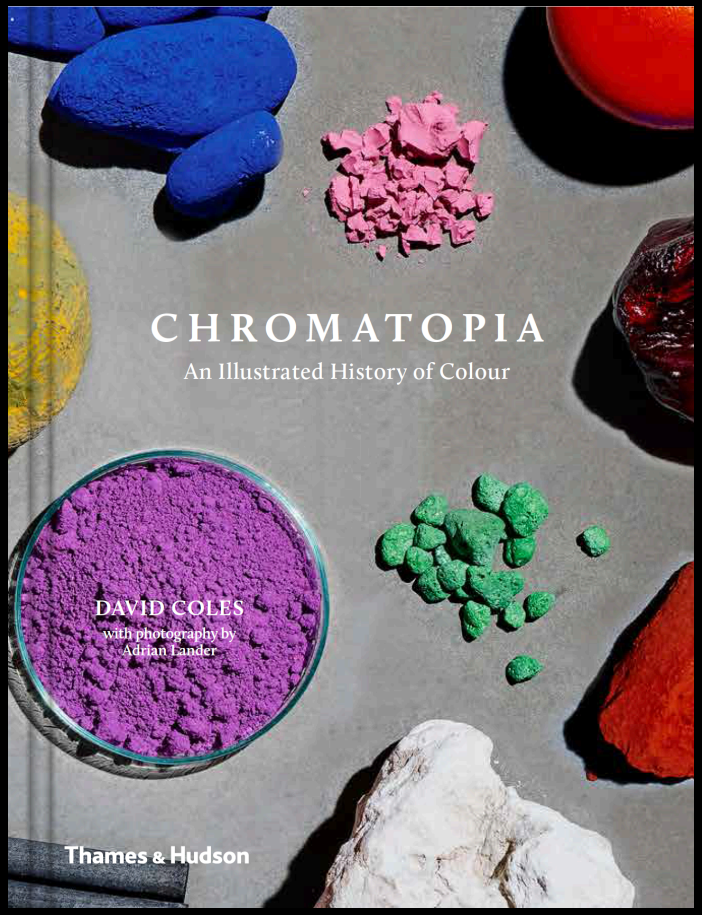
History comes alive in this survey of the origins of the world's colour pigments

# Chromatopia

*An Illustrated History of Colour*

David Coles




Illustrated in colour throughout
16.5 x 22.0cm
240pp
ISBN 978 0 500 501351
Hardback
£24.95
February 2019

A4

Book

Thames & Hudson

## Key Sales Points

- This is the book for the artist, the history buff, the science lover and the design fanatic
- Specifically surveys the original stories of pigments rather than colour in textiles or colour in theory
- Features bite-sized colour histories, working in interesting ways with monochromatic colour and ‘recipes’ for paint making

