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THE LIBRARY OF ANTOINE LAURENT LAVOISIER
(1743-1794)*

The 5th of June, 1793 a decree from the French *Convention National* ordered the confiscation and the inventory of the properties of the *Fermiers généraux*. Antoine Laurent Lavoisier became a member of the French general *Ferme* in March 1768¹ and he eventually came to occupy a prominent role in the reform of the French tax-collecting system. These activities in the *Ferme* were the cause of his arrest in 1793 and they ultimately led to his execution in May 1794.

Paradoxically it is due to these tragic circumstances that some precious documents on the composition of Lavoisier's library have survived. After Lavoisier's execution the *Comité des arts* charged some librarians to list those of Lavoisier's personal books which could be useful to the *Comité d'Instruction publique*². Between the autumn of 1794 and the summer of 1795, at least 30

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Acknowledgments – I would like to thank Dr. Michelle Goupil, General Secretary of the *Comité Lavoisier* (Paris), who brought to my attention the catalogues of Lavoisier's library kept at Bibliothèque de L'Arsenal and at the Archives Nationales in Paris and provided me with useful documents related to them. I also would like to thank Dr. David Corson, director of the Olin library at Cornell University (Ithaca, USA), for the valuable material and information he gave me on the Duveen collection of Lavoisier's books kept at Cornell.

¹ E. GRIMAUX, *Lavoisier 1743-1794 – D'après sa correspondance, ses manuscrits, ses papiers de famille et d'autres documents inédits*, Paris 1888, p. 32.

² Of these inventories I was able to find 30 manuscripts of different handwriting listing books from Lavoisier's library. At the Bibliothèque de l'Arsenal (hereafter BA) are 20 inventories kept under the signature ms. 6496 (ff. 136-193) and one with the signature ms. 6497 (ff. 283-87).

At the Bibliothèque de l'École Supérieure des Mines de Paris (hereafter BESM) there are 8 inventories kept with the signature ms. 29 and at the Archives Nationales de Paris is one inventory kept with the signature M. 796 (12).

The inventories do not list the titles in alphabetical order but in some cases a classification into subjects has been used.

Many of these inventories list the same books with few additions or lacks. In several cases one title has been listed only once which confirms that many books have been dispersed during the compilation of the catalogues.

catalogues were compiled and they list circa 1000 items concerning, in quantitative order, chemistry, mineralogy, physics, economy, agriculture, arts, politics, *belles-lettres*, natural history, geography, and history. It is highly possible that those books which were not considered useful by the *Comité* were not listed in the inventories and thus immediately dispersed. This hypothesis is confirmed by the Duveen collection of Lavoisier's books which is now kept in the Olin Library of Cornell University³. Among the 586 volumes collected by Duveen, there are 98 titles on history which are almost all absent in the inventories compiled by the *Comité des arts*. Also missing are most of the works on literature and politics and a complete collection of the «Almanach Royal» and it is significant that we find only a part of them in the catalogue of Madame Lavoisier's library, published after her death in 1836⁴. Thus, there is little doubt that these books were dispersed and most likely sold before any attempt to make an inventory of them was made.

We cannot even be sure about the completeness of Lavoisier's scientific library. Many documents I have consulted reveal in fact that in less than one year, half of the titles confiscated by the *Comité des Arts* were dispersed and that only 265 titles (560 volumes) of the original 1000 remained when Madame Lavoisier was allowed to get the library back on the 14th of August 1795⁵

Very little has been written on Lavoisier's library. Some general and vague information can be drawn from Grimaux's work (*op. cit.*) and Henry Guerlac's article *The Lavoisier Papers - A Checkered History*, «Archives Internationales d'histoire des sciences», 29 (1979), pp. 95-100.

³ Denis Duveen, who together with Klickstein wrote the important bibliography of Lavoisier's works (1954-1965), collected several books and manuscripts from Lavoisier's own library. In the catalogue *French Books and Manuscripts 1700-1830 - An Exhibition and Description of Collections in Cornell University Library honoring Arthur H. and Mary Marden Dean*, Ithaca-New York 1981, p. 100, is reported that the Duveen collection of Lavoisier's books lists 586 volumes.

⁴ *Catalogue des livres de feu Madame Lavoisier Comtesse de Rumford*, Paris, 1836 (I have consulted the copy kept at the Bibliothèque Nationale, Paris, Sign. Delta 15627). At the Olin Library in Cornell University (Ithaca) a two-volume manuscript catalogue of Madame Lavoisier's library is kept, entitled *Catalogue des livres de la bibliothèque de Madame la comtesse de Rumford*. This inventory is dating approximately from 1830. I thank Dr. Corson who brought this important document to my attention.

