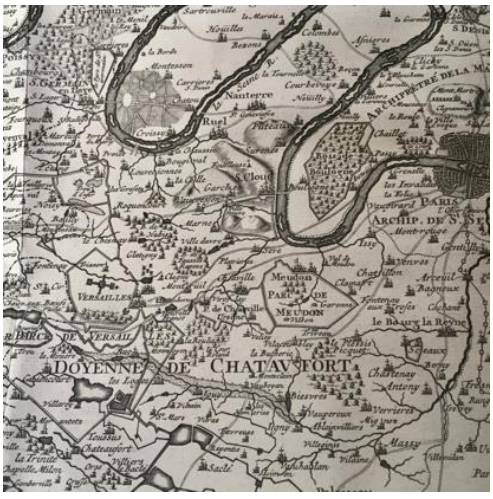
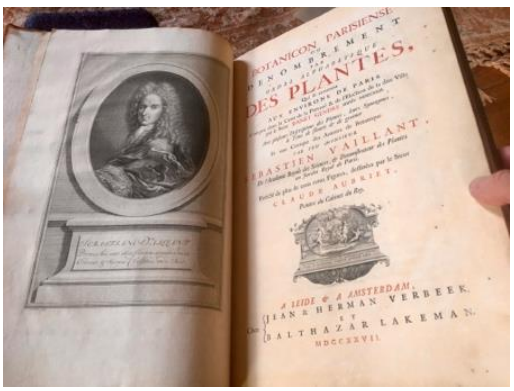
Sex at Six with Sébastien Vaillant

Before my mother gave me Sébastien Vaillant's great tome, 'Botanicon Parisiense' (many years ago because I had coveted the map inside of Paris and its surroundings of Meudon and Sèvres where Vicki and I had been living and working with our family), I knew nothing about the writer. For many years I was content with my ignorance, though I loved looking at the map - Paris was then so tiny! Now in my seventies I may not be much wiser but I am more curious. And his story, not widely known, is one that I think you'll agree is interesting.



Sébastien, born in 1669 at Vigny in the Val d'Oise region north of Paris, started school at the tender age of four, which is early for any child. Aged five, he was already quite an explorer and totally hooked on plants. He would bring back all sorts of vegetation that caught his eye, briars, wildflowers, weeds, shrubs, and stick them in his father's garden. His father soon had to give him a patch of his own (if he hadn't done so his garden would have been totally overrun) and his



adventurous son then had to put up with cramming his small plot with all his treasures. At the age of just six, he was sent away to board with a priest (Monsieur Subtil - a name which doesn't inspire much confidence, 'subtle' in English). The teacher turned out to be horribly strict. While under the 'care' of M. Subtil, the little boy fell ill with a fever that lasted for four months. Finally, Sébastien in desperation hid himself away and, relying on his already wide knowledge of plants, he prepared and ate some lettuces seasoned with vinegar. Luckily for him, the cure worked!

He was obviously very bright indeed, but he was also extremely worried about his inability to escape the censure and punishments of his fearsome teacher. The boy decided to limit the time he slept so that he would have more hours to study; to do this he used a leather bellows studded with iron nails for his pillow. As a reward for his rapid progress in his studies he was later given some organ lessons. He must have been a prodigy for his father sent him on to Pontoise to study with the elderly organist at the cathedral. When the man eventually died, Sébastien took over from him as the cathedral organist - he was just eleven!

But he continued at the same time to study his first passion: botany. Botany at that time was the equivalent of studying medicine - to be a doctor or surgeon you had to know all about plants and their effects on human beings. It was yet to be thought of as a proper science; herbs and herbalists or apothecaries were still thought of as learned dabblers in the mysteries and knowledge of potions and herbal remedies - not far removed from witchcraft and sorcery.

