

Usages, pratiques et fonctions des herbiers historiques

5.-9.11.2023

Uses, practices and functions of historical herbaria

Résumés des interventions Abstract book

Gentiana ciliata

Colloque de clôture du projet « Héritages botaniques des Lumières: exploration de sources et d'herbiers historiques à l'intersection des lettres et des sciences »
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Closing conference of the project
“Botanical legacies from the enlightenment: Unexplored collections and texts at the crossroads between the humanities and the sciences”
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Bibliothèque publique et universitaire de Neuchâtel, Herbier Jean-Jacques Rousseau / Photographie : Guillaume Kaufmann

Lundi / Monday 6.11.2023

**Portrait du botaniste
d'après son herbier:
Jean-Jacques Rousseau**

**Portrait of the botanist
from his herbarium:
Jean-Jacques Rousseau**

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THE HERBARIUM AS SCIENTIFIC OBJECT

In this contribution, I propose to consider Rousseau's herbaria within the context of recent investigations of lives of scientific objects.

Lorraine Daston has posited the 'scientific object' (hereafter 'SO') as an entity that is both *natural* (i.e. discovered *in* the natural world) and *historical* (invented or made). Many things have emerged as scientific objects, only later to fade from the scientific gaze: e.g. monstrous births, bezoars and phlogiston. In contrast with many or even most SOs, however, the herbarium has proven to be a remarkably robust scientific object, surviving the demise of the traditional scientific illustration-woodcut, engraving or colored image and has emerged unscathed from long-standing debates about the value of pictures in botany.

Following Linnaeus, who largely rejected pictures in botany ('pictures are for boys') I hypothesize that herbaria have endured as SO's because specimens are considered less as *images* of nature than as *nature itself*. For Linnaeus, the herbarium was better than any picture, a position that I argue cohered with Linnaeus's and Rousseau's common reliance on the Lockean epistemological distinction between primary and secondary qualities: privileged are the 'primary' qualities number, shape, position and proportion over 'secondary' qualities such as scent, color, use and locale.

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« AVEC LES GRAMENS D'UNE COUR OU D'UN PRÉ J'AURAIS DE QUOI M'OCCUPER TOUT LE RESTE DE MA VIE »: ROUSSEAU ET LES DÉFIS DE L'AGROSTOGRAPHIE 1762-1778

Cette étude propose d'examiner la part consacrée aux graminées dans les travaux de Rousseau, notamment ses herbiers et sa correspondance. Famille réputée difficile, les graminées ne manquent d'intriguer Rousseau, séduit par leurs modestes fleurs et peut-être par l'ascendance plébéienne que Linné leur a prêtée. Plus que toutes autres, ces plantes que l'on foule aux pieds correspondent à l'«herbaille» et au «foin», termes dépréciatifs avec lesquels le philosophe désigne sa passion pour la botanique.

Même si les yeux lui manquent, Rousseau s'évertue à étudier les graminées et consulte les ouvrages de Stillingfleet, de Scheuchzer. Aurait-il eu recours à l'aide de Mme Dugage de Pommereul? Au Jardin du roi, c'est elle qui assiste Thouin et à qui l'on confie le soin de travailler sur les graminées à partir de 1776. Sans que l'on sache s'ils se sont rencontrés, la « patronne des gramens » (dixit Gouan) et le philosophe ont brièvement fréquenté les mêmes personnes (Dombey, Thouin, B. et A.L. de Jussieu). Mme Dugage a aidé à déterminer les graminées qui figurent dans la liste des graines que Rousseau avait données au Jardin du roi.

Une comparaison de leurs herbiers respectifs permettra éventuellement de saisir plus précisément les enjeux et les obstacles au travail de reconnaissance et de détermination des graminées chez deux naturalistes volontaires.

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JEAN-JACQUES ROUSSEAU, BRYOLOGUE

Longtemps la contribution scientifique de Rousseau à la botanique a été méconnue. Il a été parfois qualifié de dilettante. Sa relative disqualification pourrait être due au fait qu'il s'investit beaucoup dans un groupe alors négligé, celui des Cryptogames au sens de Linné. Jean-Jacques Rousseau avait acquis sur une partie des cryptogames, les Bryophytes, une expertise alors rare en France. Un moussier parmi les plus anciens du monde, conservé au Musée des arts décoratifs, démontre cette expertise. Un autre herbier, celui de Neuchâtel, suggère que Rousseau fut capable en quelques semaines à Ermenonville de réunir plusieurs dizaines d'espèces de Bryophytes. Rousseau a formé des botanistes à la bryologie de terrain et suscité des vocations, notamment pour Claret de la Tourrette, Bridel et Lortet. Pendant quelques temps, au XIX^e siècle, on a gardé la mémoire de cet attachement particulier de Rousseau à la bryologie. Mais celle-ci décrut rapidement, à la mesure du faible intérêt suscité par le groupe.

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L'HERBIER ET LA NATURE DANS L'ACTIVITÉ NATURALISTE D'ANTONIO JOSÉ CAVANILLES, JEAN-JACQUES ROUSSEAU ET LÉON DUFOUR

L'objectif de cette communication est de découvrir la pluralité des valeurs associées à l'herbier dans le long XVIII^e siècle. Pour ce faire, je m'appuierai sur les déclarations faites à propos de l'herbier par trois hommes: l'Espagnol Antonio José Cavanilles, le Suisse Jean Jacques Rousseau, et le Français Léon Dufour. Cavanilles souligne la valeur scientifique de l'herbier. D'après lui, la plante abritée dans l'herbier conserve son statut d'élément original; elle sert donc de certificat d'authenticité de l'espèce qu'elle représente et, accessoirement, favorise le travail d'inventaire d'une flore qui se conçoit désormais à l'échelle universelle (et non plus seulement locale). Pour sa part, Rousseau met l'accent sur la valeur sentimentale. Sa collection de plantes séchées stimule l'exercice de la mémoire; les pièces recueillies évoquent et redessinent un temps passé et offrent une provision et une garantie de bonheur au milieu d'une existence malheureuse. Enfin, Dufour accorde à ses herbiers le statut de documents historiographiques. Bien que ses collections sur le sol espagnol aient un but scientifique – rendre compte des particularités botaniques d'une nation peu explorée –, au fil des ans, les plantes deviennent les dépositaires de souvenirs collectifs: ceux qui permettent à Dufour de revisiter la guerre entre les Français et les Espagnols dans les premières années du XIX^e siècle.