⁵ There are two copies of the inventory of Lavoisier's books returned to his wife the 26 Thermidor an III de la République (14th of August 1795): BA, ms. 6497 and BESM, ms. 29/VIII. If we confront these with the inventories compiled between the end of 1794 and the spring of 1795, we may observe that the majority of the titles progressively disappeared. Douglas McKie in his *Antoine Lavoisier. Scientist, Economist, Social Reformer* (1952), reedited (New York 1990), p. 425 reported that Lavoisier's books «were returned - 560 from the Bureau of Mines on July 13, and 134 from the Committee of Public Instruction, together with 41 from the local repository, on August 29». Unfortunately McKie did not mention the reference on which he relied and I was not able to find any documents concerning the restitution of the two sets of 134 and 41 volumes. Besides, the documents we have show that the date when Lavoisier's books were returned by the *Agence de Mines* to his wife is on August 14, 1795 (26 thermidor An III) and not on July 13 as McKie claimed.

(see fig. 1). It is likely that some of them, although not as many as of the literary collection, have never been catalogued and probably dispersed immediately after the confiscation.

We know for instance that some of Lavoisier's confiscated property was meant for the *École centrale des travaux publiques*, the *Museum d'histoire naturelle* and the *Agence des mines*⁶, but, apart from the inventory compiled by the *Agence des mines* no documents testify any acquisitions of Lavoisier's personal books.

This complicated story is not yet at its epilogue. Even some of the books which Madame Lavoisier got from the *Comité de Arts* eventually disappeared from the catalogue of her library, and there are reasons to believe that the economical distress the revolutionary terror put her in, forced her to sell them⁷.

After the death of Madame Lavoisier in 1836 her books, together with those of her husband, passed to the heirs and it was not until after the second World War that Duveen purchased them and eventually sold them to Cornell University. The Duveen collection of Lavoisier's books consists of approximately one third of the 1200 titles I have been able to trace.

This short survey of the fate of Lavoisier's library makes it quite obvious that we have to take this number as a mere estimation of the real composition of his original library. In this connection it is important to remember that we have a report of another library kept by Lavoisier at his castle in the countryside at *Fréchines*⁸, but no inventory of this seems to have survived.

⁶ «La Commission des travaux publics expose que les Comités de Salut Publique [...] ayant approuvé [...] le projet de distribution qui leur a été proposé, entre l'École Centrale des travaux publics, l'Agence des Mines et le Muséum d'histoire naturelle des utensiles et effets inventoriés dans la maison Lavoisier», from L. TEUTEY (ed.), *Procès-verbaux de la Commission Temporaire des Arts*, vol. 2, Paris 1917, p. 41.

From the *Procès-verbaux*, we get to know also that the *École Centrale* took Lavoisier's collection of minerals. Unfortunately there is no specific mention of Lavoisier's library and we might only indirectly assume that some of Lavoisier's books were acquired by those three Parisian institutions. Douglas McKie is of a different opinion (*op. cit.*, p. 421) since he claims that Lavoisier's books were allocated in different institutions including the three mentioned above.

⁷ In the following letter to the *Agence des Mines* dating 12th of August 1795, Madame Lavoisier asked them to enclose the estimation of the value of the books confiscated to her husband:

«24 Thermidor an 3

Je reçois Monsieur, une lettre de l'agence des mines qui m'annonce que vous devez me faire transporter mes livres chez moi le 26. je désirerais, si cela est possible, que le procès-verbal d'enlèvement et d'estimation me fut remis, j'en aurais besoin pour des affaires personnelles, et de famille» from BESM, ms. 29/TX.

⁸ «Les inventaires sont exactement dressés, à ce point qu'à la bibliothèque de Fréchines il manquera seulement trois volumes», GRIMAUX, *Lavoisier* cit., p. 315. Douglas McKie in his *Antoine Lavoisier, the Father of Modern Chemistry*, London 1935, p. 300 reported Grimaux's passage without further comments. So far this is the only hint of Fréchines' library I was able to find.

