

## **A Botanist and Artist, Aimee Antoinette Camus (1879-1965)**

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“... We should not forget that ‘amateur’ botanists during the past century rendered distinguished service to science. They were the framework of the Botanical Society of France and several of them were masters.”

This is the way that Jacques Leandri, a student of *Agrostis* and specialist in the flora of Madagascar, begins his article in volume VI of *Adansonia*, the review of the National Museum of Natural History. These pages, written in 1966 to honor the memory of Aimee Camus, who had passed away a year earlier, illuminate her signal role in the most varied areas of botany. Forty years later, it seems that Miss Camus has been all but forgotten except by those who know her as the author of new taxa and who admire her illustrative plates of oaks and chestnuts. In this she proves her worth as a great artist, “and a penetrating observer and possessor of a methodical and precise mind.”

In our day, visitors to the Chinese arboretum of Xishuangbanna, in the far south of Yunnan province, can read her name attached to that of 48 species of Fagaceae (*Castanopsis*, *Cyclobalanopsis*, *Lithocarpus* and *Trigonobalanus*).

It is interesting to recall that Aimee Camus, who was not a professional at first, was a woman who lived in the first half of the twentieth century in a male milieu, among men who were all eminent: museum professors, members of learned societies, botanists whose most recent collections she studied. She earned their confidence, and they urged her to surpass her own achievements.

She wrote hundreds of articles and ten monographs. She was honored several times by the Institute and the Botanic Society of France, and she received the title of Correspondent and then Associate of the Museum, and she was also named a laureate of the Legion d'Honneur.

### **The two daughters of E. G. Camus**

Edmond Gustave Camus (1852-1915), Doctor of Pharmacy, divided his time for thirty years between his Parisian pharmacy and botany. After 1908 he was able to devote himself entirely to the latter. Vice President of the Botanical Society of France, founding member of the Dendrological Society of France, Gustave Camus is remembered for his works on the flora of France, the willows of Europe, the bamboos, and the treatment of the *Cyperaceae* and *Gramineae* in the *General Flora of Indochina*; by studying the herbaria of Father Farges, he described new species of bamboo, including one collected in Thailand by Pierre as well as two *Arundinaria*.

His remarkable illustrations of orchids are eagerly sought by bibliophiles. Concerning the preparation of one of his collections, he explained “I have undertaken the laborious task of preparing twelve copies of the orchid illustrations by sketching and painting the forty plates which compose it twelve different times.”

Each of the copies of *Illustration of the Orchids of the Paris Region* (1885)

bears these carefully traced words from the author: “to my daughter Aimee,” one of his two daughters whom he introduced early to botany. When she was fifteen he took her to botanize in the Jura near Neuchatel, where they put together one of their first herbarium collections.

Blanche is Gustave’s other daughter and the painter of the family to whom we owe an animated portrait of Aimee. The two sisters shared the same feelings of filial piety: when after the death of their father in 1915 they had to prepare the definitive edition of

*Illustration of the Orchids of Europe and the Mediterranean Basin* (whose section on morphology was drawn by Aimee), the two went together to the Pyrenees to search for new hybrids. This expedition required that they visit all of the summits of the Pyrenean chain from the Mediterranean to the Atlantic. Later, in May, 1930, Aimee accompanied Blanche to the Near East so that she could set up her easel and paint pictures in “those luminous places.” Aimee took advantage of this to botanize near Constantinople (Istanbul) and collect orchids.

In 1947, Aimee dedicated her works on oaks to her father and to her sister:

“Blanche Camus, artist and painter, who devoted her talent to completing the numerous plates of these three atlases, not only with art but with the greatest accuracy possible and the greatest care for authenticity, consecrating much precious time to this lengthy undertaking.” One can realize this on contemplating the original drawings of the part which derives from Blanche, thanks to her pencil work which is less assertive than that of her sister and to her miniscule, very refined handwriting.

## The Universe of Miss Aimee Camus

Aimee studied botany with Gaston Bonnier, who occupied the chair of botany at the Faculty of Sciences in Paris and with Philippe Van Tieghen, professor of botany at the Museum. “The latter gave her a taste for systematic morphology, in which she later excelled.”

