Adriana Iuliano

Chemistry
Year of study: 4

Chemistry for Cultural Heritage

Abstract

Chemistry finds its applications in a variety of fields, ranging from the pharmaceutical industry to the environmental cause. A chemist is an essential figure in the field of heritage science, due to the need to both understand and preserve our cultural heritage via chemical means. Heritage science, a relatively recent research area, focuses on the analysis and the conservation of historical artefacts, and that relies on interdisciplinary contributions from the humanities as well as the physical sciences. In my project, the discovery and impact of what is considered to be the first synthetic dye, mauveine, by the chemist Sir William H. Perkin in 1856, is used as an example to highlight the importance of conservation chemistry. Perkin's mauveine became so fashionable during the 19th century, even Queen Victoria wore dresses dyed in the famous purple shade, and several stamps of the same colour were issued. However, the chemical structure of mauveine remained unknown until 1994, when chemists were able to determine its components thanks to modern analytical methods. The research focused on developing an outreach teaching unit for Advanced Higher Chemistry students with a focus on science communication and public engagement. My talk is aimed at highlighting this fascinating area of research that links the arts and the sciences together and the possible careers paths it provides for chemists.

Bio

My name is Adriana and I am a final year Chemistry student at the University of Glasgow. I was born and raised in Southern Italy, before I decided to move to the rainy UK because of my love for English and science. Growing up, I have always been passionate about history and art but did not realise these can be combined to the physical sciences until the beginning of my third year at university. Last summer I was able to spend six weeks at the University of Bologna for my research internship in Analytical Chemistry applied to Cultural Heritage. I have been determined to become a heritage scientist (yes, that's a real job) ever since. In the future, I hope to work in the scientific laboratories of a museum and do more research in order to interpret and conserve famous artefacts. Among other things, I am a scout, street photographer, music nerd and failed bass player.

For more information, contact
Dr Scott Ramsay, Dr Jessica Bownes, or Maxinne Connolly

LEADS (Learning Enhancement and Academic Development Service)
University of Glasgow

Scroll down past the timetable for full information on each presenter and a summary of their talk (an abstract).

12:40	The Past in the Past and the Present *Edward Stewart*
13:00	**LUNCH / poster session**
14:00	The representation of disability in the film industry *Zuzanna Filipiuk*
14:20	Why More People Should Be Interested in Comics About Trauma, War and Other Disturbing Topics *Martin Bruel*
14:40	Let's Talk About Travel Writing *Katie Heeps*
15:00	**TEA AND COFFEE**
15:20	Why More People Should be Interested in Lying *Gabriel Iona*
15:40	The New Media Muse - Creative Collaboration between Artist and Machine in the Age of Artificial Intelligence *Alexander Pirinoli*

12:40	Stress in 'Dancing Monkeys' in Pakistan *Mishaal Akbar*
13:00	**LUNCH / poster session**
14:00	Magnetic Resonance Imaging of the Pulmonary Veins *Jamie Robb*
14:20	Undiscovered Antibiotics: The Secret Weapon in Soil *Jack Barber*
14:40	Democracy or Autocracy? The Development and Status of Hungarian Politics as 'Modern (Semi) Autocracy' in Contemporary Hungary *Dora Moldovan*
15:00	**TEA AND COFFEE**
15:20	The Dangers of Pop Philosophy and Bad Metaphysics *Kevin Le Merle*
15:40	Mental Health and Free Will *David Aikman*
16:00	How Cancer Therapy Side Effects Can Improve the Understanding of Autoimmune Disease *Cameron Best*

and a range of posters including:

Changing the Delivery of Antibiotics for Antibiotic Resistant Bacteria

Mechanical Behaviour of Silver Nanowire Networks for Nano-Energy Harvesting Applications

Humanity in the Age of Nihilistic Killer Robots

Piwi-PiRNA Induce Cellular Immortality in Somatic Cells

The Short and Long Term in the Strategic Decision-making Process of SME Managers

11 & 12 Feb / 10:30-16:30 / Senate Room

talkaboutx.net

REGISTER TO ATTEND

Tap / click each presenter's row to learn more about them and their research

Day	Time	Speaker	Title
Mon	11:40-12:00	Winnie Chen	Regulation of the Uncontrollable - Cancer Pharmacology
Mon	12:00-12:20	Forbes Wigmore	Refracting the Slave Narrative
Mon	12:20-12:40	Marta Kalabova	Turning Dirty Water into Limestone
Mon	12:40-13:00	Edward Stewart	The Past in the Past and the Present
Mon	14:00-14:20	Zuzanna Filipiuk	The Representation of Disability in Film Industry
Mon	14:20-14:40	Martin Breul	Why More People Should Be Interested in Comics About Trauma, War and Other Disturbing Topics
Mon	14:40-15:00	Katie Heeps	Let's Talk About Travel Writing
Mon	15:20-15:40	Gabriel Ioana	Why More People Should be Interested in Lying