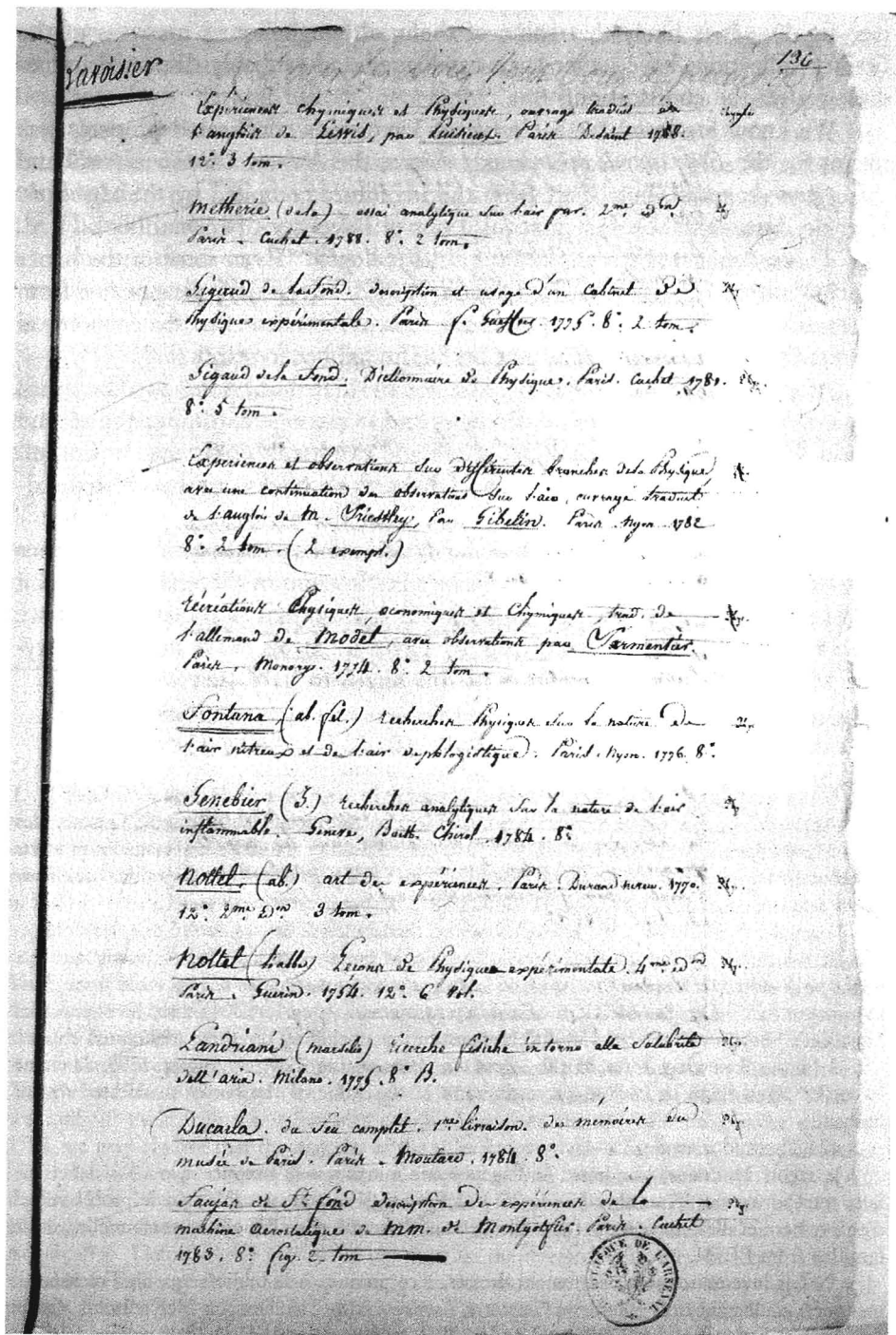


Fig. 1 – Inventory of Lavoisier's library (courtesy of Bibliothèque de l'Arsenal Paris).



Ex-Libris de Lavoisier

Fig. 2 – Ex-Libris of Lavoisier (from E. Grimaux, *Lavoisier*, Paris 1888).

The only contemporary testimony we have on Lavoisier's library as a whole, comes from the authoritative member of the *Comité d'instruction publique* and librarian of the Bibliothèque de l' Arsenal Hubert-Pascal Ameilhon (1730-1811)⁹ who considered the entire collection as a «grande bibliothèque»¹⁰. Ameilhon also listed 20 boxes containing Lavoisier's own manuscripts and eight manuscript volumes belonging to Lavoisier¹¹. If, on the one hand, it is impossible to determine a more precise figure on the quantitative composition of the library as a whole, the documents we can rely on, on the other hand, offer a valuable indication on its qualitative structure.

Lavoisier's library differed quite radically from most of French private libraries of the second half of the eighteenth century; during this period French bibliophiles and readers mostly collected encyclopedic libraries regardless to specialization¹².

During the period 1750-59 the average composition of private libraries in Paris reflected the following distribution:

| | |
|---|-----------------------|
| Titles dealing with history | 34,96% |
| Titles dealing with theology | 22,29% |
| Titles dealing with <i>belles-lettres</i> | 20,74% |
| Titles dealing with law | 12,94% |
| Titles dealing with sciences and arts | 9,07% ¹³ . |

If compared with the libraries of the seventeenth century, the only significant change that occurred in the 1750's was the important decrease of theological works, but the prominent subjects were still history and *belles-lettres* whereas natural sciences did not, but rarely, get beyond 10% of the total¹⁴.