Little by little, she extended her universe in order to realize her vocation. Professor Lecomte, 33 years her senior, and professor Humbert, younger by eight years, gave her “the greatest support for the completion of her work.” With professor Aubreville, they had her collaborate along with her father on the *General Flora of Indochina*, a work in seven volumes which was written between 1907 and 1951 in the Laboratory of Spermatophytes of the Museum. She kept up with the work of the great collectors of plants in the Indochinese world, men such as Auguste Chevalier



A portrait of Aimee Camus drawn by her sister

and his protégé, Eugene Poilane, “the greatest collector of Indochina.”

She was also associated with the uninterrupted discoveries of new plants in Madagascar and she eventually acquired uncontested authority which was not diminished even by advanced age: in 1954 she was asked to make a presentation at the Eighth International Congress of Botany on the grasses of North America, and in 1956, an additional presentation at the International Colloquium of the National Center for Scientific Research (C.N.R.S) on the endemic grasses of Madagascar. In order to complete her revision of the genus *Quercus*, Miss Camus found her study materials mainly in the Museum, but also in the herbaria of the entire world. For that she wove a vast net of correspondents, including the directors of the British Museum the Museum of Kew, the National Herbarium of Washington, the Rijksherbarium of Leyden, and the conservators of the herbaria of Leningrad, Florence, and Jerusalem. She had dealings with professors Gausson of Toulouse and Trelease of Urbana, Dr. Handel-Mazzetti of the Botanical Institute of the University of Vienna, Alfred Rehder, Conservator of the Herbarium of the Arnold Arboretum, etc. She met with “Mr. de Vilmorin, who permitted her to consult his rich library at Verrieres-le-Buisson.” For a dozen years the Director of Forests and Streams, Robert Hickel, collaborated with her, particularly to complete the study of the Fagaceae of Indochina. Although Aimee Camus hardly traveled outside of France, with the exception of her trip to the Middle East and several botanizing trips to Switzerland with her father in 1894 and 1898 and to the Sierra of Guadarrama in Spain in 1932, her sources of interest extended far beyond her apartment in Paris or the Laboratory of Spermatophytes of the Museum.

### The works of a botanist and artist

The books and their illustrative plates and the innumerable notes and articles by Aimee Camus published between 1904 and 1961 witness to the extent of her knowledge, her gift for graphic representation, and her taste for the effort to join the two.

In 1905, Gustave and Aimee Camus published *A Classification of the Willows of Europe*, the *Monograph on the Willows of France*, and, in 1908, with the collaboration of P. Bergon, *Monograph on the Orchids of Europe, North Africa, Asia Minor, and the Russian Transcaspean Provinces*. The *Great Monograph on the Orchids of Europe and the Mediterranean Basin* appeared in 1929, fourteen years after the death of the principal author.

In 1912, Paul Lechevalier edited *Little Flora of Saint-Tropez* by Aimee Camus and, in 1914, her monograph *The Cupressaceae (The Genus Cupressus)*. Hickel published there a new cypress of southwest China, *Cupressus dielouxiana*, “a lovely species which does well in Prafrance (Gard) and should be tried in different regions of the South of France where it could form good windbreaks.”

After World War I, Aimee Camus edited two small books in the pocket-book collection *The Practical Encyclopedia of the Naturalist*, which offered at one and the same time a scientific account and “some picturesque facts.” The books are titled *Flowers of Marsh, Lake, and Pond* and *Ornamental Trees, Bushes, and Shrubs*. In the latter, Aimee complains “about the banality and the extreme monotony which reigned in gardens,” while noting at the same time that “beginning twenty years ago, many trees have been introduced to France whose hardiness has been established beyond doubt, above all thanks to people such as Bois, Dode, Hickel, Lemoine, Vilmorin and Robertson-Proschowsky.” (Footnote: Robertson-Proschowsky has

studied the cold hardness of palms.) Philippe Gerard remembers this little botanical book, the first that his grandfather placed in his hands.

In 1929, Aimee published *The Chestnuts: A Monograph on Castanea and Castanopsis*, a complete monograph with very detailed descriptions and 109 illustrative plates and three volumes of the monograph *The Oaks*, which appeared between 1936 and 1954. This work was honored by the Academy of Sciences and the Academy of Agriculture with the Medaille d'or (gold medal). Fifty years later, Govaerts and Frodin, of the Royal Botanic Gardens at Kew, consider this to be "the most recent global revision of the genus, which remains a basic reference even though handicapped by some gaps..."