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INAUGURATION ET PRÉSENTATION DU SITE « LES HERBIERS DE JEAN-JACQUES ROUSSEAU »

Parmi les herbiers qui ont appartenu à Jean-Jacques Rousseau, treize collections de différentes tailles subsistent aujourd'hui. Elles sont conservées dans des institutions botaniques, muséales ou archivistiques en France et en Suisse. Certaines collections sont entièrement composées par le philosophe, mais la plupart contiennent des spécimens que

Rousseau a obtenu auprès d'autres botanistes, notamment Jean-Baptiste-Christophe Fusée-Aublet. Elles forment une grande mosaïque de plantes et d'annotations difficile à étudier, non seulement à cause de ses lacunes et de son hétérogénéité, mais encore en vertu de l'histoire tourmentée des collections. Le dernier herbier de Rousseau, en particulier, a été plusieurs fois divisé et remanié par les membres de la famille Girardin qui en héritent à la mort du philosophe.

Comptant parmi les principaux résultats annoncés du projet de recherche neuchâtelois, le site « Les herbiers de Jean-Jacques Rousseau » rassemble en ligne tous les échantillons connus. Son élaboration a nécessité la numérisation et le reconditionnement de l'herbier de la Bibliothèque publique et universitaire de Neuchâtel, un des plus volumineux. Une équipe de chercheurs s'est chargée d'étudier les plantes, les annotations et les divers supports qui composent ces herbiers pour produire des données botaniques, historiques et codicologiques. Deux informaticiens ont conçu une base de données relationnelle et un site public qui permettent de consulter ces documents et de procéder à des recherches transversales. Cet outil innovant sera inauguré à l'occasion du colloque. Nous présenterons ses principales fonctionnalités.

Rossella Baldi (Université de Neuchâtel), avec la participation de Pierre-Emmanuel DuPasquier, Timothée Léchot (Université de Neuchâtel), Martine Noirjean de Ceuninck et Anne-Lise Veya (Bibliothèque publique et universitaire de Neuchâtel)

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LE CATALOGUE INÉDIT DE PLANTES PRÉPARÉ PAR ABRAHAM GAGNEBIN À L'INTENTION DE JEAN-JACQUES ROUSSEAU TABLE RONDE

À la demande de Pierre Alexandre DuPeyrou, en 1765 le médecin et botaniste de La Ferrière Abraham Gagnebin prépare une collection de 500 plantes « alpines » pour Jean-Jacques Rousseau. L'existence de l'ensemble est attestée par la correspondance du médecin, ainsi que par celle de l'écrivain, qui ne recevra apparemment pas les spécimens.

L'assortiment était accompagné par un catalogue rédigé par Gagnebin. La récente découverte d'une partie de ce manuscrit nous permet

aujourd’hui de mieux saisir les enjeux de cet « abrégé » de la flore du Jura ; plus que les intérêts botaniques de Rousseau, la liste nous dévoile en effet les pratiques savantes et classificatoires du naturaliste. La table ronde consacrée au document va les évoquer dans une perspective interdisciplinaire, en interrogeant à la fois le contenu de l’écrit, mais également sa matérialité. ●

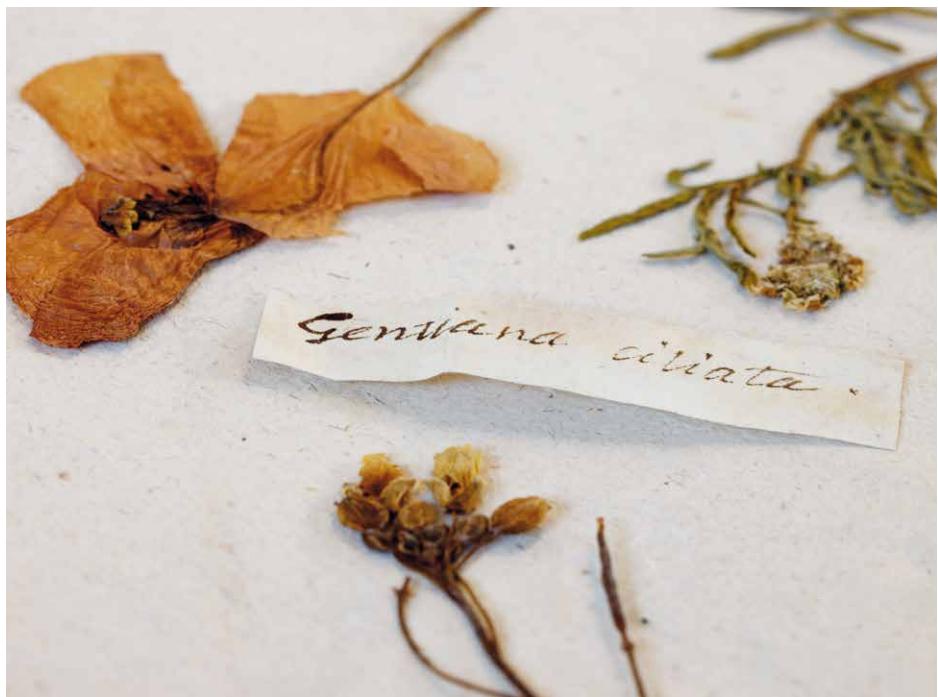


Bibliothèque publique et universitaire de Neuchâtel, Herbier Jean-Jacques Rousseau / Photographie : Guillaume Kaufmann

