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French naturalists in the Levant during the Ottoman Empire

by L. Allorge, France

Even though agriculture and language first blossomed in the famous Fertile Crescent that wraps around Mesopotamia and stretches from Palestine and Syria to Persia, nevertheless it was not until the end of the Middle Ages that Europeans began to compile botanical inventories covering Asia Minor. And yet, a large proportion of our nutritional plants stem from that region. For instance, three cereal grasses—wheat, barley, and sorghum—and legumes, such as peas, chickpeas, broad beans, lentils, fenugreek, saffron, garlic, onions—as well as the Damascus nigella, better known as black cumin (*Nigella sativa*), whose seeds are added to bread to improve its flavor—not to mention the vine, olive, peach, and fig tree—all originated there (see box, next page). Then there are the ornamental plants such as the highly toxic oleander, which contains cardenolides (Apocynaceae), and trees like the cedar of Lebanon, which the Egyptians used for constructing their small boats, and is now the symbol of Lebanon. And finally the Judas tree, *Cercis siliquastrum*, the Aleppo pine, and the magnificent *Parrotia persica* C. A. Mey, which is decked in splendid colors in the autumn and can be admired in the Jardin des Plantes, in Paris. The Fertile Crescent is also the birthplace of goats and sheep.



The *Jardin des Plantes* seen from the Cabinet of Natural History. Colored engraving, 19th century, French School. © Bridgeman Art Library.

the Egyptians used for constructing their small boats, and is now the symbol of Lebanon. And finally the Judas tree, *Cercis siliquastrum*, the Aleppo pine, and the magnificent *Parrotia persica* C. A. Mey, which is decked in splendid colors in the autumn and can be admired in the Jardin des Plantes, in Paris. The Fertile Crescent is also the birthplace of goats and sheep.

The first herbariums of Middle-Eastern plants

After the Crusades numerous ambassadors were sent to the Middle East during the Byzantine Empire from the 7th to 13th centuries. Whether or not they returned with plants, they did not leave any written trace or dried plant specimens. It was not until Luca Ghini (1490-1556) established the first herbarium in about 1530 in Bologna that European botanists began to adopt this technique. The oldest herbarium in the Na-

If you stroll around Paris, you are sure to come across the Rue Tournefort in the fifth arrondissement, near the Jardin du Roi, which became the Jardin des Plantes at the time of the French Revolution. The street was named in honor of a pioneer of the flora of the countries of the Levant (stretching from Greece to Egypt). Others before and after him had returned with plants that enriched not only botany, but furthered knowledge in all the fields of science. This article retraces the lives of the most important among them, and will lead you through these countries in company with Pierre Belon, André Thévet, Jean Thévenot, La Billardière, Michaux, and Bruguière and his friend, Olivier. They were knowledgeable in all fields of science and were passionate explorers of the unknown.

Medicographia. 2006;28:301-309.

(see French abstract on page 309)



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tional Museum of Natural History (Jardin des Plantes) dates from 1558, two years after the death of Luca Ghini. It is the second oldest herbarium in the world after that in the Vatican. In 1535, Suleiman I signed one of the treaties known as the Capitulations with Francis I, king of France. Under its terms, the sultan permitted Europeans to live and work in the Ottoman Empire according to their own laws and under their own consuls. Thanks to this the Sultan avoided the burden of administrating justice to foreign merchants.

The treaty opened the trade of the Levant to the kingdom of France and paved the way for expeditions of French naturalists, particularly of botanists, who, throughout the long duration of the Ottoman Empire, were to discover, draw, and classify hundreds of plants, many of which still have a major economic impact today. However, along the growing fascination of the France with the Orient, which was to culminate in a veritable “turcomania” under Louis XIV and Louis XV, influencing fashion and the arts (Molière, Montesquieu, etc), the Turks themselves were intrigued by France, and after an earlier failed attempt in 1669, in 1721, Sultan Ahmed III sent an ambassador to France, who, among many other places, was highly impressed by his visit to the *Jardin du Roi* (see box, right page).

SOME REMARKABLE PLANTS TRACEABLE TO THE MIDDLE EAST

The origin of plants is difficult to establish if records or a herbarium do not exist. For example, the so-called Indian chestnut tree originated in the Balkans, and was introduced in Pisa around 1550. Charles de Écluse is known to have introduced it to Vienna in 1576. Bachelier brought the tree to France after returning from the Levant in 1615. Thus the chestnut tree probably passed through the Lebanon. In France it is considered to have originated in India. In 1733, a chestnut tree was planted in the Tuileries Gardens and survived for 178 years until 1911.