These two English botanists also cite in their bibliography Aimee's 1951 study on *The Genus Nothofagus, Beeches of the Southern Hemisphere*. To be found here are a key to the genus (excepting the species of Papua and New Caledonia), several different points of view on the species of South America and Oceania, notes on the genus in cultivation and what differentiates it from the genus *Fagus*.

At times when she was in residence at the paternal properties at Saint-Tropez, Aimee botanized in the Var and the Alpes-Maritimes. There she studied mimosas, cistus, orchids, and hybrid willows on the shores of Lake Thorenc. She sketched the different phases of the germination of a small cork oak between the first of December and the first of March following. Eucalyptus, cypress, bamboos, lemons and even the cultivated mints and basil captured her insatiable curiosity. It was at this time that she assembled herbarium specimens and sketchbooks, and published her observations in *The Scientific Riviera* (a publication of the Association of Naturalists of Nice and the Alpes-Maritimes) and in the *Scientific and Industrial Bulletin of the Roure-Bertrand Company*, the bulletin of the famous perfume house of Grasse.

The majority of her other notes and her publications of new taxa appeared in the *Bulletin of the Museum*, the *Bulletin of the Botanical Society of France*, the *Weekly Reports of the Academy of Sciences*, the *Annals of the Linnean Society of Lyon*, the *Bulletin of the Dendrological Society of France*, *Candollea*, the *Annals of the Natural Sciences (Botany)* of Montpellier, or again in specialized reviews on tropical agriculture, principally those pertaining to Madagascar.

## **Forty years of collaboration with the editor Paul Lechevalier**

Forty years passed between the appearance in 1913 of the monograph *The Bamboos*, by Edmond Gustave Camus and, in 1954, of the last volume of the monumental work of his daughter Aimee, *The Oaks*. These two works, as well as all of those published in between, including the monograph *The Chestnuts*, were edited by "Paul Lechevalier & Son, 12 rue de Tournon, Paris (6<sup>th</sup>)." It was under the auspices of the same editor that there appeared in 1932 the famous work *Travels and scientific discoveries of French missionary naturalists throughout the world (15<sup>th</sup> to 20<sup>th</sup> centuries)* by P. Fournier.

A close and fruitful collaboration had become established between the Camus father and daughter and their editor and it was actually to Paul Lechevalier that we owe the idea of the monograph on oaks. The first of February, 1947, Aimee Camus thanked "the editors Paul and Jacques Lechevalier, who, following the tradition of their publishing house, devoted the utmost care to the presentation of my work," representing a total of 2,824 pages of text and 679 illustrative plates, of which 97 treat morphology.

Paul Lechevalier executed these plates following the drawings of Aimee Camus (and her sister), “realized from type specimens preserved either in the herbarium of the Museum or in other great herbaria, or, when a type specimen is lacking, based on correctly determined plants originating in the same region as the type.” She also sketched *in situ* the cork oaks of her childhood.

The drawings were made in black pencil on sheets of beige paper of different sizes or occasionally in ink on green tracing paper or on the back of a sheet of writing paper from the Museum. The strokes are light, following the curves of an



QUERCUS HYPOLEUGOIDES A. Camus 1 cm

*Quercus hypoleuroides*, named and drawn by Camus (from les Chênes)

acorn, they linger on the thickness of a petiole, or are repeated in order to juxtapose all of the scales of a cup. Hatching accentuates the volume of a bud or the edge of a folded leaf. The pencil follows the spider web meanderings of the veins, tapers at the end of the sharp tooth of a *Quercus guyavaefolia*, tacks at the top of an acorn to delineate the perianth and the styles.