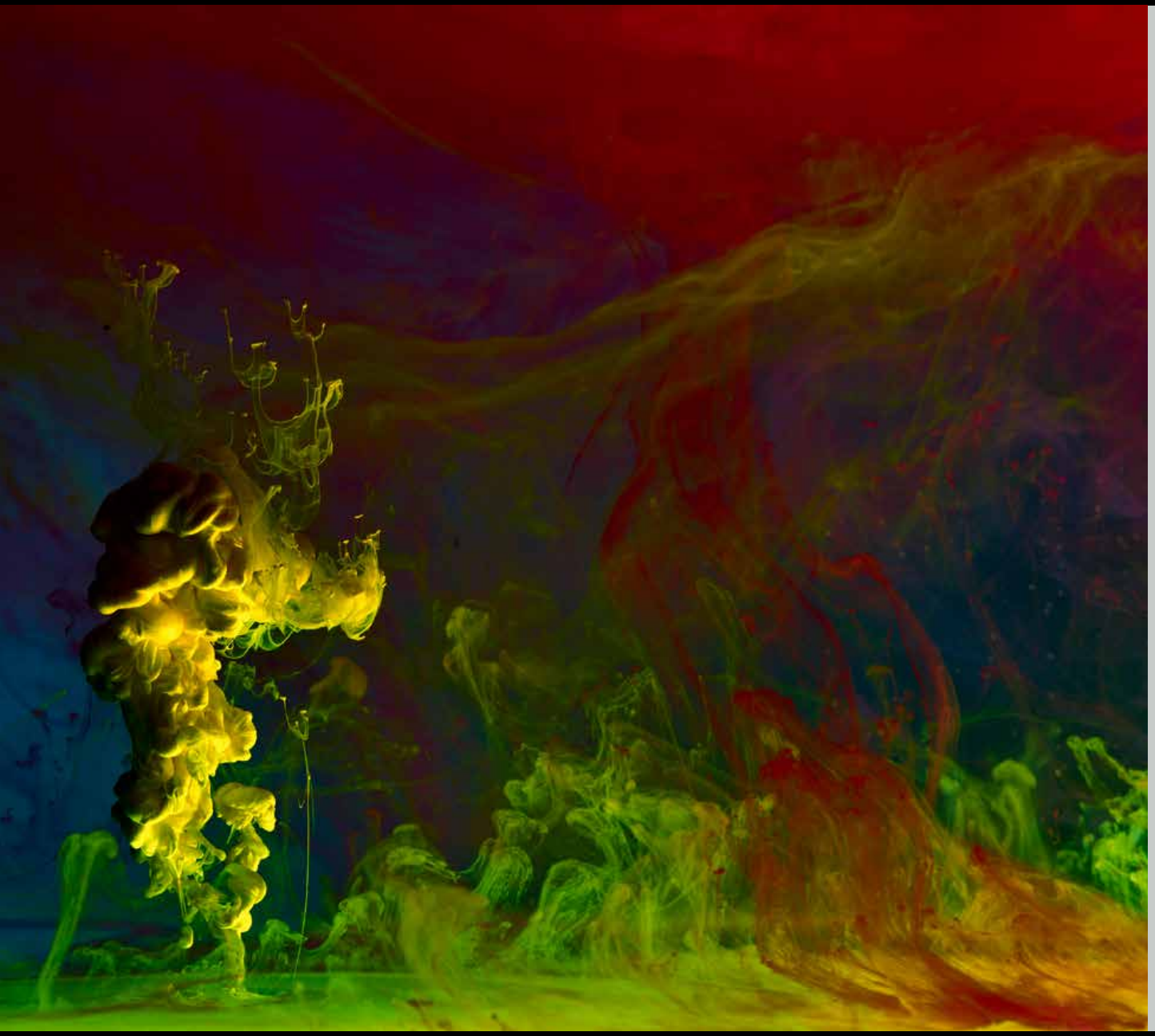
# A LIFE LIVED IN COLOUR

I have spent my whole life within the world of colour. Looking back, it could be mistaken for destiny but how I got to this place in time is a tale of serendipity, family legacy, chance meetings, wrong turns and a tenacious pursuit of the alchemical transformation of dirt into colour. In the process, I founded a paint-making company that has become one of the world's most respected makers of artists' oil paints.

My father was an advertising illustrator; the house was always full of paints, paper, markers and pencils. During school holidays, my brother and I would take the train with him up to his London studio, part of a ramshackle early Victorian five-storey building split up into a labyrinth of studios for artists, writers, calligraphers and agents. That building is no longer standing, one of many that were pulled down when Covent Garden was redeveloped. During one of our visits, a most significant event occurred. I was taken to Cornelissen & Son, the famous art materials store, then still in Great Queen Street where it had stood since 1863. Walking in, I was overwhelmed by the smell of oil-primed canvas that had accreted to the surfaces of the store over decades, and the unctuous aroma of painting oils and balsams. Arrayed in a giant cabinet of solid black timber were very large glass jars of pure pigments, natural resins, gums and waxes. Each jar had a label, describing its contents – *gamboge*, *Japan wax*, *sandarac*, *terre-verte*, *copaiba balsam*, *gum Elemi* – tempting me into a world of stories about their exotic origins.

Back in my country town, I began working in the family art store. I had already started to paint and the knowledge learnt in the shop began to inform my art practice. Around this time I was given a set of pigments, and those tiny jars – sparkling, like powdered jewels – set me on my path to an obsession with colour. With support from my parents I applied myself to becoming an artist, and at eighteen started my studies in painting at Bristol Art College under a traditional system of studying composition and colour.