The fenugreek is not Greek but originates from Mesopotamia. The tamarind tree, named *Tamarindus indica* by Linné, does not originate from India but from Madagascar, from whence it was exported to India by the Arabs. The “poule d’Inde” does not come from India but from Turkey. Cape peas (lima beans) originated in Central America, and were introduced into South Africa by the Portuguese at the Cape of Good Hope.

Apart from the plants already mentioned, many others originate from the Middle East, including cyclamen, castor oil plant, chickpea, lentils, peas, and broad beans. Then there is the salep, an old world orchid that gives a starchy extract that is supposed to be aphrodisiac, the liquidambar oriental, which is endemic in Turkey and gives storax, an oleoresin used in perfumery and known since antiquity.

There is also the mandragora (mandrake) whose fruits are toxic since they contain scopolamine, but are also known for their nocturnal brilliance like the fireflies. Which probably accounts for the superstitions surrounding the mandrake. In addition the bay tree, the almond tree, the Arabian jasmine, and the Oriental ash all originate from the Middle East.

The Arabs also disseminated many oriental plants, as did the Chinese, and the origin of sugarcane, for example, is still under discussion, as are the origins of a number of plants. The great merit of the research achieved by the adventurous French naturalists was to discover many wild plants that have given birth to cultivated descendants. This work is being continued at the grass roots and indirectly by the study of DNA.



Fenugreek (*Trigonella foenum-graecum* L.), literally “Greek hay,” an aromatic leguminous annual Eurasian herb, cultivated for forage and the medicinal use (cataplasms) of its mucilaginous seeds. Illustration by Turpin.

Reproduced from: Chaumeton FP. *Flore Médicale Illustrée par E. Panckouke et P. J. F. Turpin*. Paris, France: Éd. Panckouke ; 1816. Courtesy of L. Allorge.

Pierre Belon: tulips and murder

Pierre Belon, 1517-1564, born in Le Mans, doctor, surgeon, and zoologist, served as French ambassador to the Orient in 1536. From 1545 to 1550, he traveled to Greece, Crete, Constantinople, Mount Athos, Thrace, and Asia Minor. He then went by boat to Alexandria and explored Lower Egypt, then returned via the Sinai to Judea. Pierre Belon was above all interested in coniferous trees and their natural products. He noted the tolerance of the Turks who practiced the freedom of religion, albeit in exchange for paying a tax. He also did major research on the ancient history of the countries he had visited. He brought back the Oriental plane tree and the tulip to Europe. In around 1635, the tulip sparked an extravagant enthu-

1721: AN OTTOMAN AMBASSADOR VISITS PARIS

In the early years of the 18th century, the Ottoman Sultan Ahmed III (1673-1736) sent an ambassador to the French court. His envoy was Mehmet Effendi, a highly intelligent and insatiably curious mind. His mission was a first, since Ottoman rulers, to whom European nations had, for their part, repeatedly sent ambassadors in the past, had always considered it beneath their dignity to do the same, and merely sent low-level representatives to deal with pressing issues. The visit started most inauspiciously, as upon disembarking in Toulon after 45 days at sea, Mehmet was escorted by the French authorities to the small island of Maguelone, near Sète, where he and his party of 80(!) were placed in quarantine, because the plague was ravaging the region. Mehmet then set off by boat on the canal du Midi, the technology of which fascinated him, and which he described in detail in his account of his voyage. Arriving in Bordeaux, the party then proceeded toward Paris in horse-drawn carriages. Along the way, Mehmet imbibed everything he saw, thoroughly fascinated by the differences between France and his Turkish homeland. On March 8, 1721, he reached the gates of Paris, and Parisians poured into the streets to watch the stately passage of the envoy and his colorful entourage. Among many other sites, Mehmet toured the Jardin du Roi (Jardin des Plantes), then one of the principal botanical gardens in Europe. He was much impressed with the garden of medicinal plants, and wrote: "They have applied themselves so assiduously to collecting simples mentioned in medical books, that they have even collected those that grow in Persia and transplanted them to France." He also visited the Royal Library, the Observatory, where, much impressed, he took a peek through the telescope at the moon and several planets. Mehmet was received by 11-year-old Louis XV at the Tuileries palace, where the crowd was so great that he had trouble making his way through it. Tiers of benches had been erected on either side for the ladies of the court "whose dresses sparkled with precious stones." He was shocked by the total absence of "privacy" at the French court, where anyone was free to wander in the palace to watch the king get out of bed

in the morning and take his meals, in stark contrast to the Turkish sultan who rarely appeared in public and whose elaborate ceremonial effectively removed him from contact with his people and even visiting dignitaries. Mehmet also visited Versailles, informing his sultan that it was the most splendid palace in Europe. He marveled at the Trianon, the gardens, and admired Mansart's royal stables with their stone vaults and arcades. As a result of the visit, Paris and the court were won over, and "turcomania" reigned supreme. During the 8 or some months he stayed in France, Mehmet acted the perfect tourist, and although he spoke no French took everything in and never appeared at a cultural disadvantage, even when witnessing things as alien to Turkish traditions as theatrical performances.