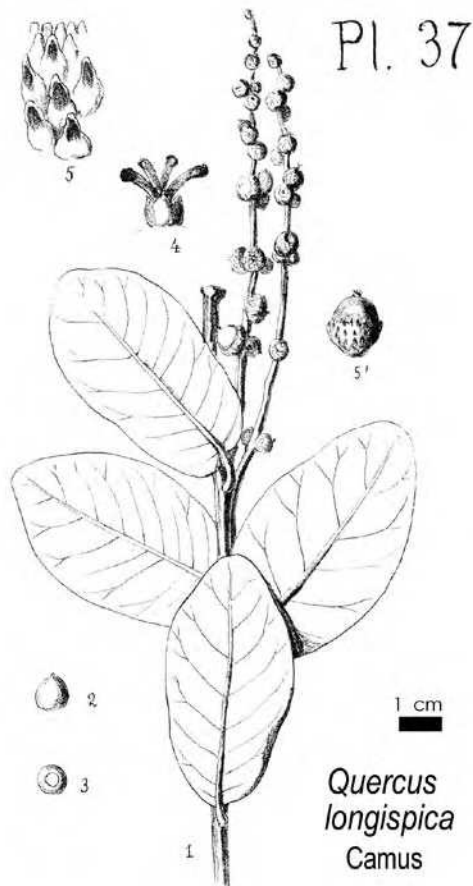
Oak leaves drawn in India ink seem blown off of a “*Quercus armenia, latifolia glande maxima, cupula crinita*” (a specimen of *Quercus cerris* var. *tourneforti* conserved in the herbarium of Tournefort). A thread of ink surrounds an annulate acorn of *Quercus fleuryi* that is beginning to germinate; a clean and precise pencil stroke defines the thick and entire edges of a leaf of *Quercus poilanei*.

On each sheet is indicated in crisp, fine handwriting the name of the taxon with the name of the author, sometimes the origin of the material and the name of the collector, the number of the type specimen, the site of collection and even the altitude. Other specifications are scribbled in: “les Barres, collection by Vilmorin,” “consider making tracing” or “tracing made” or “after the plant at Kew, a very secure sample”

or again “one of the type specimens” etc.

The morphological plates present figures magnified, for the most part, 200 times; to an uninitiated person, they can seem as enigmatic as hieroglyphs. Plate IX of the *Atlas* of volume I, for example, presents 24 anatomical cuts of leaves of *Quercus poilanie*, *Q. gilva*, and *Q. delavayi*: sections of the epidermis of the leaf edge, of the petiole, of the veins, of the teeth. At this scale of magnification, the hairs resemble strange sea anemones.

The two sisters then had to trace their drawings, accentuating here and there with a bit of shadow, light, or contours. The Lechevalier brothers then did the page formatting and the organization of the plates in atlas portfolio. Only the quality of the paper and the binding reflect the economic difficulties of the time.



*Quercus longispica*, named and drawn by Camus  
(from les Chênes)

**Aimee Camus,**  
**describer of new taxa**

Aimee Camus will never be able to equal in their adventures as plant hunters such illustrious contemporary foreigners as Forrest (1873-1932), Wilson (1876-1930) or Handel-Mazzetti (1882-1940). She had to content herself with working with herbarium specimens, leading the kind of life which held no farther attraction for professor Auguste Chevalier, the great specialist in colonial agriculture “Research in the wild became for me irresistibly attractive. A calm life in the confines of a laboratory, bent over a microscope, which I had dreamed of before, weighed heavily on me after that.” (Footnote: *L’Herbier du monde. Cinq siècles d’aventures et de passions botaniques au Muséum national d’histoire naturelle* [The Herbarium of the World. Five centuries of adventures and botanical passions in the National Museum of Natural History] 2004. Under the scientific direction of Philippe Morat, Gerard Aymonin, and Jean-Claude Jolimon. *L’Iconoclaste*, Les Editions du Muséum. p. 170.)

Among the 1,403 new taxa described by Aimee Camus, (sometimes in collaboration with Hickel) are to be found many *Fagaceae*, including some forty *Castanopsis*, around eighty *Lithocarpus*, and some fifty species, subspecies, varieties and hybrids of *Quercus* still considered valid today. Certain of these oaks are poorly known or undergoing reclassification, while others have perhaps disappeared entirely.