⁹ On the important role played by Ameilhon in the history of French private and public libraries, see the detailed study by H. DUFRESNE, *Erudition et esprit publique au XVIII^e siècle: le bibliothécaire Hubert-Pascal Ameilhon (1730-1811)*, Paris 1962 and the general survey by G. K. BARNETT, *Histoire des bibliothèques publiques en France de la Révolution à 1939*, Paris 1987, pp. 21-8 and 52.

¹⁰ BA, ms. 6496, f. 187^r.

¹¹ BA, ms. 6496 and BESM, ms. 29/I, f. 3^r and ^v.

¹² The secondary literature on private French libraries of the eighteenth century is quite rich and the main currents and characteristics of the diffusion of books are well documented. Particularly rich in information are the studies by D. MORNET, *Les enseignements des bibliothèques privées (1750-1780)*, «Revue d'histoire littéraire de la France», XVII (1910), pp. 449-96; P. RIBERETTE, *Les bibliothèques françaises pendant la Révolution (1790-1795)* Paris 1970; M. MARION, *Les bibliothèques privées à Paris au milieu du XVIII^e siècle*, Paris 1978; C. JOLLY (ed.), *Histoire des bibliothèques françaises*, vol. 2, *Les bibliothèques sous l'Ancien Régime (1530-1789)*, Paris 1988.

¹³ MARION, *op. cit.*, p. 135.

¹⁴ *Ibid.*, p. 137.

Thus, the increasing prestige of French science had not yet consistently affected the reading interest of the learned world¹⁵.

In spite of this general attitude of collecting encyclopedic libraries, a strata of the upper class began to collect books according to more specific criteria. It was in particular those who based their life upon a certain activity or cultural discipline that were more sensible in building a library according to their professional interests. It is therefore not surprising that Lavoisier, who was both a prominent scientist and a *Fermier générale*¹⁶, focussed his bibliographical attention on books concerning natural sciences and finance.

A detailed analysis of the 1200 titles results in the following figures:

| SUBJECT | % | N. Titles |
|---|------|-----------|
| Titles dealing with chemistry and mineralogy | 28,6 | (341) |
| Titles dealing with physics and mathematics | 8,1 | (97) |
| Titles dealing with finance and trade | 7,9 | (95) |
| Titles dealing with agriculture and husbandry | 7,5 | (84) |
| Titles dealing with arts and technology | 6,9 | (81) |
| Titles dealing with <i>belles-lettres</i> | 6,7 | (79) |
| Titles dealing with law and politics | 6,2 | (74) |
| Titles dealing with natural history | 5,4 | (65) |
| Titles dealing with geography and travels | 5,4 | (64) |
| Titles dealing with history | 5,2 | (62) |
| Titles dealing with medicine | 2,6 | (32) |
| Titles dealing with science (generalities) | 2,6 | (31) |
| Titles dealing with astronomy | 2,1 | (25) |
| Titles dealing with periodicals | 1,7 | (21) |
| Titles dealing with theology, religion | 1,6 | (20) |
| Titles dealing with encyclopedies, dictionaries | 0,6 | (8) |
| Titles dealing with <i>varia</i> | 0,8 | (10) |
| TOTAL | 99,9 | 1189 |

¹⁵ This situation did not change significantly during the second half of the eighteenth century when French readers remained attached to the encyclopedic approach to book collecting. In this connection see D. VARRY, *Grandes collections et bibliothèques des élites*, in JOLLY (ed.), *op. cit.*, pp. 235-67. With respect to the diffusion of scientific books during eighteenth century France see J. DHOMBRES, *Books: reshaping science*, in R. DARNTON and D. ROCHE (eds.), *Revolution in Print - The Press in France 1775-1800*, Berkeley and Los Angeles 1989, pp. 177-202.

¹⁶ In an interesting study (*Les fermiers généraux au XVIII^e siècle*, Paris 1971, pp. 562-3) Yves Durand shows that also the libraries of the other 18 *Fermiers*, catalogued between 1751 and 1797, had the tendency to be more specialized concerning finance and law. The library of Lavoisier's father in law, Paulze, listed for instance 43% of titles on tax-collecting.

Natural sciences cover 62,7% of the total whereas *belles-lettres* together with finance, politics and theology cover only 27,9% of the titles¹⁷. Obviously we have to be very cautious in drawing conclusions upon a provisory and not complete list of titles, but there are reasons to believe that this part of Lavoisier's library provides a relatively faithful picture of the library as a whole.

The profile emerging from the inventory leads to the immediate conclusion that Lavoisier built a specialized library and paid particular attention to chemistry and physics. Significantly, all the subjects Lavoisier tackled during his scientific and financial career are reflected in his library with large collections of books. Lavoisier's interest in agricultural reforms is reflected in a rich and up-to-date collection of treatises and periodicals on agriculture; similarly, Lavoisier's active role in the *Ferme générale* is shown in several titles dealing with the history and contemporary state of French and European tax systems.