Having returned to Constantinople, Mehmet set upon writing an account of his embassy, producing an abridged version for the court, and a fuller one for the sultan. This account, which to this day can still be found in a pocketbook edition in French bookstores under the title *Le Paradis des Infidèles* [*The Paradise of the Infidels*], is a vibrant record of Mehmet's journey, which sometimes goes into intricate scientific detail as when he describes the lock system of the Canal du Midi or the instruments in the Paris Observatory, but whose contemporary interest resides in the fascinating face-to-face of two cul-

tures, French and Turkish, Christian and Muslim. Ironically, the very same year the Turkish embassy arrived in France, Montesquieu published (anonymously) a work that made history, the *Lettres Persanes* [*Persian Letters*], in which under the pretense of recounting the astonishment of two Persian visitors to France at the customs they observe, he analyzes and criticizes the extant political system and offers his own ideas, which were to exert a profound influence during the French Revolution.

For extensive details on the embassy of Mehmet Effendi to France, and its repercussions, read: *A Turk in Versailles*, by Paul Lunde, published in *Saudi Aramco World*, November-December 1993;44(6); and Mehmed Efendi; Galland JC (transl); Veinstein G (comments). *Le Paradis des Infidèles*. Paris, France: La Découverte; 2004 (in French).



Ahmed III (1673-1736), the first Ottoman Sultan to have established diplomatic relations with France by sending his ambassador Mehmet Effendi in 1721.

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Tulip (*Tulipa gesneriana* L.), originally published between 1802 and 1816, by P. J. Redouté, in *Les Liliacées*, in 8 volumes containing 486 plates.

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siasm known as “tulipomania,” when the price of bulbs reached the equivalent of an average salary for a whole year. He published several works including: “*Observations on various Singularities and Memorable Items Found in Greece, Asia, Judea, Egypt, Arabia, and other Foreign Countries*” (three volumes), published by Corrozet and Cavellat, Paris, in 1553. Belon was murdered in Rome by a band of brigands, and a statue was erected in the village where he was born, the hamlet of Souletière at Ceran in the Maine-et-Loire.

André Thévet: tobacco and dog-killing plants

André Thévet (1502-1590) was born in Angoulême and journeyed to Jerusalem as a Franciscan monk. He then traveled throughout the Near East, returning to France via Italy. He published his *Cosmography of the Levant* in 1554. As a result he was invited to depart with Villegaignon for Brazil, accompanied by numerous Calvinists who were fleeing from France to found a France-Antarctic colony on an island in the Bay of Rio de Janeiro. They left on the 15th of August 1555. Two years later, Thévet returned home with tobacco, which he planted in his garden at Angoulême in 1556, well before the diplomat Nicot imported the weed. The plant rapidly became known as angoumoise, but its scientific name was dedicated to Nicot by the naturalist Linné nearly 200 years later—*Nicotiana tabacum* L., Thévet’s name was given by Linné to the Thevetia family whose seeds are highly toxic due to their content of cardenolides, like many of the family of Apocynaceae, as indicated by the name: apo (that kills) cynum (dogs).



André Thévet (1502-1590), the first discoverer of the tobacco plant, to whom Linné dedicated the *Thevetia* genus (Apocynaceae).
Reproduced from: Vve Kerver, Chaudière G. *Les Vrais Pourtraits et Vies des Hommes Illustres*. Paris, France: 1583. Courtesy of L. Allorge.



Tobacco (*Nicotiana tabacum* L.). Illustration by Turpin.

Reproduced from: Chaumeton FP. *Flore Médicale Illustrée par E. Panckouke et P. J. F. Turpin*. Paris, France: Éd. Panckouke; 1816. Courtesy of L. Allorge.

Jean de Thévenot: the polyglot and coffee lover

Around 1650, Europeans began to learn the languages necessary for communicating directly with the Muslims without translators. This enabled merchants to trade further from home and commerce between Asia and Europe was facilitated. Asia Minor is at the crossroads of the grand routes, such as the silk and spice routes. Merchants could only travel to the Orient by the sea and this was controlled by the Consulates. The Ottoman Empire became weakened after its defeat before Vienna in 1640.

Jean de Thévenot (1633-1667), born in Paris, was a surgeon and a botanist. Eager to understand the Muslim world that was fascinating Europeans, he learned several “dead” languages before departing in 1655 for Sicily, Malta, and Turkey. Setting out from Marseilles, he had to wait five months on Malta, from where he explored the Greek islands, then settled in Alexandria. He next attempted to go to Jerusalem via the Sinai, but was taken prisoner and had to return to Cairo twice.