Mon	15:40-16:00	Alexander Pirinoli	The New Media Muse - Creative Collaboration between Artist and Machine in the Age of Artificial Intelligence
Tue	11:40-12:00	Adriana Iuliano	Chemistry for Cultural Heritage
Tue	12:00-12:20	Patrick Shearer	Using 3D Imaging to Uncover the Secrets of the Flu Virus
Tue	12:20-12:40	Halina Romaniszyn	Exclusion in Spanish Grammar: Perspectives from Spanish-language Students
Tue	12:40-13:00	Mishaal Akbar	Stress in 'Dancing Monkeys' in Pakistan
Tue	14:00-14:20	Jaime Robb	Is your heart beating correctly?: pulmonary vein imaging using magnetic resonance
Tue	14:20-14:40	Jack Barber	Undiscovered Antibiotics: The Secret Weapon in Soil
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For more information,
you can find our contact details here

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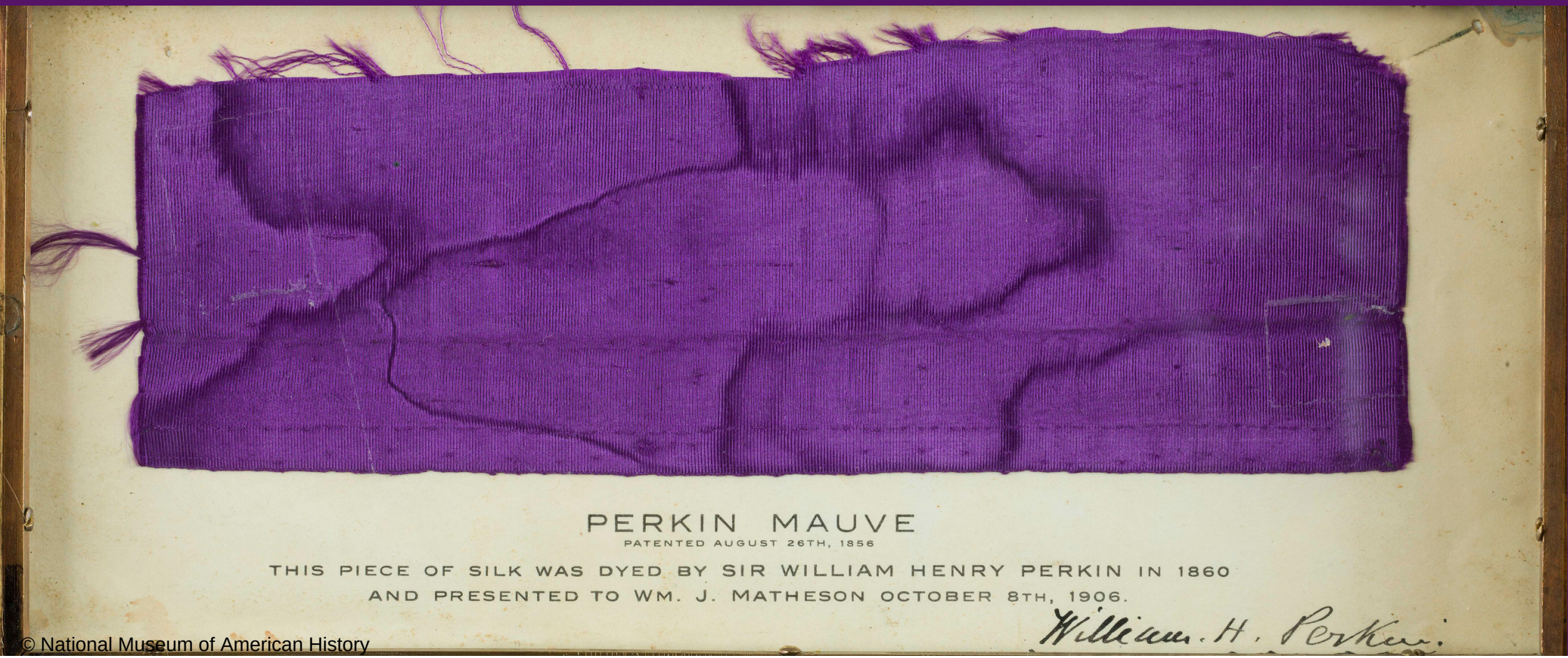
CHEMISTRY FOR CULTURAL HERITAGE

Adriana Iuliano



WHAT DOES A CHEMIST DO?