Mardi / Tuesday 7.11.2023

Pratiques de la collection chez les voyageurs

Collection practices among travellers



Bibliothèque publique et universitaire de Neuchâtel, Herbier Jean-Jacques Rousseau / Photographie : Guillaume Kaufmann

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THE GREAT SYNTHESIS. WILLDENOW'S SPECIES PLANTARUM AND HIS HERBARIUM

The herbarium of Carl Ludwig Willdenow (1765-1812) is one of the most important historical herbaria kept in Germany. Comprising some 20,000 specimens of plants it served as material basis for the fourth and final edition of Linnaeus's *Species Plantarum*. Global in scope and arranged in accordance with the Linnaean system, the Willdenow herbarium includes specimens gathered by many collectors, among them famous figures like George Forster, Alexander von Humboldt, Jacques Houtou de Labillardière and Simon Pallas.

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COLLECTING, CLASSIFYING AND CONSTRUCTING NATURE: INDIGENOUS KNOWLEDGE AND THE NAMING OF SPECIES IN THE PACIFIC, 1768-1782

The late 1760s saw a rapid acceleration in the discovery of species deemed new to European natural history. This inspired the development of unified approaches to naming, recording and classifying nature. Among the main sources of new species was the James Cook's first global circumnavigation between 1768 and 1771, on which Joseph Banks, Daniel Solander and their team of seven assistants recorded, classified and collected information on thousands of species they encountered according to the Linnaean system.

This talk examines the complex array of paper technologies used by Banks's team to order, record and transfer information across a variety of different formats. These were compiled from field notebooks, Solander's 'manuscript slip catalogue' that took a similar format to index cards, images and annotated printed books. In addition to their own observations, this talk adds a new level of complexity to the linguistic imperialism thesis through examining the contributions made by indigenous inhabitants of the Pacific, knowledge that remained central for formulating and ascribing Linnaean names and descriptions to new species. Many of these were translated from indigenous terminology, information transcribed by Herman Spöring into Banks's and Solander's interleaved copies of Linnaeus' *Systema Naturae* and *Species*

Plantarum. Banks's and Solander's Linnaean names held their origins in indigenous uses of plants and animals, etymological roots that persisted through the consistent reediting of these descriptions by European naturalists.

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RECOVERING ALEXANDER ANDERSON'S HERBARIUM AND CATALOGUE: COLONIAL AND SUBALTERN CONTRIBUTIONS TO EIGHTEENTH-CENTURY BOTANY

Over the course of his career, the eighteenth-century Scottish botanist Alexander Anderson sent back thousands of dried plant specimens from the Caribbean to Europe. Yet there is no herbarium associated with Anderson today since he was a colonial collector whose contributions were absorbed into the herbaria of others in the metropole. While a full recovery or reconstruction of "Anderson's herbarium" would be impossible, this paper will discuss where some of Anderson's dried plant specimens ended up. In particular, I will focus on specimens that Anderson collected on a 1791 expedition to the Guianas, where he found many of the same plants that Jean-Baptiste Fusée-Aublet encountered earlier in the century, as well as new, nondescript species. I will also compare Anderson's dried plant specimens with a catalogue that Anderson drafted of the plants that he collected for the St. Vincent royal botanic garden, which he superintended from 1785 to 1811. Although never published, the catalogue contains hundreds of detailed plant descriptions and memorializes Anderson's knowledge of Caribbean flora. As such, the catalogue can be viewed as a technology of preservation akin to an herbarium, even if it lacks dried plant specimens. Moreover, because the catalogue frequently describes African and Indigenous individuals providing Anderson with plants and information, it can be read as an archive of subaltern contributions to botany. This archive includes dozens, if not hundreds, of botanical illustrations done by the Afro-Antiguan artist John Tyley, who worked with Anderson for seven years at the St. Vincent royal botanic garden and served as a crucial scientific partner to him. As such, the catalogue not only supplements what we can learn about Anderson from European herbaria but also transforms our understanding of who created botanical knowledge in the eighteenth century.

FROM ONE TO MANY: PLANT SPECIMENS AND BOTANICAL DRAWINGS OF GOVERNMENT BOTANISTS IN THE BRITISH EMPIRE

In the late eighteenth century, government botanic gardens in the British colonies allowed a few naturalists to take paid work in the empire as garden superintendents. These difficult posts required superintendents to frequently justify the gardens' existence to stave off budget cuts. However, superintendents of prominent gardens were able to engage in common practices of naturalists. They traveled locally collecting plants, some of which became specimens in their personal herbariums. The superintendents of the botanic gardens in Calcutta and in St. Vincent also employed botanical artists who made drawings of plants encountered on collecting trips and those growing in the botanic gardens.

Though plant specimens and botanical drawings were common tools for naturalists, the circumstances under which they were produced in the colonial gardens gave them additional meaning. So much more rested on their ability to circulate through scientific and governmental circles, with different purposes in each space. But at the end of their careers, government naturalists faced the inability of their collections to travel; prohibitive shipment costs meant that their life's work might remain rooted in place in the empire. This paper examines the role of botanical specimens and drawings in the careers of British colonial naturalists, with particular attention to the meaning of a single specimen versus their collections as a whole, to illustrate the instability of the superintendents' place in the wider botanical community.

