A science in the making?

Thorvald Pedersen

Molecular Gastronomy: Exploring the Science of Flavour

by Hervé This

(translated by MB DeBevoise)

Columbia University Press, NY, USA

392 pp, \$30/£20

ISBN 023113312X

Molecular Gastronomy: Exploring the Science of Flavour consists of 101 short essays, which first appeared in *Pour la Science*—the French edition

of *Scientific American*—when author Hervé This was one of its editors. The book is a translation of *Casseroles et Éprouvettes*, and, after an introduction to the English-language edition, the essays are grouped into four loose sections: Secrets of the Kitchen; The Physiology of Flavour; Investigations and Models; and A Cuisine for Tomorrow.

The book begins with a brief history of molecular gastronomy: “a word or two about the origin of the name” and a mention of its two founding fathers, This and the late professor of physics, Nicolas Kurti, who died in 1998. Alas, This neglects to mention two more founders: Harold McGee, a famous American food writer, and Elizabeth Cawdry Thomas, an American cooking teacher. It is generally agreed that the founding event was the ‘International Workshop on Molecular and Physical Gastronomy’, held in August 1992 in Erice, Italy, and attended by chefs and scientists both from within and outside Europe. These workshops have been held regularly in Erice ever since, now under the name ‘International Workshop on Molecular Gastronomy’—it was Kurti who insisted on adding ‘and Physical’.

This’ definition of molecular gastronomy is based on a lengthy quote from *The Physiology of Taste*—a classic text from fellow Frenchman Jean Anthelme Brillat-Savarin. When I organized a workshop on molecular gastronomy at the Danish Royal

Veterinary and Agricultural University in August 2004, I found the dictionary definition of ‘gastronomy’ to be useful: “The art and science of choosing, preparing and eating good food”. By omitting ‘art’, I had a brief, but fitting, operational definition of molecular gastronomy. ‘Art’ contains not only reflections about aesthetic matters in relation to food but also the craftsmanship and skills that the cook must master. In his introduction, This highlights the distinction between craftsmanship and scientific insight. It is generally understood that molecular gastronomy is the science of cooking at the level of the individual, not industry.

The first essay in *Secrets of the Kitchen* is ‘Making stock’, and the main issue is whether the meat should be placed in boiling or cold water. A brief history of meat extracts is followed by a description of some of This’ own experiments on making stock; as might be expected, it does not matter whether the water is hot or cold. Other essays reveal similar interesting tips, such as whether to salt a steak before or after grilling, or if a teaspoon in the neck of an open bottle of champagne really does preserve its fizz.

‘Food as medicine’ begins *The Physiology of Flavour*, and focuses on the variability in preferences among primates for sweet foods. Sweetness normally implies nourishment, although monellin—a protein found in the West African serendipity plant—is many times sweeter than sugar but not very nourishing; it is now being investigated as a non-carbohydrate sweetener. Various fruits and vegetables contain polyphenols, some of which have antioxidant characteristics with potential health benefits. A note about polyphenols explains that “hydroxyl (OH-) groups that attach to benzene rings having six carbon atoms”—if you did not know that already, you would hardly be enlightened by this definition. Although the essay is interesting, the scientific background information is unfortunately limited.

Investigations and Models begins with ‘The secret of bread’, which describes the formation of gluten in wheat dough using a rather technical explanation. This is one of the most scientific of the essays and would probably appeal most to chemists or bread lovers. Other interesting essays on how to mask tastes and odours, and on the rapidly spreading phenomenon of foams also appear in this section.

A Cuisine for Tomorrow starts with ‘Cooking in vacuum’, in which This

introduces the reader to vacuum filtration. Although this is well-known from the chemistry laboratory, who is likely to install a water-jet vacuum pump in their kitchen and use a cubic meter of water to filter their stock? This is hardly a technology for the future. Other essays in this section describe technologies more suited to industry than the home cook, such as devices for smoking salmon that use tens of thousands of volts.

These essays are informative and interesting but would benefit from the inclusion of more references to peer-reviewed, scientific publications. The author cites only a handful of references, mainly to his own books and essays and most of which are in French. Of course, such references might not have been appropriate for *Pour la Science*, but they could have been added to the translated version. Their absence is puzzling, because This so strongly emphasizes that molecular gastronomy is a science. Perhaps the term ‘protoscience’—a discipline that hopes to establish itself as a science—would be more appropriate; protoscience provides intelligent suggestions rather than definite answers.

Although they represent a mere fraction of the essays in *Molecular Gastronomy*, these four short articles reflect the style of the entire collection. Like the essays by This, my monthly column ‘Kemikeren I Køkkenet’ (The Chemist in the Kitchen), in the Danish chemistry journal *Dansk Kemi*, analyses common cooking techniques and recipes in a relaxed and entertaining way. I rarely use detailed scientific explanations in my writing; ‘protoscience’ might also be a better description for my work.

Molecular Gastronomy is a timely addition to the growing interest in this field of research, and is suitable for both scientists and the lay public. As attention on molecular gastronomy continues to increase, it might soon move from protoscience to science. Indeed, public research agencies in Denmark and elsewhere are now providing substantial funding for molecular gastronomy research and teaching. Already, something is cooking.

Thorvald Pedersen is Professor Emeritus in the Department of Food Science at the Royal Veterinary and Agricultural University, Frederiksberg, Denmark.

E-mail: thp@kvl.dk

doi:10.1038/sj.embor.7400879