Very few have been introduced to Europe, except perhaps for *Quercus hypoleucoides* from New Mexico; still very rare, *Quercus leucotrichophora*, which exists, among others, as a large individual at Serre de la Madrone, or *Quercus* 'Warburgii', which certain of us received from Cambridge more than twenty years ago. Thierry Lamant adds to these, *Q. dentata* subsp. *stewardii*, *Q. dolicholepis*, *Q. longispica*, *Q. rehderiana*, and very probably *Q. stewardiana*. All are hardy in Brittany and in the south of France and some possibly elsewhere in Zone 7. For mild climates with good moisture regimes "Chinese *Cyclobalanopsis*, such as *Q. brevicalyx*, *Q. kouangsiensis*, *Q. arbutifolia*, *Q. macrocalyx* could be attempted, choosing always those of good provenance. As for the *Lithocarpus* described by Aimee Camus, I have no idea which ones might be hardy. It is a genus which could render some pleasant surprises."

We could recall also three other woody species described by Aimee Camus: the prestigious *Cupressus dupreziana* and the less well known *Corylus yunnanensis*, whose type was discovered by Delavay in the Heishanmen mountains at 3,000 meters altitude, and *Carpinus rupestris*, a charming small Chinese shrub from two to four meters high growing in rocky soils between 1,100 and 1,700 meters in altitude.

From his expeditions to Madagascar, professor Humbert (footnote: It is with Henri Humbert that Gilbert Cours Darne, our late lamented friend from the APBF ???, created a map of the vegetation of Madagascar in 1965.) sent specimens for

identification to his Parisian colleague Aimee; the large island is rich: the number of plants which are strictly endemic is above 90%. Thanks to him, Aimee Camus described and named numerous grasses, odoriferous herbs, herbs from prairies, water plants or plants from steppes, and bamboos.

She was interested in grasses her whole life. She described 600 new genera or species of them, whether from Madagascar, from the Congo or Sierra Leone, from New Caledonia or the Solomon Islands, from Asia Minor or East Asia, North America, or France. She educated herself on their role in food production, a high priority at the time, including also the floating rices of the Sudan, the grasses in Indochina used in brewing and the cultivated ferns of India, or again a variety of Japanese millet.

In 1965, after the death of Aimee Camus, Blanche Camus donated to



*Q. dolicholepis* Camus in Southern China  
© Guy Sternberg

the Museum “the E. G. and A. Camus herbarium,” 400 packages and 50,000 specimens. “I remember very well its difficult removal down a narrow stair on the Rue de l’Abbe Groult in Paris,” confides professor Gerard Ayumonin. This collection, Leandri affirmed in 1966, included several single types and some duplicate series from renowned botanists, particularly Leveille. This missionary priest is probably the author of *Quercus guyuavaefolia*, which Aimee drew based on specimen #4,482, collected by Delavay “on the heights of Mo-So-Yn” in Yunnan.

### **Names for the new taxa**

The collectors in Indochina are the first for whom Hickel and Aimee Camus, or Aimee Camus alone, named the *Fagaceae* (*Castanopsis*, *Lithocarpus*, *Quercus*): Thorel, Pierre, the creator of the botanic garden at Saigon, or, among those of her own generation, Bois, Chevalier, Dussaud, Finet, Fleury, Gagnepain, Lecomte, Petelot, Poilane. *Quercus chevalieri* and *Q. fleuryi* bear the names of their discoverers: professor and academician Auguste Chevalier and one of his students, Francois Fleury.

Among the new genera of grasses of Madagascar can be noted those which Aimee Camus named for her colleagues Lecomte, Humbert, Hickel, Perrier de la Bathie, Viguier, Saint-Yves, cf. the genera *Lecomtella*, *Humbertochloa*, *Hickelia*, *Perrierbambus*, *Viguiarella*, *Yvesia*. As for the genus *Hitchcockella*, it honors Albert Spear Hitchcock, the celebrated American agrostologist.

Foreign botanists whom she honored are also for the most part contemporaries of hers, for example, Dr. William Trelease who directed the Missouri Botanical Garden from 1889 to 1912. *Quercus treleaseana* A. Camus is Mexican and considered to be synonymous with *Q. laurina*. This American scholar is the only one who named an oak for her: *Q. camusae* Trel., a *Cyclobalanopsis* from southeast Yunnan and Vietnam. Another American, Dr. Albert Newton Steward, the Austrian Dr. Heinrich Handel-Mazzetti, and the Briton James Sykes Gamble, Conservator of Forests in British India, are among those chosen for naming new *Fagaceae*, determined and named by Miss Camus.

