world? What do they help with, how do they do it and what difference are they making?
- Why do you think governments need to be convinced to help people by stating that a project will help economic growth? Why isn't people's health and wellbeing convincing enough?
- How did you feel at the end of this chapter?

Chapter 11

- Find out where Tibet is and how long a flight might take to get there from your closest capital city.
- After reading about Creswell's first flight, would you like to be a pilot? Discuss your choice and why you made it.
- Creswell lands on the highest-altitude runway in the world. Is there a lowest-altitude runway? Steepest? Shortest? Most-dangerous?
- What are the dangers of being at high altitude? How can people live here permanently?
- What is Tibetan Buddhism? How does it compare to your belief system?
- Why would Creswell aim to be 'no longer involved' (p. 134)?
- Take a look at Kate Riedl's website to see some photographs and part of the documentary she made about Creswell: <https://kateriedl.com/film-and-television/the-man-who-saved-a-million-brains/>

Chapter 12

- What do you think about Creswell rearranging the salt?
- Why do you think people in Australia were not getting enough iodine, apart from not eating the iodised salt?
- Why was raising iodine levels easier in other countries compared to Australia?
- Why did Creswell spend 2020 working from home?
- We learn about Creswell's fall in this chapter. Why is it important to include events like this in this biography?
- Why does Cres say:
Medicine doesn't owe me anything. I owe medicine a lot.

EXTENSION QUESTIONS FOR FURTHER THINKING

Understanding: What is your understanding of iodine deficiency since reading this story? How did this book give you more information? What other questions do you have about iodine deficiency now you have read the story? How might you discover these answers?

Engaging personally: How did this book relate to your life? How did the life of Cres inspire you to do more in your own life?

Connecting: How did Penny Tangey's story help you to understand Cres's life, compared to watching part of Kate Riedl's documentary or reading other texts written about Cres? Why is this Aussie STEM Stars series important for children?

Engaging critically: What are the different ideas and values shown to you throughout the text? Why do authors of all stories weave in various values and ideas? Is this a good thing for readers? When may it be harmful? Read another Aussie STEM stars book to see if similar values and ideas are woven into that story.

Experimenting: Imagine you are Professor Eastman's translator, Wang. Rewrite the description of Creswell getting altitude sickness. Try to work out how Wang felt while trying to get Cres to safety.