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HERBORISATIONS ET FABRICATION D'UN HERBIER DANS LA CHINE DE L'EMPEREUR QIANLONG: LE PÈRE D'INCARVILLE (SJ) ET SES ENVOIS À BERNARD DE JUSSIEU (1740-1757)

Parti pour la Chine en 1740, le Père d’Incarville (1706-1757) était missionnaire, jésuite, et correspondant de Bernard de Jussieu, alors démonstrateur au Jardin du Roi à Paris. À partir des lettres et herbiers envoyés par d’Incarville à Jussieu, nous nous intéresserons aux différentes étapes et pratiques du travail de botaniste mené en Chine par d’Incarville au milieu du XVIII^e siècle. Nous nous intéresserons tout particulièrement au travail de collecte et de mise en circulation des plantes en insistant sur les difficultés rencontrées sur le terrain. Nous évoquerons par exemple l'impossibilité de circuler librement en Chine, les enjeux de la conservation ou encore les aléas météorologiques et du transport des objets de Pékin à Paris. Il s’agira également de situer les herbiers parmi les autres travaux naturalistes du Père d’Incarville.

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GEORGES F. REUTER (1805-1872): HIS LIFE AND MAJOR CONTRIBUTION TO SWISS AND WORLD BOTANICAL STUDIES

On the occasion of the 150th anniversary of the death of Georges F. Reuter we present novel data on his life and career based on thorough research in the archives and the herbarium of the Conservatory and Botanical Gardens of the City of Geneva (CJBG), and the Library of Geneva (BGE). Indeed, the recent donation of the archives of the descendants of G.F. Reuter to the BGE made it possible to discover unpublished documents and to provide hints to some questions that have remained unanswered until today. It turns out that G.F. Reuter, through his floristic and systematic works and his functions, played a key role in the scientific life of Geneva. Indeed, between 1842 and 1884 he contributed to the publication of 515 new taxa (mostly Iberian Peninsula and Middle East), alone or as co-author with his great friend and celebrated botanist Edmond Boissier. His life, which remained in the shadow of the famous great botanists of his time, was almost entirely dedicated to his passion for botany and his botanist friends. In this contribution we provide new evidence to consider Georges Reuter as one of the greatest botanists of the 19th century.

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FUSÉE-AUBLET, UN NATURALISTE VOYAGEUR DES LUMIÈRES À L'OMBRE DES GRANDS?

L'ouverture du congrès d'Ascona, début novembre 2023, est l'occasion de célébrer le tricentenaire de la naissance de Jean-Baptiste Christophe Fusée-Aublet (3 novembre 1723 - 6 mai 1778), figure importante mais injustement oubliée des Lumières. Si les botanistes contemporains saluent son *Histoire des plantes de la Guiane françoise* (1775), première flore de la région utilisant la méthode linnéenne, les historiens s'attardent plus volontiers sur l'épisode curieux des muscadiers qui l'opposa à Pierre Poivre (1719-1786). Beaucoup oublient cependant, qu'il est l'auteur de l'*«Herbier Rousseau»*, l'une des collections historiques les plus prestigieuses du Muséum national d'histoire naturelle de Paris. Afin de pallier le vide critique concernant les trajectoires scientifiques multiples et la biographie très lacunaire de Fusée-Aublet, nous avons entrepris la réalisation d'un premier ouvrage* entièrement consacré à ce voyageur naturaliste qui côtoie les plus grands acteurs de l'élite savante de son temps. Nous évoquons notamment la formation de celui qui fut à la fois apothicaire, botaniste, chimiste et minéralogiste, son cercle d'influence, ses liens institutionnels, ou l'histoire de ses collections botaniques. Autant de thèmes qui seront abordés dans cette intervention et qui tendent à montrer que l'interdisciplinarité de Fusée-Aublet dans des disciplines en pleine transition l'a constamment maintenu à l'ombre des grandes figures que furent Adanson, Guettard, d'Holbach, les Jussieu, les Rouelle, Venel, ou encore Rousseau.

* Guilhem Mansion et Thibaud Martinetti (sous la direction de), *Jean-Baptiste Christophe Fusée-Aublet (1723-1778) – Trajectoires d'un naturaliste voyageur au siècle des Lumières*, Brepols Publishers.

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PROJET AUBLETIA : ÉDITION ET CARTOGRAPHIE NUMÉRIQUES DES VOYAGES BOTANIQUES DE FUSÉE-AUBLET EN GUYANE FRANÇAISE (1762-1764)

Entre 1762 et 1764, le botaniste et apothicaire Jean-Baptiste Christophe Fusée-Aublet (1723-1778) sillonne la Guyane française afin de rédiger des mémoires sur les ressources naturelles d'un vaste territoire peu exploré. Cette mission s'inscrit au sein d'une expédition dirigée par Étienne-François de Choiseul, Ministre de la Marine de Louis XV, visant à planter une nouvelle colonie à Kourou (1763). Dans le cadre de ce voyage, Fusée-Aublet récolte de nombreuses plantes locales qui seront déterminées et publiées en 1775 dans son *Histoire des plantes de la Guiane françoise*. Réalisé en collaboration avec Christian Morel, le site internet « Aubletia » restitue cet épisode scientifique de la vie de Fusée-Aublet sous la forme d'une édition numérique de sa flore guyanaise et de ses récits de voyage, accompagné d'une visualisation cartographique des différentes étapes de ses itinéraires botaniques en Guyane. Lors de cette communication, nous présenterons la base de données relationnelles mise en place durant ce projet ainsi que l'interface des fonctionnalités de visualisation offertes par le site internet. Nous proposerons ensuite une réflexion sur le potentiel scientifique des outils d'édition et de cartographie numériques ici exploités sous une forme inédite. ●



Bibliothèque publique et universitaire de Neuchâtel, Herbarium Jean-Jacques Rousseau et annotation de Jean-Baptiste Christophe Fusée-Aublet / Photographie : Guillaume Kaufmann