At the age of only nineteen, Sébastien Vaillant thus became a surgeon and moved to Paris, later serving in the French army at the Battle of Fleurus in 1694. In Paris he became a pupil of one of the most renowned botanists in France, Joseph Pitton de Tournefort. The clever student presently drew the attention of Guy-Crescent Fagon, another botanist and, more importantly, the Chief Doctor serving the king of France, Louis XIV. So impressed was Fagon with the young man's abilities that he made him his secretary. The King's Chief Doctor was also in charge of Le Jardin du Roi, the special botanical garden built by Louis XIII to vie with all the other great botanical gardens of Europe, like those at Leiden, Copenhagen or Leipzig. There, Fagon conducted demonstrations and oversaw all the latest acquisitions. When he retired from that post in 1708, Fagon appointed Vaillant *over* Tournefort, Sébastien's teacher, who had assumed quite naturally that *he* would be the next director (Tournefort died soon after in December 1708 as a result of a carriage accident in what is now the 5e arrondissement in Paris).

Under Sebastien Vaillant, the King's Garden (now a busy tourist spot known as Le Jardin des Plantes near the Gare d'Austerlitz in the east of Paris) flourished. Although Vaillant became known principally as *the* specialist of Parisian flora, the garden received rare plants from the colonies and other places far afield - he was in touch with many people overseas. Hothouses were built in 1714 and 1716 to house many of these newly acquired tropical plants. Louis XIV took a personal interest, as a result of which an amphitheatre and '*cabinet de pharmacie'* were later established. At the height of his fame, Vaillant was acclaimed as *the* leading French specialist in the new science of botany (no longer seen as the herbal lore of old fashioned apothecaries). And in 1716, he was duly elected to the Academy of Sciences, the holy of holies in this country at the forefront of the Enlightenment in Europe.

Sebastien Vaillant was exceptionally hard working; he could, if he had wanted, have become wealthy - indeed, Fagon even offered him the rich franchise of French mineral waters, which he refused - but he was never interested in wealth or power. An exceptional teacher, his many pupils loved and respected him; he was never happier than joining them on expeditions to gather more specimens - he often went off with friends to Normandy and Brittany, hunting for rare plants to add to the collections. Having helped Tournefort with his masterwork, 'Eléments de Botanique' he then began to distance himself from the plant classifications as set out by his former teacher. Vaillant had been working for 36 years on his own masterwork and he was beginning to have some radical ideas about the different species and genera. The year after his acceptance by the *Académie des Sciences*, he delivered a lecture in the Jardin du Roi that would astound the world of botany and shake the illustrious *Académie* to its core.

You wouldn't think that a lecture beginning at 6 am would have many takers, but on the 10th June 1717 the amphitheatre was packed with Vaillant's pupils, all fellow botanists

and medical students. They must have known that something special was coming their way, but even so the shock was great.[1]

> *"Messieurs,"* he began, (there were no women as women wouldn't be admitted as medical students for another 150 years), *"since among all the parts that characterise plants the ones we call flowers are, without question, the most essential, it seems appropriate to discuss them with you at the outset, even more so because botanists in general have provided us with rather confused ideas about them. Perhaps the language I am going to use for this purpose will seem a little novel for botany, but since it will be filled with terminology that is perfectly proper for the use of the parts that I intend to expose, I believe that it will be more comprehensible than the old fashioned terminology, which — being crammed with incorrect and ambiguous terms better suited for confusing the subject than for shedding light on it — leads into error those whose imaginations are still obscured, and who have a poor understanding of the true functions of most of these structures."*

He was soon clarifying what he meant in terms of terminology - he meant, and he didn't mince his words, SEX! Here was the bombshell - plants had *sexual* lives! Male plants had the equivalent of 'testicles' and female plants the equivalent of 'ovaries'. And there were hermaphrodites!

> *"From my definition of the true flower [i.e., reproductive organs surrounded by a corolla], one can easily understand that it should be in full bloom, because, when still a bud, the corolla not only completely surrounds the reproductive organs, but also conceals them so perfectly that one can consider the bud as a nuptial bed, since it is usually only after they [the reproductive organs] have consummated their marriage that they are permitted to show themselves; or if the bud happens to open slightly before they are through, it opens*

[1] English translation thanks to Huntia (A Journal of Botanical History) https://www.huntbotanical.org/admin/uploads/02hibd-huntia-11-2-pp97-128.pdf