An integral part of our training was the preparation and manufacture of the artist's materials: canvas, paint, mediums and varnishes. This was the early 1980s, painting was back in favour, and students around me were rediscovering the paints and materials abandoned by previous generations. Some experimented with the ancient technique of encaustic, painting with pigmented molten wax. Others tried their hand at distemper, hand-making their paint from warm solutions of rabbit-skin glue, chalk and pigment. All this experimentation, with the encouragement of our lecturers, left us with the realisation that we were part of a 'golden chain' of history that could be traced back all the way through the centuries to the Renaissance and beyond.



# THE BASICS OF COLOUR

To understand how to navigate colour it is important to know the rules of colour pigments, commonly called the subtractive colour model. In this model, there are three primary colours: red, blue and yellow. From these, virtually all other colours can be mixed. By adding two primaries together we end up with the secondary colours; red and blue make purple, blue and yellow make green, yellow and red create orange. The addition of more colours creates tertiary colours, but every time more colours are added, the purity of colour drops until eventually we end up with browns and greys.

Most of the pigments of history were chromatically weak and artists were loath to mix them to keep bright colours in their paintings. The history of pigments is full of technological advances, each age creating brighter and purer colours that artists have hungrily adopted.

# BLUE

is 'the vault of heaven' – the colour of the sky and the celestial city. It has held spiritual significance for diverse cultures throughout human history.

However, the reason that we see blue when we look up at the sky is not chemical but optical. When light is scattered by water particles in the atmosphere, the shorter wavelengths of blue light are the ones that are most visible to us. For the same reason, the further away from the viewer an object is, the bluer and paler it appears. This observation is well known to landscape artists, who use it to depict space and distance.

Very few blue pigments are available in nature, so early civilisations were, by necessity, forced to turn to technology. The Ancient Egyptians devised extraordinarily sophisticated techniques to create Egyptian blue, the first synthetic pigment. Its creation is part of the beginnings of interaction between technology and culture.

It is important to realise that the idea of the absolute constancy of primary colours is quite modern and Eurocentric. In antiquity, the words used to describe colours were much more fluid, and blue was not recognised as a colour in its own right. To the Ancient Greeks, the word to include blue was melas, but this actually signified 'dark'. Blue was simply seen as a value of darkness. Blue was also not part of the classical world's tetrad of primaries: white, black, red and yellow. Artisans in this time of course used blue pigments, such as Egyptian blue and indigo, but their concept of its place within the order of colours was quite different from ours.

Used sparingly throughout the Middle Ages, due to the relative rarity or dullness of most available pigments, blue finally moved to centre stage when ultramarine arrived in Europe in the 13th century. Derived from the semi-precious stone lapis lazuli, ultramarine cost more than gold itself. Its use was a display of wealth, prestige and devotion. In paintings of the Virgin Mary, her blue mantle emphasises her position as the queen of heaven, an intermediary between God and humanity.

The tonal values of many pigments, especially the blues, change when they are bound in different mediums. Ultramarine is a brilliant luminous blue in egg tempera but it becomes dark in oil. When linseed oil was introduced as a binder for paints in the early 15th century, artists had to add white to restore the brilliance of ultramarine. This reversed a long-held prejudice against mixing pigments.

The scarcity of blue pigments ceased dramatically at the beginning of the 18th century with the introduction of Prussian blue, followed quickly by cobalt blue, cerulean blue and synthetic ultramarine. These technical advances in pigment manufacture gave blue a central role in the modern palette. Its apotheosis came in the late 1950s, when Yves Klein created monochromatic paintings using his signature colour, International Klein Blue. Klein's works bring the philosophic idea of blue as 'atmosphere' full circle from the beginnings of civilisation to the present day.

# VERMILION

THIS RED TURNED MINERS INSANE.

In 1566 the King of Spain sent condemned criminals to serve their sentences at the mercury mine of Almaden. The dangerous working conditions at the mine and the well-known nature of mercury poisoning had made it difficult to find willing labourers. In the second half of the 16th century, one-quarter of the prisoners died before being released.

The prisoners were mining the mineral cinnabar, from which mercury is extracted. Cinnabar is the name given to both naturally occurring mercuric sulphide and the opaque bright red colour that it gives rise to. Vermilion is its synthesised form.