Six months later, in April 1659, he arrived in Marseilles, whence he had departed six years earlier, bringing with him hundreds of sacks of mocha coffee. After selling these, he returned to Paris, where he published an account of his journeys, and with his uncle spent four years studying the Arab, Persian, and Turkish languages.

In November 1664, he left for Alexandria, Damascus, Aleppo, Mesopotamia, and Mosul (in Iraq). He then traveled through Persia to Basra, departed for India where he spent thirteen months, voyaged to Shiraz, arrived in Ispahan, and died in Miana, on November 28, 1667 at the age of thirty-four. He had sent his

Coffee (*Coffea arabica* L.). Illustration by Turpin.

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travel journals back to France, and the first, *Report on a Journey to the Levant*, was published in Paris in 1664, the second, *Continuation of the Journey to the Levant*, covering Persia, was published after his death in 1674, and the last, *Journey to Hindustan, the New Moguls, and the Regions of India*, was published in 1684.

His collection of dried plants consisted of five volumes, but only one found its way back to France, in 1796. Thus his travels did not greatly increase knowledge of the vegetation he had encountered, even though he had made a list of the herbs he had gathered, and this was published by Edmond Bonnet in 1906. However, the loss would be made up for by his successor, Tournefort, in his famous voyage to the Levant.



Joseph Pitton de Tournefort: the Jesuit and the fig

Joseph Pitton de Tournefort (1656-1708) a member of the order of Jesuits, relinquished his imposed religious vocation with alacrity as soon as his father died. After studying medicine and botany at Montpellier he investigated the flora in the region of Aix-en-Provence, and climbed the mountains of Provence, Languedoc, those around Grenoble, as well as the Alps and the Pyrenees. He made astronomical observations, and in 1694 published *The Elements of Botany or How to Understand Plants*. His *History of Plants in the Vicinity of Paris* was published after his death. His influence was considerable since he was the first



Fig (*Ficus carica* L.).
Illustration by
E. Panckouke.
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*Flore Médicale Illustrée
par E. Panckouke et
P. J. F. Turpin*. Paris,
France: Éd. Panckouke ;
1816. Courtesy
of L. Allorge.



Joseph Pitton de
Tournefort (1656-1708).

Reproduced from:
Pitton de Tournefort J.
*Relation d'un Voyage du
Levant, Fait par Ordre du
Roy, Contenant l'Histoire
Ancienne et Moderne de
Plusieurs Îles de l'Archipel,
de Constantinople, de
Côtes de la Mer Nopire,
de l'Arménie, de la Géorgie,
des Frontières de Perse et
de l'Asie Mineure*. 3 vol.,
Lyon, France: Anisson &
Posuel; 1717. Courtesy
of D. Lamy, Cryptogamie,
MNHN, ic 268.

to use a systematic method to determine the characteristics of plants and especially flowers. In 1683 he was appointed Botanist of the King's Garden. Tournefort was sent by Louis XIV to the Levant in march 1700, with the aim of rediscovering the plants that were known in ancient times. He also made observations on the natural history of the country as well as noting its geographic features and antiquities. He was accompanied by an artist, Claude Aubriet (1665-1762), whose drawings were so precise that Lamarck used some of them 80 years later in his *Methodical Encyclopedia* of 1781 and 1789. Tournefort was also accompanied by one of his German students who later became a famous doctor, André von Gubdelcheimer (1668-1715). On the way they stopped in Greece, Istanbul, and Iráklion (Crete), followed the coastline of the Black Sea as far as Sinop, then went on to Armenia and Georgia. They botanized on Mont Ararat, visited the ruins of Ephesus, and re-embarked at Smyrna for France.

Tournefort collected about 3200 botanical samples. He was also the first to observe the caprification of cultivated figs (the fastening of wild male flowers in the trees to assist pollination by wasps). Aubriet made numerous black and white drawings of plants, ancient monuments, musical instruments, local dress, and the layout of villages. But above all he created sixty very fine plates that are now in the vellum collection of the museum, and which were inspired by the new plants that had been brought back in good condition to Paris. On his return, Tournefort wrote the draft of the first part of their long voyage. He was appointed professor of medicine at the Collège de France and director of the Jardin du Roi. But in the nearby road, now called Lacépède, he was struck violently in the chest by a cartwheel, and died six months

later at the age of fifty-two. The second account of his voyage appeared after his death, and Desfontaines published the vellums and added descriptions based on the dried plants brought back by Tournefort.