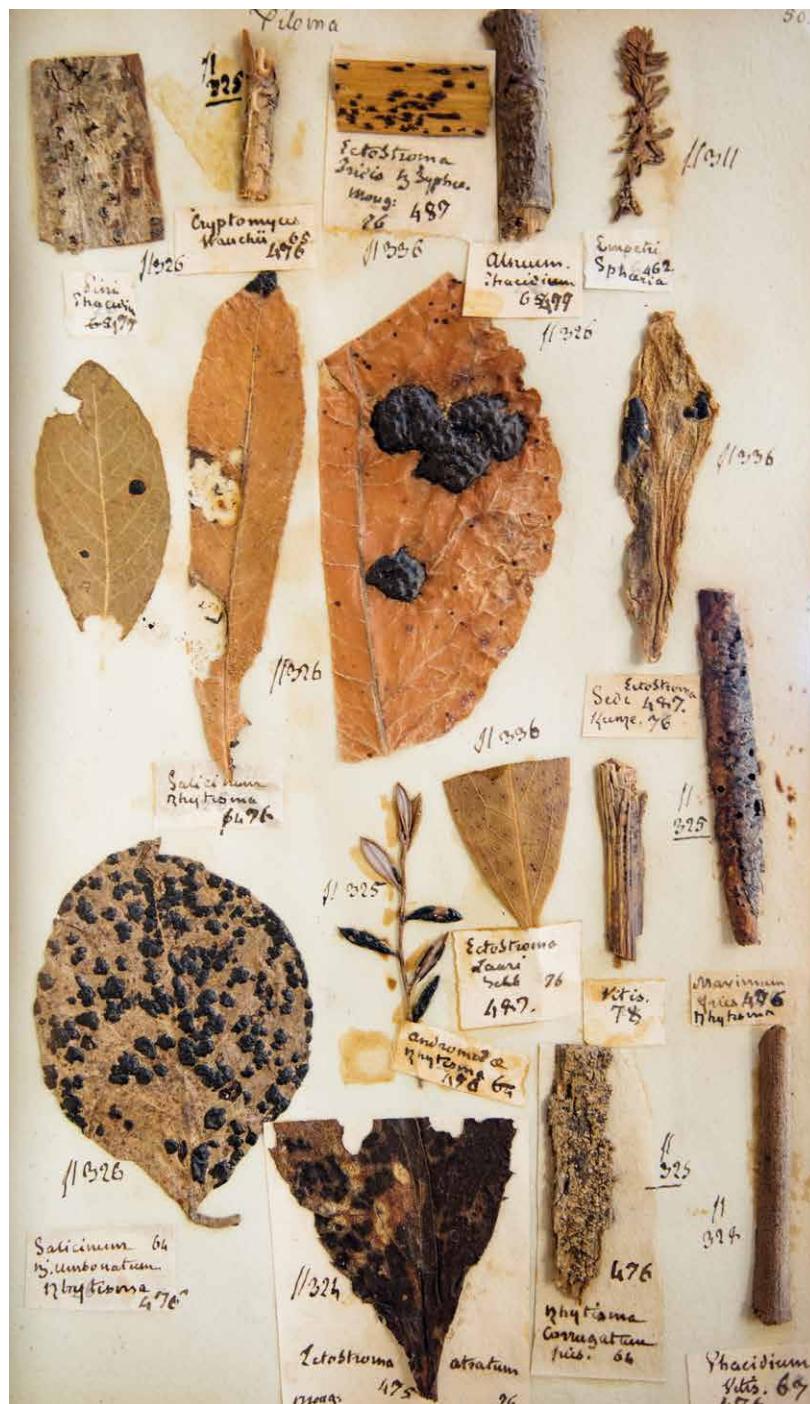


Herbier de l'Université de Neuchâtel / Photographie : Guillaume Kaufmann

Mercredi / Wednesday 8.11.2023

L'héritage botanique de Jean-Frédéric Chaillet

The botanical legacy of Jean-Frédéric Chaillet



THE BOTANICAL LEGACY OF THE INCOMPLETE, THE DISREGARDED AND THE DISCRIMINATED AGAINST

Chaillet collected much and communicated much – but published little. The prime example of such behaviour in that period, must surely have been Sir Joseph Banks (1743-1820), who was a rich and generous international networker and facilitator of much scientific progress, but perhaps too busy to get to the nitty-gritty of taxonomic work, despite having devoted much time and effort to exploration and plant-collecting. The story of the failure of Banks and his associates to publish his materials from the Pacific, especially New Zealand and Australia – and the consequences of this failure – are explored.

Other less eminent workers, whose efforts were not to be recognised in their time were perhaps often victims of snobbery and other prejudices. Despite being very well-connected in French academic circles, Sarah Bowdich (1791-1856) had to publish her own work, being the first woman not only to collect plant specimens in tropical Africa but also the first one to describe new genera of plants – from anywhere. Despite this, her work was not recognised and evaluated for almost 200 years. She seems to have been the victim of prejudice as were many others having their work ignored, notably Goethe's protégé, Friedrich Dietrich (1768-1850) by comparison with the establishment Kurt Sprengel (1766-1833) in Germany, and Richard Salisbury (1761-1829) shunned by 'the establishment' in England.

This paper is not merely an exercise in exposing these failings because, in botany, with the prestige given to the naming of new plants and fungi in the nineteenth century, the ignoring of such work has become embedded in modern research work, as databases all derive from indexes and registers immersed in such prejudice – xenophobia, imperialism, racism, misogyny, class distinction and the deliberate outlawing of work by those considered to be outside 'the establishment'. Snobbery was such that, for example, *Index kewensis*, the fount of all modern plant data-bases, did not include even the nomenclatural novelties of Kew staff 'moonlighting' on other, largely horticultural, projects.