WHAT DOES A CHEMIST DO?

WHAT DOES A CHEMIST DO?

WHAT DOES A CHEMIST DO?

EMIST DO?


Vessel 3

WHY NOT BOTH?

ART

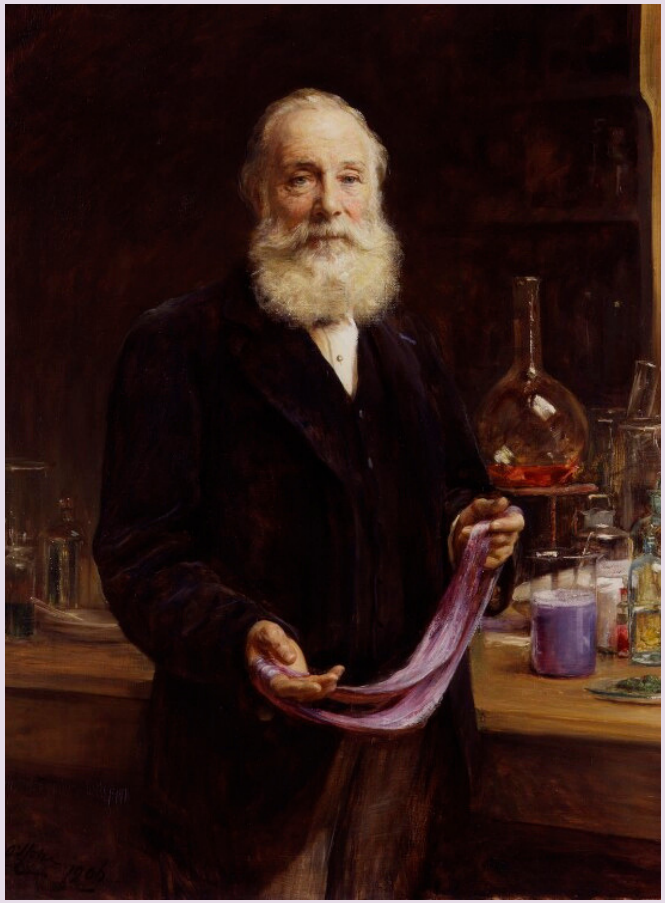
SCIENCE

CONSERVATION CHEMISTRY

NOT JUST FOR ART LOVERS

A conservation chemist needs to:

- **understand** the artefact
What materials were used? How was it made?
- **preserve** it
How and where should it be stored?
- **restore** it
What can be used to clean it without altering it?



SIR WILLIAM H. PERKIN

AND THE FIRST SYNTHETIC DYE

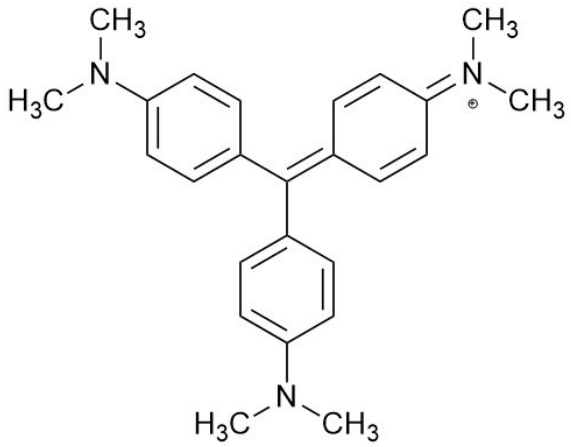
In 1856, William Perkin discovered the first synthetic dye and called it **mauveine**.

It revolutionised the chemical community.