It is obvious, however, that the most interesting and revealing section of Lavoisier's library is the chemical which is fortunately the best documented in its bibliographical contents and its acquisition.

The earliest document testifying Lavoisier's emerging interest in chemical books is a letter dated September 5, 1767 addressed to his father:

[. . .] nous avons été aujourd'hui chez le plus fameux libraire d'icy. on trouve chez lui la plus part des livres imprimés en allemagne. j'ay trouvé beaucoup de livre de chimie qui ne sont point Connus en france¹⁸.

Two days later Lavoisier bought 114 works from a book dealer and printer named Amand König in Strasbourg and it is notable that most of the works dealt with chemistry and mineralogy. This considerable purchase was rather expensive since Lavoisier had to pay 533,5 *livres*¹⁹, more than a year's salary of an average worker. Some of the books were, however, extremely important and rare. Among these we find Mayow's rare treatise on niter²⁰ in which

¹⁷ I have not considered the titles dealing with geography, periodicals and encyclopedias since the disciplinary boundaries are too vaguely determined.

¹⁸ LAVOISIER, *Correspondance*, vol. 1, Paris 1955, p. 83.

¹⁹ *Ibid.*, pp. 94-98.

²⁰ MAYOW, *De Sal-Nitro*, in-8°. Unfortunately this is the only bibliographical reference of the purchase. PARTINGTON, *The Life and Work of John Mayow 1641-1679*, «Isis», 47 (1956), pp. 217-30, claimed that the treatise was *Tractatus Quinque Medico-Physici. Quorum primus agit de Sal Nitro, et Spiritu Nitro-aereo* [. . .] (Oxonii 1674) but, if this is the case, it is difficult to understand why Lavoisier by the end of 1775 asked Magellan to look in England for the very same work (see note 29). Besides, Lavoisier never quoted Mayow's work in his *Opuscules*, although it was one of the few treatises related to the investigation on *vital air* (oxygen). There is of course the possibility that Lavoisier asked Magellan to get him Mayow's other work *Tractatus duo Quorum*

many crucial pneumatic observations were outlined; three chemical treatises by Becher and two by Stahl²¹, important periodicals such as the «Histoire de l'Académie royale des sciences et des belles lettres de Berlin» and 12 volumes of the «Miscellanea curiosa medico-physica Academiae naturae curiosorum», many mineralogical and some alchemical books.

With respect to the works by Mayow, Stahl and Becher, we may assume that this purchase led Lavoisier to his first pneumatic investigations, namely the study of calcination and combustion. Although most historians of the chemical revolution claim that Lavoisier's scientific interests was mainly directed towards geology and mineralogy before 1770, the accuracy with which Lavoisier selected the chemical books he was interested in reveals that the French chemist was already well acquainted with the literature of this science.

This is also confirmed by the fact that soon after the death of the French chemist Jean Hellot in 1766, Lavoisier, together with his master Jean-Etienne Guettard and the *Président* of the Academy of sciences in Paris Trudaine de Montigny, bought most of Hellot's papers and books²². Of this acquisition only the nine following works bearing both Hellot's and Lavoisier's ex-libris have survived and they are now kept in the Olin library at Cornell University:

AUBERY, Jean, *Les bains de Bourbon Lancy et Larchanbaut*, Paris, A. Perier, 1604, in-12°

BACCI, Andrea, *De Thermis*, Romae 1622, in-folio

BAILLET, Adrien, *La Vie de Monsieur Des-Cartes*, 2 vols., Paris 1691, in-4°

BOOT, Anselmus Boetius de, *Gemmarum et lapidum historia*, Lugduni Batavorum 1647, in-8°

CATTIER, Isaac, *De la nature des bains de Bourbon* [. . .], Paris 1650, in-8°

DELLA PORTA, Giambattista, *Phytognomonica*, Francofurti 1591, in-8°

prior agit de Respiratione: Alter de Rachitiite (Oxford 1668); on this matter we only have Magellan's answer to Lavoisier which makes it impossible to verify if Magellan understood correctly.

²¹ BECHER, *Demonstratio philosophica, seu theses chymicae, veritatem, et possibilitatem transmutationis metallorum in aurum evicentes*, Lipsiae, apud Gleditschium, 1703, in-4°; ID., *Experimentum chymicum novum*, Francofurti 1671; ID., *Opuscula chymica rariora*, Norimbergae-Altorfi 1718; STAHL, *Opusculum chymico-physico-medicum* [. . .], Halae 1715, ID., *De rarefactione chymica*. I was not able to find the exact title of this last work neither among Stahl's chemical works nor in the catalogue of Stahl's dissertations.