**DE LA MONTAGNE JURASSIENNE À UNE RECONNAISSANCE
EUROPÉENNE: ESSAI SUR LA CONTRIBUTION DU MéDECIN-
CHIRURGIEN-BOTANISTE-PALéONTOLOGUE ABRAHAM
GAGNEBIN (1707-1800) AUX TRAVAUX D'ALBERT DE HALLER,
CARLO ALLIONI, ETC.**

Fils et petit-fils de médecins, Abraham Gagnebin naît à Renan (ci-devant Evêché de Bâle), aîné de huit enfants. Dès l'âge de 14 ans, c'est à Bâle qu'il poursuit ses études débutées avec des précepteurs. Il a notamment Theodor Zwinger (auteur du *Theatrum botanicum*) et son fils Johann Rudolf pour professeurs, Friedrich un autre fils est son contemporain et condisciple. Médecin-chirurgien militaire au service de France (1728-1735), il herborise dans la partie orientale du pays, de Strasbourg aux Pyrénées. Fixé à La Ferrière dès 1735, il rencontre Albert de Haller en 1739, et débute avec lui une longue collaboration (marquée par une activité féconde de collecteur) et de nombreux échanges épistolaire (plus de 100 lettres). Une importante relation naît en 1752 avec son confrère Carlo Allioni à Turin et débouche sur de nombreux échanges. Gagnebin n'a que très peu publié sous son nom, se contentant souvent de transmettre ses cueillettes ou ses observations à ceux auxquels elles étaient le plus utiles. Ses échanges de correspondance avec Johannes Gessner, Réaumur, Bernard de Jussieu, Tournefort, Daubenton, etc. ne sont malheureusement que peu documentés. Gagnebin fut avec son frère Daniel (1709-1781), médecin-chirurgien-physicien, à l'origine d'un riche cabinet de curiosités ayant attiré de nombreux visiteurs célèbres.

Son and grandson of physicians, Abraham Gagnebin was born in Renan (former Bishopric of Basel), the eldest of eight surviving. From the age of 14, he continued his studies in Basel, which he began with tutors. He notably had Theodor Zwinger (author of *Theatrum botanicum*) and his son Johann Rudolf as teachers, Friedrich, another son, his contemporary, is a classmate. As military physician and surgeon in the service of France, he botanized in the eastern part of the country, from Strasbourg to the Pyrénées. Settled in La Ferrière from 1735, he met Albert de Haller in 1739, and began a long collaboration with him (marked by a fruitful activity as a collector) and numerous epistolary exchanges (more than 100 letters). An important relationship with his colleague Carlo Allioni in Turin, was born in 1752 and led to numerous exchanges. Gagnebin published very little under his name, often contenting himself with transmitting his pickings or his observations to those to whom they were most useful. His exchanges of correspondence with

Johannes Gessner, Réaumur, Bernard de Jussieu, Tournefort, Daubenton, etc. are unfortunately poorly documented. Gagnebin was with his brother Daniel (1709–1781), physician-surgeon-physicist, at the origin of a wealthy cabinet of curiosities which attracted many famous visitors.

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**THE BOTANICAL SPECIMENS OF ABRAHAM GAGNEBIN AT
THE HERBARIA BASEL: COLLECTION CONTEXTS AS BOTANICAL
INTERACTION NETWORKS**

Abraham Gagnebin was a pivotal plant collector in the 18th century. He became acquainted with botany at the University of Basel, rather early in his long life. Recently, we discovered several hundred Gagnebin herbarium specimens at the Herbaria Basel that were not known to exist. These specimens are part of the herbaria of Wernhard Lachenal, a close correspondent of Albrecht von Haller, and especially Johann Ludwig Buxtorf, friend of Lachenal and Archiater of Basel. Ongoing digitalization efforts now allow us to interpret these specimens: how did they end up in these collections and what does their physical state tell us about the nature of the interaction between these people, and the Basel botanical scene more generally? These questions are addressed by discussing a range of exemplary specimens from these collections.

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SEEING CRYPTOGAMS IN EARLY MODERN BOTANY

Significant inquiry into mosses, fungi, and lichens is thought to have begun considerably later than the early modern investigation of seed-bearing plants. While cryptogamic reproductive structures and functions were not worked out until long after those of phanerogams, there was significant interest in the former in the 16th and 17th centuries. I will argue that the most substantial evidence for this is visual, in the form of drawings and specimens. While naturalists were puzzled by the lack of seeds in these organisms, they nonetheless made careful investigations, including dissections and examinations with hand lenses and early compound microscopes. The hundreds of drawings, particularly of fungi, done by and for Federico Cesi testify to his work in this area,

though he died before he had an opportunity to write his planned book on them. However, Carolus Clusius did publish an illustrated text on the fungi of eastern Europe in 1601. There are also detailed 16th-century drawings of fungi, mosses, and lichen in the *Libri Picturati* volumes and in Conrad Gessner's notebooks. In addition, there are specimens of these organisms in early modern herbaria, indicating that they were considered worth keeping even though they presented more preservation problems than most phanerogams.