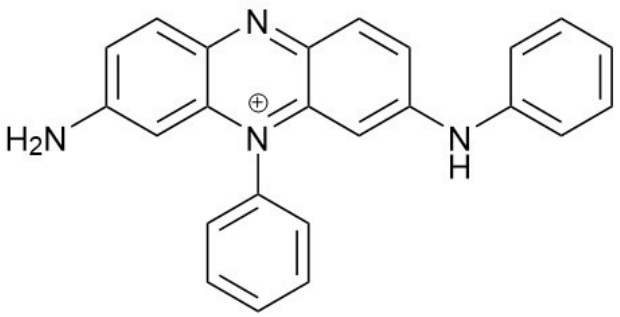
Mauveine and other derivatives were soon used in fashion, photography and even stamps.


CANADA POSTAGE
V R I
1837 1897
TWO DOLLARS
VICTORIA
TWO PENCE
VICTORIA
TWO PENCE
NEW ZEALAND POSTAGE & REVENUE
TWO PENCE
POSTAGE AND INLAND REVENUE
ONE PENNY
POSTAGE & REVENUE
2/6
2/6
2 SHILS & 6 PENCE
POSTAGE
SIX PENCE
VICTORIA
POSTAGE
TWOPENCE

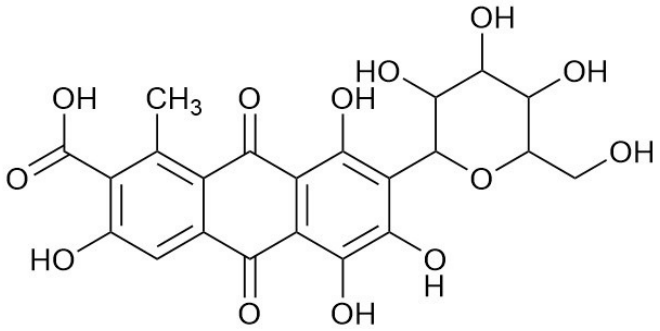
Dye Reveal



A) CRYSTAL VIOLET

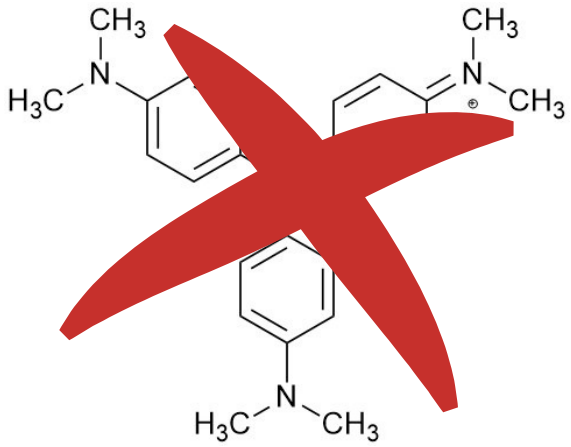


B) PSEUDO-MAUVEINE



C) CARMINIC ACID

Dye Reveal



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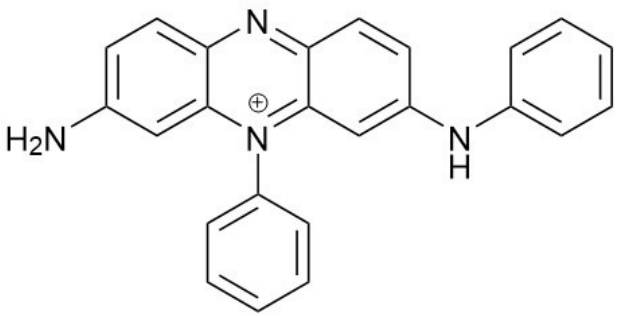

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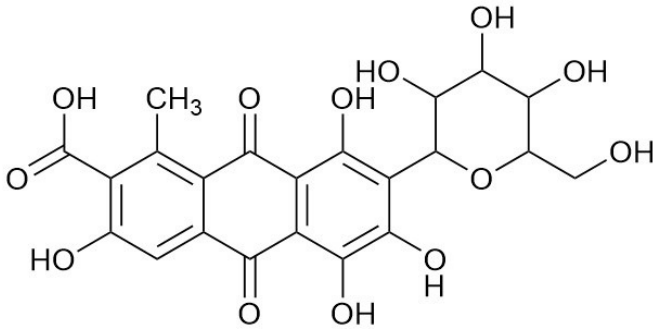