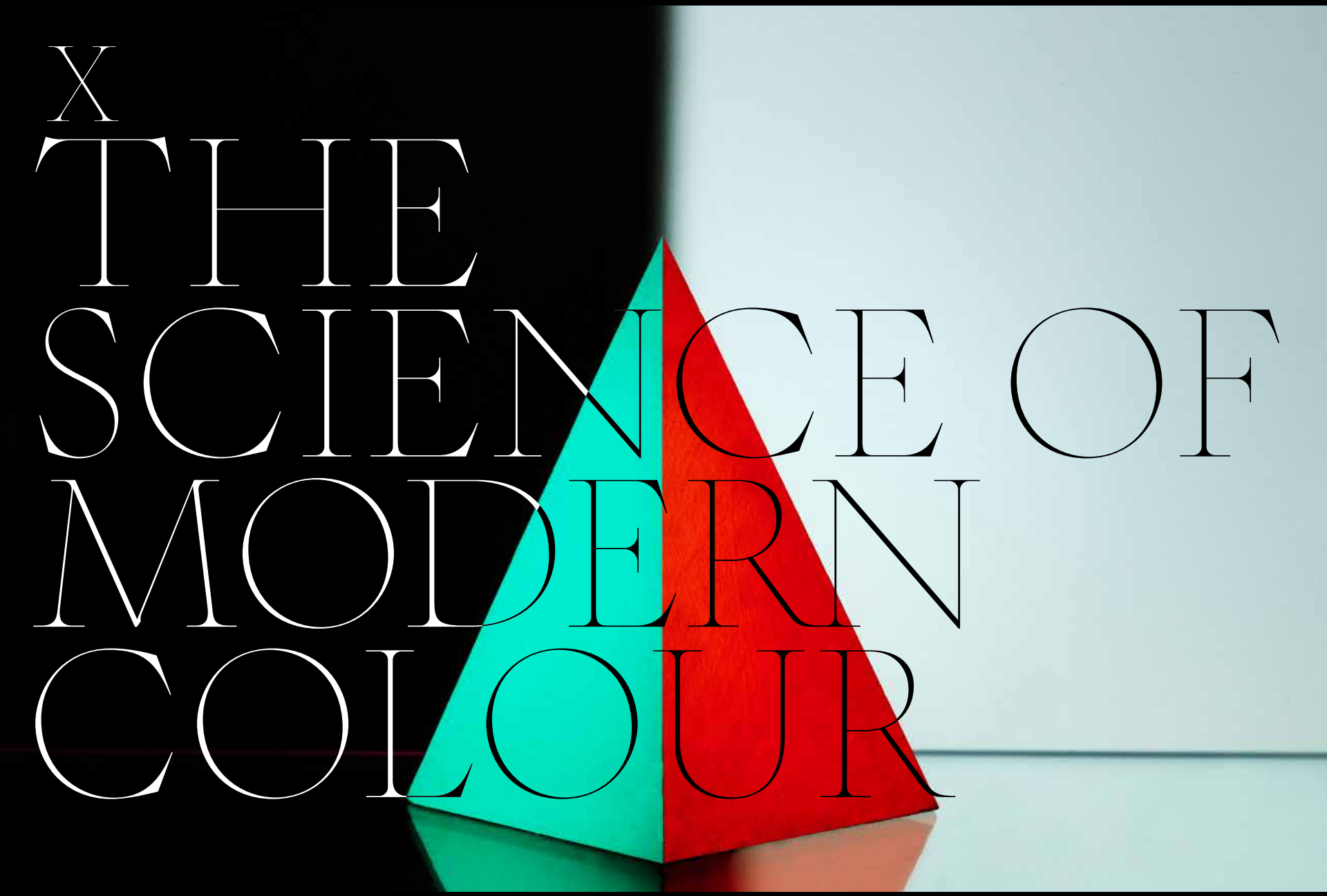
The recipe for making vermilion was introduced to Europe by Arabic alchemist around the 8th century. Several centuries later, Cennino Cennini described the process:

*Take one part of mercury and one of sulphur. Put it in a glass bottle, thoroughly clad with clay. Put it on a moderate fire and cover the mouth of a bottle with a tile. Close it when you see yellow smoke coming out of the bottle, until you see the red and almost vermilion-coloured smoke. Then take it from the fire and the vermilion will be ready.*

The resulting lump is black, but when ground with water on a slab a fiery red colour develops. Vermilion's marriage of two fundamental substances – sulphur (which was believed to be base gold) and mercury (quicksilver) – made it incredibly interesting to alchemists.