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THE FOUNDING OF MODERN BRYOLOGY AND THE LEGACY OF JOHANNES HEDWIG

Johannes Hedwig (1730-1799), one of the founding fathers of modern bryology, was a pioneer of his time who began the process of scientific recognition of moss diversity. Above and beyond his taxonomic contributions he revolutionized bryological thinking in his era, detailing different morphological and anatomical structures, as observed under the microscope. A practicing medical doctor in Chemnitz, Hedwig studied and collected plants in his free time. After receiving a microscope from J.D. Schreber around 1760 he became interested in the features and functioning of structures in smaller and smaller organisms. Realizing that microscopic observations revealed natural variations and traits of scientific importance, around 1770 he learnt to draw and began to illustrate his findings. His original illustrations accompany his works and they are a testament to his observational and illustration skills. He studied the natural history of mosses (*Fundamentum historiae naturalis muscorum frondosorum*) and used features to group and classify mosses, in the process, introducing a substantial number of concepts or terms into the bryological lexicon that we still use today. He went on to produce a four volume series containing detailed descriptions and illustrations of the mosses known to him (*Descriptio et adumbration microscopico-analytica muscorum frondosorum*) before embarking on what would become his posthumous magnum opus *Species muscorum frondosorum* that was published in 1801. Hedwig's body of work has had a long lasting influence on this particular branch of science, not only as his 1801 work is the designated starting point of the nomenclature of mosses (expecting the Sphagnaceae), but also due to the perspicacity of his observations. His research stimulated advancements in the field of bryology and influenced both his contemporaries and subsequent

generations of botanists and bryologists. The history of early bryology and early bryologists will be presented, focusing on the main discoveries, scientists and scientific works.

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JEAN-FRÉDÉRIC CHAILLET (1747-1839) AND THE FLORA OF NEUCHÂTEL

Jean-Frédéric Chaillet (1747-1839) discovered more than 150 new species of fungi and plants from the Neuchâtel region of the Swiss Jura that were published by others, notably Alphonse Pyramus de Candolle in Geneva, Christian Hendrik Persoon in Paris, and Elias Magnus Fries in Uppsala. His practice of sending out exact and numbered duplicates of his specimens to specialists meant that it was easy for him to connect the new identifications to the specimens remaining in his herbarium. We have visited and databased the Type material of all these collections, designating holotypes, isotypes, neotypes or lectotypes. Chaillet's own herbarium of flowering plants, bryophytes, algae, lichens, and fungi is extensive and fully integrated into the herbarium of the Institute of Biology, University of Neuchâtel, Switzerland. It has been completely databased and cross-referenced with his collection catalogues. Therefore, we compare the practices of Chaillet to that of contemporary 'professional' botanists and mycologists, as well as other 'amateurs' that highlights his importance as a significant compiler of knowledge of European organismal biology.

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LES DÉBUTS DE LA LICHÉNOLOGIE EN SUISSE – CHAILLET OU LE CHAÎNON MANQUANT

Les débuts de la cryptogamie en Suisse remontent à Albrecht von Haller, qui est le premier à publier une flore de Suisse, en 1742, puis en 1768, comportant aussi bien des plantes à fleurs que des fougères, mousses, lichens, algues et champignons. Dès le début du XIX^e siècle, les botanistes se spécialisent et rédigent désormais des flores consacrées à un seul de ces groupes. La première flore des lichens de Suisse est l'œuvre d'Emmanuel Schaefer, publiée entre 1823 et 1842.

Entre deux, l'absence de publication est trompeuse. En effet, un personnage a joué un rôle essentiel en toute discréction. Grâce à sa correspondance, sa bibliothèque, ses herbiers et ses carnets de notes, il a été possible de retracer l'activité lichenologique de Jean-Frédéric Chaillet (1747-1839). Or, il apparaît qu'il a commencé par réaliser des index synonymiques entre les noms polynomiaux de Haller et les noms binomiaux de Linné, offrant de précieux indices pour leur synonymie actuelle. Il a ensuite constitué un herbier des lichens du pays de Neuchâtel, qui nous permet de reconstituer l'état des connaissances au début du XIX^e siècle. La correspondance reçue de la part de Schaeerer montre enfin que Chaillet a joué le rôle de mentor pour le jeune lichenologue.

The beginnings of cryptogamy in Switzerland go back to Albrecht von Haller, who was the first to publish a flora of Switzerland, in 1742 and then in 1768, including both flowering plants and ferns, mosses, lichens, algae and fungi. From the beginning of the 19th century onwards, botanists specialised and wrote floras devoted to only one of these groups. The first flora of lichens in Switzerland was the work of Emmanuel Schaeerer, published between 1823 and 1842. In between, the lack of publication is misleading. In fact, one person played an essential role in all discretion. Thanks to his correspondence, his library, his herbariums and his notebooks, it has been possible to trace the lichenological activity of Jean-Frédéric Chaillet (1747-1839). It appears that he began by creating synonymous indexes between Haller's polynomial names and Linnaeus' binomial names, providing valuable clues to their current synonymy. He then compiled a complete herbarium of the lichens of the Neuchâtel region, which allows us to reconstruct the state of knowledge at the beginning of the 19th century. Finally, the correspondence received from Schaeerer shows that Chaillet acted as a mentor for the young lichenologist.

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400 YEARS OF COLONIZATION: HUMAN IMPACTS ON BERMUDA'S MYCOBIOTA

Like its native plant flora, Bermuda's native mycoflora comprises both eastern North American and Caribbean biogeographic elements. Revision of historic specimens as well as examination of recent collections is providing an update of Bermuda's mycoflora for the first time in over 75 years, adding dozens of species to the c. 850 previously known from this remote, North Atlantic archipelago. The biggest increase has been