> *completely only after they have left each other. The opposite happens to the flowers that have only one sex, and the reason for that is obvious. But if on the same plant one finds flowers surrounding only female organs and others that surround both sexes, the tension or swelling of the male organs occurs so rapidly that the lips of the bud, giving way to such impetuous energy, open with astonishing speed. In that moment, these enthusiastic organs, which seem to think only about satisfying their violent desires, abruptly discharge in all directions, creating a tornado of dust which expands, carrying fecundity everywhere; and by a strange catastrophe they now find themselves so exhausted that at the very moment of giving life they bring upon themselves a sudden death."*

This was all hot stuff indeed! The lecture continued with detailed explanations couched very much in the language of sex:

> *"The tails or filaments, which serve to attach and support the testicles, and which are, strictly speaking, just the sheaths of their spermatic ducts are either simple, as in the Graminae, Cyperacea, Crucifers, Umbellifers, and others, or branched, as in Ricin, Laurel, etc….*
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> *…….*
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> *"The ovaries, which Malpighi calls "matrices"22 and which the author of the Institutiones Rei Herbarai and his partisans, without rhyme or reason, sometimes call "pistils" and other times "chalices," are the female organs of the plants. Their use is too well known to warrant elaboration and their shapes too diverse for us to give a description here."*

Had Vaillant overreached himself in this lecture? It received an ovation from his enthusiastic pupils but the *Académie* were less than pleased. Plants? Engaging in the sordid business of amorous dalliance? Hah! Worse than the court at Versailles! PLANTS? But it's not in the Bible! God was surely not condoning such promiscuity…? Or words to that effect, no doubt.

You can still go and visit one of the sources of Vaillant's revolutionary ideas. At Le Jardin des Plantes, in the Alpine section, there still stands a pistachio tree planted by Tournefort in 1702, making it one of the oldest plants in the collections there. Vaillant knew that there was another pistachio tree in Paris in the Jardin de la Faculté de Pharmacie, and he knew, too, that although both trees bore flowers, neither tree produced fruit. By scattering the pollen from the male tree in the Jardin des Plantes on the pistils or 'sexual organs' of the female tree, he discovered that, lo and behold, fruit appeared on the female tree!

The end of Sébastien Vaillant's life, however, was sad. Overworked, in disgrace and exhausted, he died in poverty (1722), though his widow was helped when she sold his herbarium to the Cabinet du Roi. Vaillant had been working on his major work for 36 years and now thought that it would never appear, but shortly before his death he sought help from a Dutch botanist, an enthusiast for his ideas. Herman Boerhaave worked from the notes that Vaillant gave him and was able to to bring out a preliminary volume in 1723, the year following Vaillant's death. Later, Boerhaave brought out the complete and definitive edition in 1727. This was enriched with more text and 300 beautiful illustrations by Claude Aubriet, '*Peintre du Cabinet du Roi'*. Aubriet had previously done beautiful illustrations for Tournefort, when he had been sent by Louis XIV to bring back important specimens from the Levant in 1700. For the '*Botanicon Parisiense'*, he had completed the drawings under Sébastien Vaillant's personal supervision, and Boerhaave was able to buy back the drawings that would properly illustrate this great work.

Vaillant's ideas would later directly influence Carl Linnaeus, the Swedish botanist who in 1735 brought out his own revolutionary

work ‘Systema Naturae’, which proposed new taxonomies in minerals, plants and animals. These classifications, particularly important in the province of botany, laid the foundation for modern botanical studies. The English doctor, Erasmus Darwin, the grandfather of Charles Darwin, used Linnaeus’s sexual system for his poem “The Botanic Garden” (1789), which caused an uproar among contemporaries for its explicit and indecorous passages!

Charles Edgar Salmon, our grandfather, was a Fellow of the Linnean Society of London and he knew a great deal about the history of the development of Botany as a science, from the early English herbals to the latest work being done in Kew and elsewhere. He owned an extraordinary collection of botanical books covering not just Britain but Europe (including not just one, but three editions of Sowerby’s ‘Botany’ - one of the great publishing landmarks). Many papers were written and presented by him at meetings of the Society before his own major work, ‘Flora of Surrey’, finally appeared posthumously after *his* early death in 1930. He travelled widely in France, collecting specimens in the Alps and Pyrenees, and he bought this book for his collection and as something he consulted. I would love to have been able to ask him for his own reflections concerning Sébastien Vaillant and this wonderful book.