

Book Review

CHASING THE MOLECULE: Discovering the building blocks of life. By John Buckingham. Sutton Publishing, 2005, ISBN 0 7506 3346 1. *Reviewed by John Packer.*

This paperback of 229 pages is an absolute gem. It traces the development of organic chemistry up to the time of establishing the correct number of atoms in a molecule, which atoms are connected to which and their geometrical arrangement in space; i.e. what we might now call the ball and stick model of molecules. By the end of the 1870's most chemists accepted this model and it allowed organic chemistry to advance at a great rate. Although the structure of the atom had not yet to been discovered and there was no theory of what held the atoms in molecules in place – no theory of chemical bonding.

The book is written for the lay-person, with simple explanations of the modern basic ideas of chemical structure introduced in appropriate places. This means the reader can appreciate the thoughts and problems facing chemists of the 1700's and mainly 1800's as they struggled to make sense of theirs and others experimental observations and results. Anyone with Year 12 knowledge (UE or 6th form for those over 30!) of chemistry would feel right at home.

As well as following the developments of the ideas, the author gives us wonderful insights to personalities, problems, circumstances and rivalries of the main players in the saga, and attempts to proportion the proper recognition of the contribution various individuals deserve. The main protagonists (in alphabetical rather than chronological order) in the story from 1800 are Berzelius, Couper, Dumas, Gerhardt, Hofmann, Kekule, Laurent, Liebig, Pasteur, Wöhler

and Wurtz. The ideas and contributions of other chemists and physicists (Avogadro, Biot, Butlerov, Bunsen, Cannizzaro, Crum Brown, Dalton, Davy, Faraday, Frankland, Gay-Lussac, Kolbe, Lavoisier, Loschmidt, Odling, Priestley, Scheele, Williamson) are woven into the story.

The obstacles and difficulties that held up more rapid development are discussed in an entertaining way; the confusion of the atomic weights of the elements, the rise and fall of the vitalism, the conservatism of senior players and their reluctance to accept new theories, nationalistic pride, the vendetta of Kolbe against Kekule.

I found the progress from Berzelius's radicals to Dumas' type theory and its development by Laurent and Gerhardt to the idea of functional groups particularly interesting. The place of Kekule, and the authenticity of his dreams are fully explored.

In the last chapter the author describes the organic chemistry of today, with its emphasis on natural products and synthesis, and its relationship with the pharmaceutical industry.

Even New Zealand appears in the story! It relates to an Italian myth and chirality. Perhaps this will whet the appetite and encourage people to read this book. It should be in the library of all schools with students genuinely interested in chemistry. It should be compulsory reading for any BSc student majoring in chemistry, and a prized possession of all professional chemists. Perhaps NZIC could accept orders and put in for a bulk order.

I repeat my first sentence. *This book is an absolute gem.*