La Billardière, the compulsive plant collector

Jacques-Julien Houtou de La Billardière (1755-1834) was born on October 28, 1755, in Alençon. He studied medicine in Montpellier from 1772 to 1780 and received his doctorate in Paris. He traveled to England to learn the language and stayed for six months. There he met Banks, a botanist who had accompanied Cook on his first great voyage of exploration. Then in 1787, Billardière departed for the Levant.

Before La Billardière went to Palestine, only three other botanists had ever been there, Leonard Rauwolf (1540-1596) whose herbarium is in Leiden, Tournefort (1656-1708) whose herbarium is in Paris, and Frederik Hasselquist (1722-1752) pupil of Linné, whose herbarium is in Uppsala.

Embarking at Marseilles, he made a stop in Cyprus where he learned that the plague was ravaging Syria. He then decided to continue via Antioch thus avoiding Aleppo. On arrival in Damascus he explored the surrounding regions as well as those of Beirut, Tripoli, and Mount Lebanon, where the cedars then numbered about one hundred. He spent nearly two years in Syria and Lebanon, which was then known as Ottoman Syria. On returning to France he stopped again in Cyprus, Corsica, and Sardinia. He arrived back in 1789, in the middle of the Revolution, with close to a thousand dried plants, as well as living plants which he entrusted to the head gardener of the King's Garden, André Thouin. His dried plants were purchased by the King's doctor, Le Monnier, who had helped arrange the voyage. La Billardière had his findings published in



Lebanese carnation (pink) (*Dianthus libanotis* Labill.). Illustration by P. J. Redouté.

Reproduced from: La Billardière. *Icones Plantarum Syriae Rariorum*. 5 volumes. Paris, France: Prévost; 1791. Courtesy of L. Allorge.

1791 under the title *Icones Plantarum Syriae Rariorum (Rare Syrian Plant Images)* by Prévost, Paris, in 5 volumes. The first, *Decas Primas*, consisted of 22 pages with 10 plates by the famous painter of roses, Pierre-Joseph Redouté; the second, *Decas Secund*, consisted of 18 pages with 10 plates also by Redouté. These included around one hundred new species unknown to the scientists of that time: *Astragalus gummiifer* Labill., known since early Greece for its colloidal, medicinal, and cosmetic properties, *Prunus prostrata* Labill., *Phlomis rigida* Labill., and *Juniperus drugacea* Labill. After Le Monnier died, the herbarium was purchased by a rich Geneva Banker, Delessert (1773-1847), and the collection is now in the Geneva Herbarium. There, Alphonse de Candolle, whose botanical abbreviation is DC, continued to study them and described more new species including: *Astragalus echinus* DC., 1802, Oriental type Labill.; *Astragalus macropus* DC., 1802, Oriental type Labill.

On September 28, 1791 La Billardière boarded the ship *La Recherche* that was setting out from Brest under the command of Rear Admiral Bruni d'Entrecasteaux (1740-1793). It's mission was to search for *La Boussole* and *L'Astrolabe*, two ships that had disappeared three years earlier under the command of the Comte de La Pérouse (1741-1788). La Billardière did not return to France until March 12, 1796, after many incidents, and with the news that La Pérouse had died at sea. During the earlier part of the voyage La Billardière collected numerous plants in Australia and Tasmania. Among them was the famous blue gum tree, *Eucalyptus globulus* Labill., whose leaves when distilled give eucalyptus oil. And above all several plants of the famous breadfruit tree, an object of envy between England and France, since the two countries were planning to feed breadfruit to the slaves on their sugar plantations in the West Indies. Unfortunately, d'Entrecasteaux died, and La Billardière was denounced by one of the ship's officers for his revolutionary ideas. However, he managed to entrust his precious plants to the ship's chief gardener, La Haye, before he was arrested. La Haye took enormous care of his charges, and later succeeding in returning them in good condition to Paris. On another expedition, La Billardière nearly lost his collections again when they were confiscated in Indonesia and sent to England.



Jacques Julien de La Billardière (1755-1834).

Reproduced from: Jacques Julien de la Billardière. Courtesy of D. Lamy, Cryptogamie, MNHN, ic 242.

There, fortunately, it was the botanist Banks who received them, and returned them in their entirety to their owner. A letter written by Dupuis, an official on the island of Mauritius, to the French botanist Jussieu, in 29 Brumaire, year 4 of the French Republic, was entrusted to La Billardière. It stated:

I am giving this letter to citizen La Billardière, one of the savants on the d'Entrecasteaux expedition, who returns to France with the poor remains of a collection that would have been precious if it had not been almost entirely pillaged by men who were less interested than him in science and their country.