²² There are no documents testifying the sale of Hellot's library, in the Duveen collection in Cornell there are however eight works which bear Hellot's ex-libris and one title which bear both Hellot's and Guettard's ex-libris. According to Arthur Birembaut «Trudaine avait acheté, moyennant 6000 livres, les papiers d'Hellot à sa veuve; ces papiers se trouvent de nos jours à la bibliothèque municipale de Caen», from R. TATON (ed.), *Enseignement et diffusion des sciences en France au XVIII^e siècle*, 2nd ed., Paris 1986, p. 381.

FOUET, Claude, *Le Secret des bains et eaux minerales de Vichy et Bourbonnois*, Paris 1679, in-12°

HARVEY, William, *Exercitationes de generatione animalium* [...], Amstelodami 1651, in-12°

PASCAL, Blaise, *Traictez de l'équilibre des liqueurs et de la pesanteur de la masse de l'air*, Paris 1664, in-12°

Lavoisier began to work intensively on the chemical analysis of mineral waters during his geological expedition with Guettard in the spring and summer of 1767²³. This fact is underlined by the purchase from the book dealer König which included 15 treatises on mineral waters. The three works on mineral waters that Lavoisier bought from Hellot's library are probably only a minor part of a bigger collection in this field. Lavoisier's library does in fact list around one hundred literary, historical, chemical and alchemical treatises on mineral waters²⁴ which were possibly acquired between 1766 and 1770. This impressive collection established an almost complete bibliography on the topic and shows that before performing his scientific investigations Lavoisier made sure of getting the most complete bibliography on the argument he was going to study.

The mutual exchange with other scientists was another important channel of getting books. Once again Lavoisier's correspondence offers many interesting documents in this connection. In January 1774 Lavoisier's publisher Prault printed 1237 copies of the *Opuscules physiques et chymiques*²⁵, the first systematic work dealing with the chemical role of air. Soon after Lavoisier began to send copies to the most prominent European scientists and academies. This capillary campaign of diffusion was primarily meant as an effective means of persuasion, looking for support for the new theory of calcination, but Lavoisier also regarded it as a good opportunity to enter into contact with other scientists and consequently with their books.

There were, in fact, many responses to Lavoisier's gift and he received quite a few books dealing with pneumatic chemistry in return.

On the 29th of March 1774, the Italian chemist Giuseppe Angelo Saluzzo di Menusiglio sent Lavoisier the first three volumes of the «Miscellanea Philosophico-Mathematica Societatis Privatae Taurinensis» which included important essays by him, Giovambattista Beccaria and Giovanni Francesco

²³ See LAVOISIER, *Correspondance*, vol. 1, cit., pp. 35, 51, 67, 90 where the French chemist gives a detailed account of his investigations on mineral waters carried out during the summer of 1767.

²⁴ I have drawn this number from the inventory of Lavoisier's library that I am presently working on and from the *Catalogue des livres de feu Madame Lavoisier, Comtesse de Rumford*, cit., p. 18 where 45 works on mineral waters are listed.

²⁵ LAVOISIER, *Correspondance*, vol. 2, Paris 1957, pp. 402-3.

Cigna²⁶. As Seymour Mauskopf recently pointed out²⁷, Saluzzo's chemical investigations on detonation and on the nature of niter re-oriented many of Lavoisier's assessments.

The English contact established by Lavoisier with João Jacinto Magellan (Magalhães) was also very important. Magellan kept the French chemist well informed on the latest progress and publications of pneumatic chemistry performed in the British Isles. The 13th of November 1775 Magellan sent Lavoisier a letter enclosing Bryan Higgins' chemical lectures, as well as informing him about the latest publications of Joseph Priestley²⁸. Since Lavoisier could not read English, Magellan translated the essential parts of these texts into French.

In at least one case Lavoisier charges Magellan to search for two books printed in England which were directly related with his current research on salpeter. The two books were Mayow's *Tractatus quinque physico-medici* and Clarke's *Natural History of Niter*²⁹. Unfortunately for Lavoisier, Magellan could not find them and suggested the French chemist to consult the catalogue of a public library in Paris. It is anyhow significant that Lavoisier was well aware of the English book production of chemical literature and of its importance.

Magellan was not the only scientist in England with whom Lavoisier was in correspondence; among others an apothecary from Manchester, Thomas Henry³⁰, sent him Thomas Percival's medical works³¹ and his own impressions on the rising controversy between Lavoisier and Priestley.

Lavoisier's French correspondents were also important in respect of the diffusion and exchange of scientific books. Louis Bernard Guyton De Morveau sent Lavoisier the first volume of his *Éléments de chymie* in March 1777³² with the following words:

²⁶ *Ibid.*, pp. 431-33.

