

Chemistry Gallery

John Emsley, *Molecules at an Exhibition: Portraits of Intriguing Materials in Everyday Life* Oxford University Press, 1998, 250 pp¹

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Marcel Berthelot once pointed out that chemistry resembles the arts. It is unique among the natural sciences in that it creates most of its objects by synthesis. The exhibits in this book include both natural and man-made substances, selected for being important, either useful or harmful, in our everyday life. Some, such as nitric oxide, have made a remarkable transition in our judgment. Eight galleries group the substances, from foodstuffs to vital components of our body, from illicit drugs to raw materials and energy sources, from agents that destroy us and our environment to those that give us pleasure.

Chemistry books, even those written for the general public, are often burdened with complex formulae. Fortunately, here John Emsley provides only a few familiar formulae, such as H_2O and CH_4 . Knowing the formulae of the more complex molecules he describes would not make it easier to understand their function. A case in point is his description of the way we excrete unwanted nitrogenous material from the body by molybdenum-containing xanthine oxidase, a mammalian enzyme, producing uric acid. If uric acid is overproduced it accumulates in the form of sharp crystals in the joints, resulting in the painful illness of gout. The mechanism is understandable as described, and including the relevant formulae would not make it any easier to grasp the idea.

Most of us are largely unaware of the roles of many of the exhibited molecules in our everyday life. For example, phenyl ethylamine makes us feel good when we eat chocolate, sodium azide explodes on the impact of a car crash to save our lives, and thallium will poison us if the food of cows whose milk we drink had been exposed to thallium sulphate, which is used to kill rats.

Engaging stories are sprinkled throughout the galleries. Emsley tells us about the British discovery of penicillin and why British citizens had to pay US companies to use it. He explains that every time a young man thinks of sex — four times an hour, on average — his thoughts generate nitric oxide to help him fulfill his desires. And he provides a balanced assessment of the uses and dangers of DDT, one of the most worshipped and most feared molecules.

The descriptions are accurate without being pedantic and the captivating short stories didactic without appearing patronizing. But this is a chemistry book nevertheless, albeit an unusual one in that it provides a lot of natural and cultural history along with its chemistry. A broad audience, regardless of whether it has a background in chemistry, will enjoy browsing and reading it. The composer Modest Mussorgsky's "Pictures at an Exhibition" is a classic; Emsley's own 'exhibition' will also be receiving many visitors for a long time to come.

¹ Nature 1998, 393:641