La Billardière's collections numbered nearly four thousand plants, three quarters of which were not previously known. He then devoted himself to writing *The Story of the Voyage to Locate La Pérouse*, which was published in 1800. He did not continue classifying his Syrian collections until after he had been elected to the French Academy on November 26, 1800, division of science, botanical section.

The third part of his *Icones Plantarum Syriae Rariorum, Decas Tertia*, consisting of 16 pages and 10 plates, was published in 1805, again in Paris by Prévost; then *Decas Quatra*, in 1812, with 16 pages and 10 plates; and finally *Decas Quinta et Ultima* in 1812, with 16 pages and 10 plates. The plates were prepared once again by Pierre-Joseph Redouté, aided by Pierre Poiteau and Pierre Turpin, both of whom had returned from the West Indies, and who later jointly illustrated the works of Humboldt, Bonpland, and Chaumeton.

André Michaux: cuneiform writing and bellflowers

André Michaux (1746-1802) was born near Versailles on the farm of a Monsieur Satory. Le Monnier, doctor to Louis XV and XVI, noticed him, took him under his wing, and organized his vocational training, which led to final studies in the King's Garden.

During a stay in England Michaux met other botanists, and in 1780, Lamarck, who had just published his *Flore de France*, invited friends to investigate the flora of central France. Among them were Thouin (the King's Gardener), Desfontaines, Boissanjeu, de Laussat, and Michaux. For him the experience was a revelation, and his one ambition was henceforth to be a plant hunter. He left for the Pyrenees and searched for flora on the French and Spanish slopes. He became a member of the Linné Society created by Broussonet in memory of the famous Swedish botanist.

Then, thanks again to Le Monnier, Michaux had the chance to explore the Orient. He accompanied the nephew of Jean-Jacques Rousseau, Jean-François Rousseau, who had been appointed ambassador to Persia. Jean-François had been born in Ispahan (now Esfahan), and had served as consul in Baghdad and Bassora. He arrived in Versailles wearing oriental robes for his official enrollment as ambassador. The two men left from Marseilles on February 28, 1782. Michaux began

studying Arab and Persian with the idea of traveling through Mesopotamia, Syria, and Persia. He arrived in Aleppo on April 14, 1782 and spent six months collecting plants (*see box, next page*). He made numerous archeological discoveries and copied down ancient inscriptions. Later in Iraq in 1785 he discovered a stone engraved with cuneiform writing now known as the "Stone of Michaux." He and Rousseau then left for Baghdad, in the middle of Mesopotamia, which he reached after a forty-day march across the desert. They found a vast town at the convergence of the main commercial routes. This was Rousseau's destination (1782-1785), and Michaux departed by himself for Bassora (Iraq), where he stayed for three months. On the way he was stopped by Arabs who were at war with Persia and was relieved of his measuring instruments and money. However, they were not interested in his books. He was saved by the English consul in Bassora who gave him funds so he could continue. From there he went to Schiraz and Ispahan, then for two years explored Persia from the Arabian to the Caspian sea, encountering on the way both mountains and deserts. During his travels he managed to send back plants, animals, and minerals to Paris, nonetheless he arrived home with bursting trunks. He discovered new species among them a new member of the Campanulacea (bellflower) family, which was named Michauxia in his honor. The French government sent him to America where he crossed through very inhospitable regions. His exploits have been recounted by Régis Pluchet, a distant nephew. Finally, in 1800 he sailed with Nicolas Baudin's expedition to Australia, but left him on arrival at Mauritius and headed west to Madagascar. There he died of malaria on October 11, 1802 on the banks of the Ivondro river, twelve kilometers south of Tamatave. It was there that I was able to find his tomb on a promontory from which there was a 360° view of the land where he had planted the trees he had brought with him from Mauritius.



The "Stone of Michaux" with cuneiform writing, discovered in 1785 in Iraq.

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Jean-Guillaume Bruguière: umbellifers and seashells

Jean-Guillaume Bruguière (1750-1798), a naturalist aged 23 years, departed from Brest on March 24, 1773 with Yves-Joseph de Kerguelen on a quest to find the elusive southern continent. Their voyage took them to Mauritius, October 16, 1773, and the islands later named after Kerguelen, then they returned via Madagascar on September 7, 1774. Bruguière set off again in 1792, with his friend Guillaume-Antoine Olivier (1756-1814), entomologist, and they headed for the Ottoman empire. Leaving Toulon they arrived at Constantinople and the Dardanelles Strait, where they had to wait six months for a laissez-passer. They then visited different Greek islands, Tenedos, Lemnos, Lesbos, Skyros, and continued via Crete (Iráklion), and Alexandria. In 1794 they went up the Nile, then visited the islands of Thera and Rhodes. After stopping in Tripoli and Aleppo, they rested for three months and then set out for Mesopotamia. They took thirty days to arrive at Mosul, then went on to Baghdad (Iraq), and continued to Tehran, where they explored Mount Elburz and the ancient city of Ispahan. They then headed for home, but Bruguière never saw France again.