²⁷ S. MAUSKOPF, *Gunpowder and the Chemical Revolution*, in A. DONOVAN (ed.), *The Chemical Revolution – Essays in Reinterpretation*, «Osiris», 2nd series, vol. 4 (1988), pp. 91-118.

²⁸ LAVOISIER, *Correspondance*, vol. 2, pp. cit., 504-5. Although the title of Higgins' work is not specified by Magellan, it is almost sure that the book enclosed was *A Syllabus of Chemical and Philosophical Enquiries*, London 1775. On this see W. COLE, *Chemical Literature – 1700-1860*, London 1990, p. 260.

²⁹ LAVOISIER, *Correspondance*, vol. 3, Paris 1964, p. 1. The two works are: J. MAYOW, *Tractatus Quinque Medico-Physici*, Oxonii 1674; W. CLARKE, *Natural History of Nitre*, London 1670.

³⁰ In 1776 Henry translated Lavoisier's *Opuscules* under the title *Essays physical and chemical*.

³¹ LAVOISIER, *Correspondance*, vol. 3, p. 564. Unfortunately it is impossible to be more precise about the title of Percival's works.

³² *Ibid.*, p. 593. The work by Guyton, in which Maret and Durande also collaborated is the *Éléments de Chymie Théorique et Pratique, Rédigés dans un nouvel ordre*, 3 vols., Dijon 1777-78.

[. . .] il y a un exemplaire pour vous du premier volume de notre cours de chymie, je vous prie de [. . .] le recevoir comme un temoinage des sentimens que vous m'avez inspirés et que je n'échapperai aucune occasion de cultiver, vous reconnoîtrés souvent votre propre bien, vous me le pardonneres si vous jugés que j'en aie fait bon usage, je suis assuré du moins que vous seres content de ma docilité, vos découvertes ont fait une nouvelle science, il falloit bien de nouveaux elemens, et le premier essai en ce genre merite quelque indulgence³³.

The following years Guyton sent his translation of Bergman's *Opuscula*³⁴ together with the first volume of the *Encyclopédie méthodique*³⁵.

The 29 of September 1782 the Swiss naturalist Jean Senebier announced to Lavoisier that the would soon receive his *Mémoires physico-chymiques*³⁶ in spite of the fact the work was not yet published!

On the 29th of June 1784 the young and promising chemist from Montpellier, Jean-Antoine Chaptal, announced his conversion to Lavoisier's ideas by sending him a letter and one memoir on the decomposition of nitric acid³⁷. Other naturalists, perhaps less famous but certainly not less anxious in making themselves known, sent Lavoisier a great number of memoirs, books and manuscripts, often asking for suggestions and comments.

The 29th of May 1785 Guettard communicated to Lavoisier that because of his bad health he was forced to leave the comfortable residence at the *Palais Royal* where he kept his rich library and one of the most outstanding private cabinets of natural history in Paris and he charged his old pupil to sell them³⁸. Lavoisier, who was by now a close friend of Guettard, succeeded after a long negotiation to secure the cabinet for the *Académie des sciences*. The library was not preserved in its original state in spite of Lavoisier's efforts and his claims of it being a «superbe Bibliothèque composée de livres de botanique, d'agriculture, d'histoire naturelle, de medicine et de chimie»³⁹. The Franch chemist did, nevertheless, succeed in buying a part of Guettard's chemical books,

³³ *Ibid.*

³⁴ On May 10, 1785 Guyton sent Lavoisier the second volume of his widely commented French version of Bergman's *Opuscula physica et chemica* (Upsaliae 1779 and ff.) with the title *Opuscules chymiques et physiques de M. T. Bergman. Recueillis, revues et augmentés par lui-même. Traduit par M. De Morveau. Avec des notes*, 2 vols., Dijon 1780-85. See LAVOISIER, *Correspondance*, vol. 4, Paris 1986, pp. 119 and 124-5.

³⁵ LAVOISIER, *Correspondance*, vol. 4, cit., p. 259.

³⁶ *Ibid.*, vol. 3, pp. 728-29. The work by Senebier is *Mémoires Physico-chymiques, Sur l'influence de la lumière solaire pour modifier les êtres des trois règnes de la nature, et sur-tout ceux du règne végétal*, 3 vols., Geneve 1782.

³⁷ LAVOISIER, *Correspondance*, vol. 4, p. 21.

³⁸ *Ibid.*, p. 126.

³⁹ *Ibid.*

whereas the botanical section went to the *Société d'Agriculture* and the medical collection to the *École vétérinaire*.