seen for the lichenized fungi, going from 91 to 208 species over the past 15 years. Recent discoveries include nine species new to science (*Angiactis bermudensis*, *Bactrospora flavopruinosa*, *Chrysotrichia bergeri*, *Diploicia christinae*, *Donadinia seaveri*, *Fellhanera scottii*, *Lithothelium bermudensis*, and *Toninia bermudana* ined.). Endemic species account for roughly five to seven percent of Bermuda's mycoflora, which is low compared to other remote archipelagos. New combinations, and other taxonomic changes, are proposed that will impact floristic work in other neotropical regions. While some fungi have been extirpated from Bermuda due to destruction of Bermuda's endemic cedar forest in the 1940s, the early advent of agriculture on the islands – combined with an explosion of invasive plants since the 1960s – has provided new substrates for a wide range of introduced fungi, including lichens. A rough timeline tracking the changes in Bermuda's mycoflora will be presented. Currently, Bermuda's biodiversity is under threat from rapid development (approximately 6.5 hectares of woodland is lost each year), as well as rising seas and stronger hurricanes due to climate change. Renewed efforts to update fungal species entries in the Bermuda Species Database is crucial for conserving them, as this is the primary resource used by Bermuda's Department of Environment and Natural Resources and Department of Parks for policy-making and natural resource management. Other outcomes of this project include a specimen-based, virtual lichen flora (<http://bermudalichens.myspecies.info>) that will generate range maps; dynamic, online identification keys; and an illustrated pamphlet for identification of common Bermudian lichens.

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À LA DÉCOUVERTE DE L'HERBIER CHAILLET

Au tournant du XVIII^e et XIX^e siècle, l'ancien militaire neuchâtelois Jean-Frédéric Chaillet se passionne pour la botanique de sa région natale qu'il herborise pendant près de 50 ans. À l'image de ses prédécesseurs et de ses contemporains, Chaillet inventorie et récolte les plantes qu'il rencontre, et les préserve en herbier. Il confectionne alors un important herbier décrit par Sandoz Rollin en 1818 comme « l'herbier le plus complet des plantes du Pays [Neuchâtel] ». D'abord légué en 1839 au Muséum d'Histoire Naturelle de Neuchâtel, l'herbier Chaillet est aujourd'hui intégré parmi les différentes collections de l'Herbier général et de l'Herbier suisse conservés à l'Université de Neuchâtel (NEU). La découverte des trésors que recèle l'herbier Chaillet commence par un

voyage numérique à la recherche de ces spécimens cachés parmi les milliers d'échantillons digitalisés de l'Herbier suisse des phanérogames (NEU). Cette exploration a mené à la recomposition virtuelle de la partie helvétique de l'herbier Chaillet. La reconstitution de l'herbier permet alors de dévoiler ses secrets, en tant qu'objet historique (témoins du savoir et des usages botaniques passés) et scientifique, en envisageant les multiples applications des herbiers dans la science (évolution de la biodiversité, études génétiques...).

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**HISTORICAL PLANT SPECIES AND HERBARIUM SPECIMENS
AS A CHALLENGE FOR THE DIGITAL HUMANITIES**

Haller's Flora of Switzerland (*Historia stirpium*, 1768) was not the work of a single man. On the one hand, Haller and his contemporaries formed a network of around a hundred botanists and plant collectors with whom he exchanged countless plant records. On the other hand, Haller systematically integrated historical plant works for synonyms as well as for locality information and also consulted older herbarium specimens. In contrast to his contemporary and botanical competitor Carl von Linné, Haller considered the inclusion of his predecessors' research data an essential element in the research and publication process. Conversely, many of Haller's Swiss successors also related their findings to Haller's Flora, for example Jean-Frédéric Chaillet. In this sense, Haller produced "Open Research Data" *avant la lettre*, because he not only published research results, but also research data. Reconstructing this collaborative knowledge culture of botany is one of the challenges of the recent historiography of botany. With tools, methods and workflows of the Digital humanities, traceable relations between text and structural data can be developed. That allows to link today's authority data systematically to the historical information such as changing plant names, herbarium specimens, locality information, plant collectors and plant transfer in networks. Using today's digital methods and following the FAIR-data principles, the aim is to transform yesterday's "Open Research Data" into future one, both for the history of botanical knowledge production and for the reconstruction of biodiversity in the long run.

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SIR JOSEPH BANKS TO ROBERT BROWN: THE TRANSITION TO PROFESSIONALISM IN BOTANY

Sir Joseph Banks (1743-1820) was a privileged British landowner who bought his way on to James Cook's first voyage to the Pacific (1768-71), but declined to join the second when his demands were not met by the British Admiralty. With increasingly broad interests and activities, he paid others to write up the scientific results of the first voyage and to prepare large copper engravings for a mooted Pacific flora that was never published in its entirety.

Despite this, Banks maintained his interest in the Pacific, promoting the colonialisation of Australia, though he seems not to have benefitted personally from this imperialism, whilst in effect setting up a research lab with library and herbarium in his London home - a facility open to many scientists from Europe and North America, though, on occasion, some materials were withheld from such visitors. This discrimination is discussed in the context of contemporary thought and networks, as is his lobbying for a major new expedition to Australia, namely Matthew Flinders's *Investigator voyage* (1801-03) and his appointing as its scientific leader, the Scottish soldier-botanist, Robert Brown (1773-1858).

Brown, unlike his contemporaries at Royal Botanic Gardens Kew, eschewed the pursuit of exploitative inventory of potentially economically valuable plants as part of the colonial project. He stuck to his 'philosophical' botany leading to major breakthroughs not only in systematic botany but also morphology and particularly cytology, such that he was internationally recognised as *Jupiter Botanicus*, travelling widely to European conferences where he personally distributed his work before it appeared in journals and works of exploration. He was able to do this, because, after Banks's death, he was Banks's legatee with regard to the Banksian collections and successfully negotiated with the British Government their passing to the nation under terms (including vacations) extremely favourable to himself and, at the same time, ensuring that his post became, in effect, the first publicly funded botanical one in Great Britain – Keeper of Botany in the British Museum. In retrospect, he was a modernising force, his approach rooted in the Enlightenment, rather than the grubby chauvinism of empire. ●



Herbier de l'Université de Neuchâtel / Photographie: Guillaume Kaufmann



Herbier de l'Université de Neuchâtel / Photographie : Guillaume Kaufmann