LETTER FROM MICHAUX TO THOUIN COPIED BY J. P. F. DELEUZE AND TRANSLATED
BY C. D. E. KÖNIG AND JOHN SIMS FOR THE *ANNALS OF BOTANY* IN 1805

Aleppo, July 30, 1782.

My Dear Sir,

I landed at Alexandretta on the 30th of March. I cannot express to you the delight with which I crossed the country here. In examining the multitude of plants with which the fields abound, I was often transported beyond myself, and compelled to pause and tranquillize my mind for some moments. At night I could not sleep, but watched the dawn of day with impatience. What happiness! To find myself in Asia, and at my pleasure



Rough-leaved Michauxia
(*Michauxia campanuloides* L'Hér.), named
after André Michaux.

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to traverse the mountains and valleys covered with liliaceous plants, orchids, daphnes, laurus, vitex, myrtles, and rachmes, styrax, palms, and other vegetable productions different from those of Europe. The seashore abounded with shellfish, varied in form and color: land and sea birds came every morning to feed upon them. The flamingos came in flocks of three and four hundred each. The marshes abounded with reptiles. Unfortunately, the greater part of the plants were not yet in flower; and the mountains

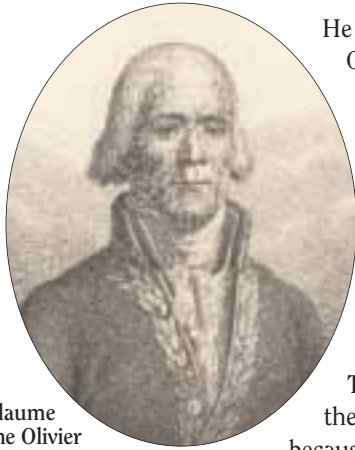
were infested by the Bayas, who the preceding year had pillaged the caravan of Alexandretta, and a few days before our arrival had put to flight the troops sent to guard the town and had burnt several of the houses.

Since my arrival at Aleppo, I have made two tours among the mountains. The town is situated on the side of a valley in which are gardens abounding with trees, none of which are grafted. The rest of the country is dry, stony, and uncultivated. For six leagues round, not a single tree or shrub is to be seen. Beyond are vast plains, whose fertility, if cultivated, would be prodigious.

On these were formerly villages, which have been successively destroyed. The predecessor of the present pasha destroyed more than eighty, on the pretext that the inhabitants had formerly revolted. His soldiers committed unheard of things. They ransacked the houses, and cut off the heads of women and children, to make themselves masters of the pieces of gold which ornamented their headdresses. It is by such vexations that the pashas indemnify themselves for tributes they pay to the grand seigneur. These ruined villages are at present the haunts of robbers.

Excursions are equally painful and dangerous throughout the whole of this part of Asia, which extends from Syria to the frontiers of India. The traveler carries his provisions and sleeps on the ground, avoiding the caravanserais on account of their filthiness and the insects with which they abound. He must, however, follow the caravans; otherwise he would be plundered by the Arabs on the plains, and the Kurds who infest the mountains. The caravans are often attacked: last March the robbers took from those of Alexandretta 380 camels; and the one which is now ready to depart has been compelled to wait ten days beyond their time, expecting troops which the pasha of Aleppo and Antioch has detached for their escort. Every traveler must take with him an Armenian, whom he must watch attentively; for the conductors of the caravans are for the most part knaves, who watch an opportunity secretly to rob the traveler.

While I am waiting for our departure from Baghdad, which will not take place in less than a month, I propose to make a botanical excursion over 150 leagues. I shall pass by Laodicea, Antioch, and Seleucia: I hope to find medals in the last city. At my return I shall send you and Mr de Malesherbes some specimens of seed. The consuls and merchants can tell you that no one labors with more ardor to make his fortune, than I do in the interests of botany.



Guillaume
Antoine Olivier
(1756-1814).

Reproduced from: Guillaume
Antoine Olivier. Courtesy of
D. Lamy, Cryptogamie,
MNHN, ic 258.

He died of exhaustion in the Italian port of Ancona having spent six years abroad. His friend Olivier returned to Paris with their collections. Like La Billardière, Olivier was elected to the French Academy of Science in 1800. He published the account of their travels under the title: *Voyage to the Ottoman Empire, Egypt, and Persia* (three volumes, 1801 to 1807) and the plates were once again signed by Pierre-Joseph Redouté. A genus of umbellifers brought back from Syria and Iraq was named *Oliviera* in honor of Olivier. Bruguière, who had identified a new species in Madagascar was honored posthumously by Lamarck who named the species *Bruguiera gymnorhiza* Lam., (Rhizophoraceae). Bruguière's vast collection of rare shells was sold to a museum for 6000 francs in 1799.