“I am happy,” she wrote “to express my gratitude to the botanists who sent me sample material, their publications, or their photographs.” Many of these pictures were taken by Wilson and sent from the Arnold Arboretum.

### **Ecology and culture of some oaks and chestnuts**

Each oak or chestnut described by Aimee Camus is methodically analysed: after the bibliographic and iconographic references and the morphological and anatomical descriptions, she groups all of the data which she could find on the geographic distribution, habitat, culture and uses of the taxon, sometimes its longevity and other remarkable facts.

With the goal of making known for each species its best chances of acclimatization, she indicates the successful introductions to France, either in particular regions or arboreta such as Les Barres, La Fosse, La Maulevrie, Prafrance, Pezanin, Berrieres-le Buisson or the collections of Lavallee at Segrez or of the Villa Thuret at Antibes.

Here are some examples: *Quercus pontica*, “a very beautiful small oak, with very decorative leaves, deserving of more frequent cultivation. Assumes beautiful color in the fall. Planted at the Domaine de la Fosse (Loir-et-Cher). There is one



at Barres which fruits well and easily hybridizes," *Q. gilva*, "a species with rapid growth which could be cultivated in southern Europe. It is thriving at Prafrance (Gard)." As for *Q. acutissima*, it is surviving well at Verrieres-le-Buisson and in the Bois de Boulogne where it is a shrub. It is doing well at the Maulevrier arboretum, at the Domaine de la Fosse, and at the arboretum of Pezanin.

Cultural requirements occupy only a limited place in the literature of Aimee Camus because they are unknown for a majority of the species. For this reason, we read those which are given with even more interest. Here are some: *Quercus ilicifolia* is very undemanding, "it grows in very mediocre, dry, sandy or rocky soils but it avoids lime. It takes spring frosts and hot sun in stride;" *Q. alnifolia*, which has very beautiful foliage with golden tomentum, is not sensitive to cold; in Cypress, in the mountainous region where it grows, there is frequent snow for a month" or again *Q. dentata*, which can have an asymmetrical and spreading habit, "grows on almost any site, even thin and dry soils and it would be content on sand dunes." Concerning *Q. frainetto*, Aimee repeats the observations of Elwes and Henry: "On the hot and sunny days of summer, in the valley of the Drina (in Yugoslavia), the leaves at the top of the tree exposed to the sun turn their lower surface towards the east in the morning and to the west in the afternoon."

*Quercus pseudosemecarpifolia*, now a synonym of *Q. rehderiana*, lives in limy, sandy or schist-derived soils at 1,800 to 3,500 meters of altitude, in hot temperate regions or regions which are rarely temperate. The type specimen was collected by Delavay above Dapingzi, like the specimens of *Casstanopsis delavayi*, which is one of the most beautiful trees of Yunnan and which yields sweet acorns according to Delavay. "It would do well in France. It has been tried in the United States where it has not been affected by cancre (?)"

*Chrysolepis chrysophylla*: "very decorative, the color of the foliage is beautiful. Rarely cultivated in France, rather hardy, requires a rather mild climate, a healthy, semishaded spot on a heath. It would do well in the South or West. To prosper, it would require a climate more or less identical to that required by camellias.

*Lithocarpus densiflorus* likes rich and moist soils in the vicinity of the coast. "Rarely cultivated in France, it is one of the beautiful species of the genus, with thick foliage of a luxuriant aspect. It is difficult to transplant. It can be sown in a pot but it should be planted out as soon as possible."

In 1961, four years before her death, Aimee Camus was still writing on a malagasy species of bamboo which she named in 1934, together with Stapf, for Professor Humbert: *Humbertochloa*. Today (2004), in *Adansonia* 26(2) are published some new species from Madagascar. The author of a new *Sterculia*, Laurence J. Dorr from the National Museum of Natural History of Washington, writes: "It is believed that there approximately 4,220 species of trees in Madagascar and that 96% of these are endemic. The malagasy flora is very rich, and despite almost four centuries of botanical exploration, collectors continue to find new woody species even in areas which have been relatively well explored."