X

# THE SCIENCE OF MODERN COLOUR



# CARMINE LAKE

## MAKING

| | |
|---|---|
| Cochineal | 100 grams |
| Alum | 200 grams |
| Cream of tartar | 10 grams |
| Soda ash | 170 grams |

To make carmine lake, the soluble dye must be extracted from the cochineal and converted into an insoluble pigment. First, take the cochineal insects and grind them down into a fine powder using a mortar and pestle.

Add the powdered cochineal to 1600 ml of boiling water on a stove and simmer gently for one hour. Strain the liquid through filter paper into a 6-litre heat-proof container.

Next, dissolve the alum and cream of tartar in 1600 ml of hot water. Pour this warm solution into the dye container and stir to mix fully.

Now dissolve the soda ash in 1600 ml of hot water. Gently pour this solution into the dye container. It will froth immediately. Stirring to mix the solutions together will generate even more of a reaction.

Allow the solution to sit overnight to let the pigment precipitate settle. Using a siphon, draw off the slightly coloured water above the precipitate until there is only about 5 mm left above the pigment surface. Now add 2 litres of cold water, stir and allow the pigment to settle overnight again. Draw off the liquid as before. Repeat washing until the water is colourless after the pigment has settled.

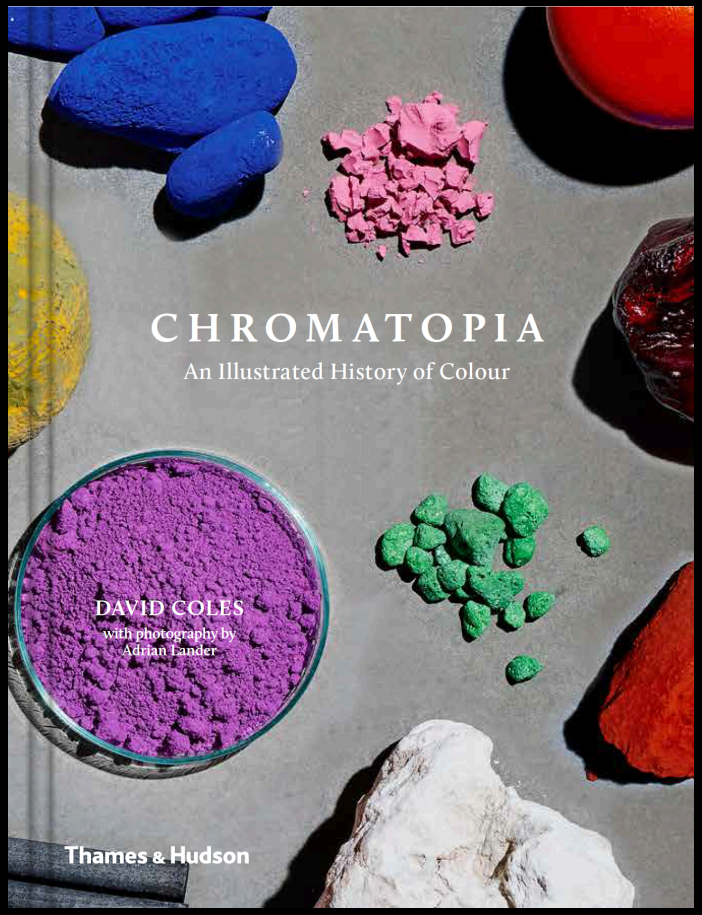
Filter the pigment and leave it to dry in a warm, draught-free space. Finally, grind it in a mortar and pestle to a fine powder.

History comes alive in this survey of the origins of the world's colour pigments

# Chromatopia

*An Illustrated History of Colour*

David Coles




Illustrated in colour throughout
16.5 x 22.0cm
240pp
ISBN 978 0 500 501351
Hardback
£24.95
February 2019

A4

Book

Thames & Hudson