

BOOK REVIEW

The wine-dark sea within; a turbulent history of blood

Author: Dhun Sethna, Basic Books, June 2022
ISBN: 9781541600669

It is difficult for us to conceive the idea that the heart has no function in the circulation of blood, but this concept lasted for nearly 1500 years, based on the ideas of the Greek Physician and Philosopher Aelius Claudius Galenus Galen (c. 130-220 CE) who believed the heart septum had minute pores to allow blood to flow between chambers of the heart and was the source of the "body fire". This became the dogma until the discovery of the circulation of blood by William Harvey, published in 1628. However, prior to this major discovery it was widely believed, based on the dogma of Galen, that the heart was a 'furnace' to fuel/power the body and the venous circulation came from the liver. This was responsible for 'fuelling' the heart and the body, and the arteries contained the 'pneuma' (Ancient Greek) for air and in religious terms 'spirit' or 'soul'. This not only became embedded in the early medical literature and therapies but also in the early Christian beliefs. Prominent philosophers embraced this or modifications of the concept over time and it became dangerous for others to propose alternative ideas to the "Galen philosophy" relating to blood even to the point of being burned at the stake for heresy.

The book under review provides a fascinating history from the Ancient Greeks through the ages to the final discovery that blood actually circulates around the body, which was strongly resisted despite William Harvey's discovery as it went against the 'wisdom' of 1500 years. This took 25 years to be accepted

in Britain and longer in Europe where data and experiments were fabricated to try and disprove the circulation of blood. Such was the rigor of Harvey's experiments and proof that he could defend his circulation theory against the detractors. The pulmonary circulation and the transfer of gases still remained an enigma until the discovery of atmospheric gases. It is appropriate therefore, that the final chapters of the book move to the then vexed question of respiration and the subsequent discovery of oxygen in the early 1800s as well as other gases and the evidence that oxygen was necessary to support life, but the mechanism of oxygen transport i.e., discovery of haemoglobin had to wait until the late 1800s.

The author is a senior clinical and academic cardiologist who has worked at the Cleveland Clinic and the Cedars Sinai Medical Centre and has produced an extremely interesting and well written book discussing the many and varied theories of blood and functions of the heart from the Ancient Greeks to the proof of what we now acknowledge as the circulation of the blood. It is extensively researched and provides insights into early personalities of the major natural philosophers (now scientists) of their day. The title is taken from Homer's concept of a "wine dark sea" followed by Alchmaeon's ebb-and flow of idea that the circulation was analogous to an irrigation system proposed by Aristotle.

Reviewed by: Michael Legge, Deputy Editor, NZIMLS

BOOK REVIEW

Planting clues: how plants solve crimes

Author: David J Gibson, Oxford University Press, Oct 2022
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The author, David Gibson, a Professor of Plant Biology at Southern Illinois University Carbondale has written extensively on plant biology. In this current book, he explores the use of plants in both solving and facilitating crimes. In the seven chapters he uses cases to provide the evidence and explains how understanding plants and their biology has led to successful prosecutions where plant forensic evidence provided the vital clues. In the first chapter he discusses how understanding wood patterns successfully led to the conviction in the 1935 Lindberg kidnapping case and the development of the use of 'expert evidence' in court. Evidence based on plant materials from the scenes of crime are presented in the second chapter whereby plant material found on two perpetrators linked two separate murders with the crime scenes. This chapter has several successful convictions for murder linked to plant-based evidence. There is also a discussion on Edmond Locard, who was probably the first real forensic scientist and coined the phrase; "...when two objects come into contact, each takes something from the other or leaves something behind". Moving on, the use of pollens and fungal material from crime scenes is presented in solving several murders. The use of DNA is introduced in chapter 5 and the author succinctly describes the basis for the use of DNA in murders and the establishment of DNA databases for serious crimes. Again, he links the use of plant molecular evidence to kidnappings, murders and

successful prosecutions, as well as the use of DNA in major marijuana trading and the illegal timber trade. There is a change of direction for the penultimate chapter which describes the use of plants as poisons starting with the death of Socrates (399 BCE) with hemlock tea. Here the author outlines the narrow margins between survival and death with an example of Renaissance women using belladonna (from deadly nightshade) eye drops which was believed to enhance their beauty by dilating their pupils as well as several other historic plant poisonings. The author identifies famous plant poisoning cases and describes the use of plant poisons including cyanotoxins and the use of 'traditional' medicines. The use of strychnine, ricin pellets and mushroom poisonings makes interesting reading in this chapter. The final chapter describes rare and endangered plants and timber smuggling. Here satellite imaging of endangered forests is used to detect logging as well as sophisticated tracking systems to follow the timber. New instrumental analytical technologies and DNA analysis are being developed to "fingerprint" rare plants and timber. Cases using these techniques are discussed. Although this is not a biomedically-related book it is a fascinating journey of the development and evolution of forensic science to show how plants will be used to commit and solve crimes.

Reviewed by: Michael Legge, Deputy Editor, NZIMLS