Enlightened naturalists return with treasures from the Orient

These naturalist voyagers were to have a great influence on their time. While quite young men they left for countries that were dangerous, not only because of diseases like the plague, but also because conditions were totally different from those of today: traveling on foot in close contact with the population and living like them, not to mention the incessant wars. Nevertheless they managed to give an impulse to fundamental research to which they dedicated their lives with passion. The museums encouraged them to travel, as did the Academy of Science. Their publications still remain a very precious tool for understanding the origins and history of plants. They returned not only with new plants for Europe, but with nutritional and medical plants, as well as trees and shrubs to enliven our gardens. Moreover, they had very profound knowledge in many other domains, geology, archeology, and languages, among others. They were indeed men of the Enlightenment. □



Ispahan,
in Persia.
19th century
engraving.
Courtesy of
L. Allorge.

REFERENCES

– Allorge L. *La Fabuleuse Odyssée des Plantes: Les Botanistes Voyageurs, les Jardins des Plantes, les Herbiers [The Fabulous Odyssey of Plants, the Voyager Botanists, the Jardin des Plantes, the Herbariums]*. Paris, France: JC Lattès; 2003.
– Bonnet E. *Le Voyageur Jean de Thévenot (1633-1667). Son Herbarier de l'Hindoustan [The Voyager Jean de Thévenot (1633-1667). His Hindustan Herbarium]*. Reports of the French Association for the Promotion of Science, 1-10; 1906.
– Deleuze J. *Memoirs of the Life and Botanical Travels of André Michaux. Michaux's Bicentennial, 2002*. Charlotte, NC: Fourbears Press; 2002.

– Pluchet R. *André Michaux le Laboureur Explorateur [André Michaux, Ploughman Turned Explorer]*. In *Hommes et Plantes*, n°52: 4-12; 2005.
– Pitton de Tournefort J. *Relation d'un Voyage du Levant, Fait par Ordre du Roy, Contenant l'Histoire Ancienne et Moderne de Plusieurs Îles de l'Archipel, de Constantinople, de Côtes de la Mer Noire, de l'Arménie, de la Géorgie, des Frontières de Perse et de l'Asie Mineure [Report of a Journey to the Levant by Order of the King, Describing the Ancient and Modern Histories of Several Islands of the Archipelago, of Constantinople, the Coasts of the Black Sea, Armenia, Georgia, the Frontiers of Persia, and Asia Minor]*. 3 vol., Lyon, Anisson & Posuel; 1717.

LES VOYAGEURS-NATURALISTES FRANÇAIS AU LEVANT PENDANT L'EMPIRE OTTOMAN

Si vous parcourez Paris, vous trouverez la rue Tournefort dans le cinquième arrondissement, près du Jardin du Roi, devenu Jardin des plantes à la révolution française. Ce nom fut donné en hommage rendu à ce pionnier de la flore des pays du Levant. D'autres avant lui et après lui rapporteront des plantes et vont enrichir la botanique et la connaissance dans tous les domaines des sciences. Nous retraçons la vie des plus importants d'entre eux, et vous emmenons dans ces contrées avec Pierre Belon, André Thévet, Jean Thévenot, La Billardière, Michaux et Bruguière et son ami, Olivier. Ils avaient une formation universelle et étaient portés par une passion de découverte dans tous les domaines.

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◆ All texts should be submitted in English. In the case of translations, the text in the original language should be included.

◆ Provide black and white photograph(s) of author(s).

◆ On the title page, provide: a title (concise and informative); full names of authors (first name, middle name initial, and last name); highest academic degrees (in country-of-origin language); affiliations (names of department[s] and institution[s] at the time the work was done); a short running title (no more than 50 letters and spaces); keywords (5-10); corresponding author's complete mailing address and telephone No., fax No., and e-mail address; acknowledgments (on title page, or at end of main text).

◆ Include an Abstract of 200-250 words (1 standard typed page) for all texts except Editorials and replies to the Controversial Question.

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2. Darling RC, Brewster DC, Ottinger LW. Autopsy study of unoperated abdominal aortic aneurysms: the case for early resection. *Circulation*. 1977;56(suppl II):II161-II164.

3. Schulman JL. Immunology of influenza. In: Kilbourne ED, Alfade RT, eds. *The Influenza Viruses and Influenza*. Orlando, Fla: Academic Press Inc; 1975:373-393.

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