

BOOKS & ARTS

Flavour and plenty

There may be more to great dishes than a dash of chemistry and a squeeze of lime juice.

Citrus: A History

by Pierre Laszlo

University of Chicago Press: 2007. 262 pp.
\$25

Kitchen Mysteries: Revealing the Science of Cooking

by Hervé This

Columbia University Press: 2007.
232 pp. \$22.95, £13.95

Peter Barham

Many supermarkets offer a year-round array of fresh fruits, vegetables, meats and cheeses. For the first time in history, our eating habits are no longer dictated by seasons or climate. How did we reach this situation of plenty, in which cooking and eating are driven by pleasure as well as hunger? Only a few decades ago, bananas were a luxury in northern countries and strawberries arrived in time for tennis at Wimbledon. *Citrus* and *Kitchen Mysteries* dig into these issues in different and complementary ways.

Pierre Laszlo looks at the widespread availability of citrus fruits as an example of how foodstuffs have been propagated around the world in response to religious, economic and political trends over the centuries. Citrus fruits originated in Asia and were later enjoyed by the Romans and cultivated in southern Europe, having been introduced in about 300 BC by Alexander the Great. The conquering Spanish and Portuguese brought them to the New World. Laszlo highlights technological developments that have contributed to the global spread of citrus fruits — for example, the creation of new strains that can grow in different climates or have increased resistance to diseases or variations in flavour. He describes advances in juice extraction, packaging, storage and transport.

Orange juice as a mass commodity in the United States has its origins in a chance recommendation to an up-and-coming copywriter, Claude Hopkins, by a press baron. Hopkins came up with the timely slogan 'Drink an orange' in 1908, when growers facing a glut of oranges in California were about to start destroying trees. Instead, the excess fruit was turned into juice and sold. The rest, as they say, is history.

Citrus provides a colourful background of the literature, poetry and art associated with citrus fruits, as well as their pharmaceutical



Gastronomy al fresco: does food really taste better outdoors?

effects. Apparently, an ingredient of grapefruit juice deactivates an enzyme in the small intestine that destroys some medications before they can enter the bloodstream. Alternatively, the citrus component boosts the activity of certain drugs, such as sildenafil (better known as Viagra) and inhibitors of HIV-1 proteases.

Rapid development of other crops across the world has led us to the present cornucopia of readily available raw ingredients. How can we transform this bounty into great dishes full of thrilling flavours and textures? Hervé This uses the kitchen as a laboratory to meet this challenge and to analyse the scientific secrets of culinary delights.

In *Kitchen Mysteries*, he describes the scientifically important steps in cooking processes and how they could be improved, revealing tricks of chemistry and physics to prevent soufflés from collapsing and mayonnaise from breaking up. This molecular gastronomy is garnished with the author's own rich philosophy of food and flavour.

The science of taste and flavour is still young. We understand tongue physiology, but still argue about how many taste sensations our tongues can discriminate — there are at least five (salt, sour, sweet, bitter and umami). The olfactory sense is even more controversial — it is unclear how many types of sensor we have, how they work and to what extent we can learn to smell new aromas.

We do have a rough picture of the signals sent to the brain by sensors in the mouth and

nose. But determining the flavour of a dish and deciding whether we like it is complex: we do not simply sum the signals arriving at the brain to 'calculate' the taste. Flavour, and the degree to which we enjoy it, seems to be a mental construction, relying on memories of past experiences as well as on incoming sensations. Everything about a meal — the colour of the plate, the music in the background and even the people eating it with us — can affect our perception of its flavour.

These books should help any experimental scientist to become a better cook, although *Kitchen Mysteries* sometimes optimistically assumes that we all know how to make a béchamel sauce or why highly methoxylated pectins are crucial for jam-making. In *Citrus*, Laszlo applies his expertise as a chemist to the understanding of citrus fruits. His succinct explanations of the Maillard and caramelization reactions when describing how to make marmalade, and his notes on foams, phase separation, and the volatility of aromas when explaining how to make a sabayon, justify the cost of the book on their own.

Both books have one drawback — neither has an index. This detail could avert a catastrophe for your guests by helping you quickly to locate, for example, advice on what to do if your Béarnaise sauce fails to thicken (remove from heat, add a little water, then beat very hard). ■ Peter Barham is a professor in the H. H. Wills Physics Laboratory, University of Bristol, Bristol BS8 1TL, UK.