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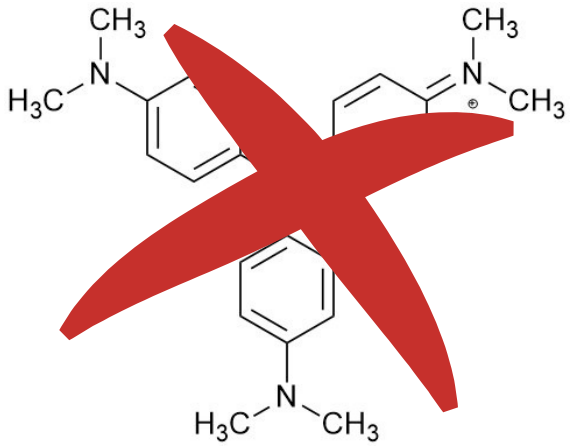

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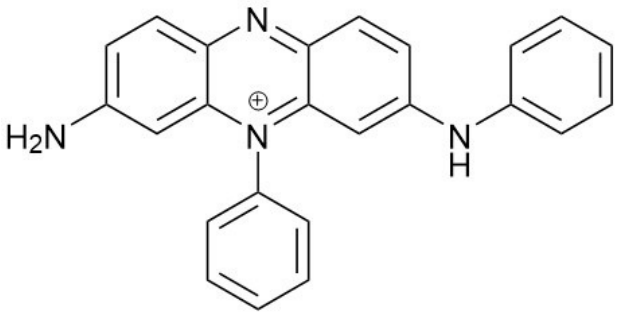
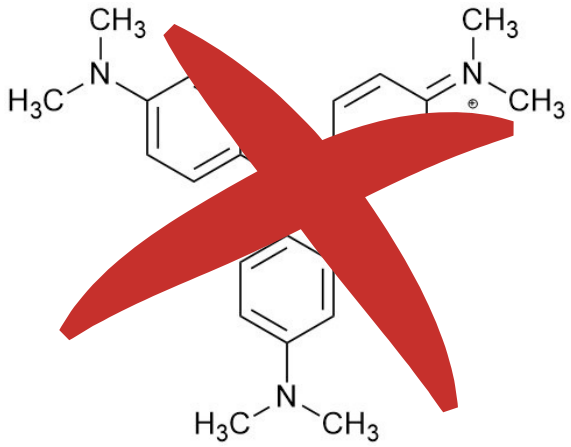


B) PSEUDO-MAUVEINE

C) CARMINIC ACID

Dye Reveal



A) CRYSTAL VIOLET

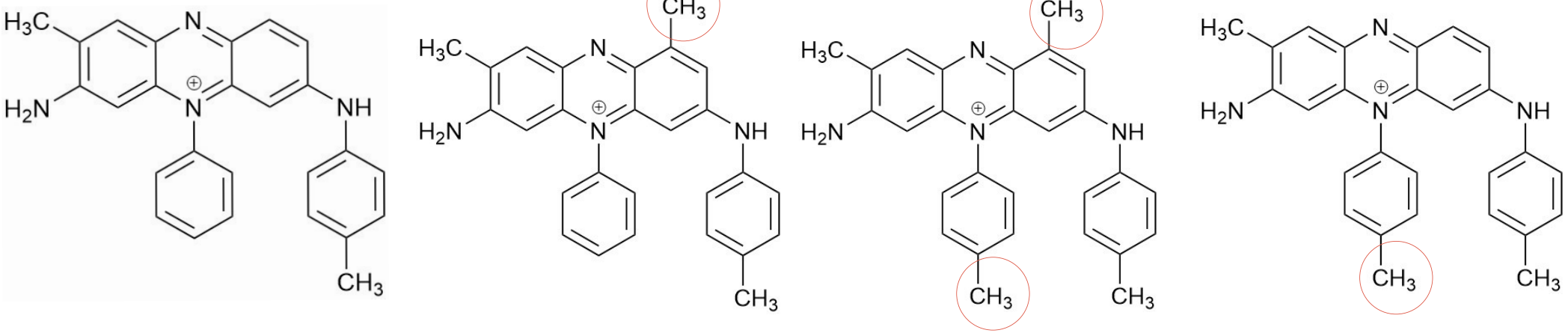
B) PSEUDO-MAUVEINE

C) CARMINIC ACID

SIX PENCE STAMP

The six pence stamps (with no hypen between 'six' and 'pence') were the only ones dyed with Perkin's original mauveine.

...Perkin's Mauveine is actually a mixture!



Chemists only realised this in 1994!

REFERENCES

Research supervisors:
*Dr. Linnea **Soler**, School of Chemistry*
*Dr. Anita **Quye**, Centre for Textile Conservation and Technical Art History*

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