Unfortunately the scarcity of documentation does not allow us to possess but little hints of which books Lavoisier bought from Guettard's library. In the Duveen collection in Cornell there are only three books with Guettard's ex-libris; one of them is Boyle's third Latin edition of the *Sceptical chymist*⁴⁰. Probably Lavoisier bought a great number of books from Guettard, just like in the case of Hellot's library, but the only thing we can be sure of is that the French chemist intended to buy the chemical section and that Guettard's library was an extremely rich one⁴¹.

Also some other of Lavoisier's surviving books in the Duveen collection, reveal an interesting provenance; they are for instance a copy of s'Gravesande's *Philosophiae Newtonianae Institutiones*⁴² and a second edition of Newton's *Principia*⁴³, both from the library of the Abbé Noël Antoine Pluche, the author of the *Spéctacle de la nature*. Lavoisier's library also lists a work on geometry by Jacques Ozanam which had belonged to Jean Lacaille, his teacher of mathematics at the *College Quatre Nations*⁴⁴.

During the period of the chemical revolution between 1787 and 1789, Lavoisier intensified his efforts to spread the works he published and to overcome the fierce controversy which he fought together with Guyton, Berthollet, Chaptal, Fourcroy and few others against the rest of the European chemical community which was still attached, although in different proportions, to Stahl's phlogiston theory.

In order to win this difficult battle, the pervasive diffusion of the new ideas on oxygen was as important as knowing the opinions of those who rejected them. For this reason, Lavoisier became even more anxious than before in getting new publications and in following all the reactions of his critics. Indeed an increasing number of letters testifies that he intensified the book exchange with his correspondents during this period and although many letters have been lost, those that still survive show that Lavoisier exchanged books and memoirs with prominent scientists such as Priestley, Kirwan, Black, Franklin, Volta, Spallanzani, Lorgna, Senebier, Guyton, Chaptal, De Saussure,

⁴⁰ *Chymista Scepticus vel Dubia et paradoxa chymico-physica circa Spagyricorum Principia, vulgo dicta, Hypostatica* [. . .], Roterodami 1668.

⁴¹ LAVOISIER, *Correspondance*, vol. 4, p. 126.

⁴² W. J. 'SGRAVESANDE, *Philosophiae Newtonianae institutione in usus academicos*, Leyden-Amsterdam 1728.

⁴³ I. NEWTON, *Philosophiae naturalis principia mathematica. Editio secunda auctior emendatior*, Cambridge 1713.

⁴⁴ H. OZANAM, *L'usage du Compas de proportion* [. . .], Paris 1700.

Van Marum and others⁴⁵. Unfortunately, apart from these occasional exchanges, there are no other documents indicating Lavoisier purchasing any books during the last period of his life.

In spite of the scarcity of documentation and of the incomplete inventory, the titles of Lavoisier's library provide us with a valuable source of historical information. As seen before, it was the chemical and mineralogical section with its 341 titles that was the richest. Among the rarities in these disciplines we find the first edition of Agricola's *Bermannus* printed in 1530 and *De re metallica* printed in 1556, the Latin Folio edition of Arnald of Villanova's works printed in 1504 and several alchemical treatises printed in the sixteenth and seventeenth centuries. Naturally the protagonists of the library were eighteenth century chemical books. Accordingly we find most of the works dealing with pneumatic chemistry ranging from three French translations of Stephen Hales' *Vegetable staticks* to Priestley's *Experiments and observations on different kinds of Air* both in the English (1774) and the French (1777) versions. Lavoisier also owned many different works by Boyle, Becher, Stahl, Kirwan, Bergman and Scheele. More obvious is the presence of works by French chemists such as Lemery, Glaser, Lefevre, Macquer, Demachy, Baumé, Sage, Chaptal, Guyton, Berthollet and Fourcroy.

The presence of mineralogical literature is also very impressive, regardless of its national provenance. The pervasive interest in mineralogical books reveals an aspect of Lavoisier's scientific background which often has been underestimated. Most historians of chemistry have insisted on stressing the fact that only in eighteenth century Germany, Sweden and England a sound tradition of mineralogical studies was present whereas other countries, in particular France, did not contribute actively to the progress of this science. This picture is only partly correct and if we approach this historical problem by considering Lavoisier's books in mineralogy, we get an interesting reassessment of it.

In fact Lavoisier's library lists not only French translations of the mineralogical works by Henckel, Orschall, Lehmann, Wallerius, Kunckel, Swedenborg, and Bergman, but also the contributions in this field by French naturalists such as Cattier, Calmet, Valmont de Bomare, Gobet, Sage, Réaumur, Monnet, Hellot, Guettard, Haüy, Romé de l'Isle etc. This massive bibliographical production, mostly undertaken during the period between 1750 and 1780, testifies to the spreading and pervasive interest that French naturalists had for mineralogy and it shows quite clearly that Lavoisier himself was careful in following its latest progress.

⁴⁵ I thank Dr. Michelle Goupil who let me study her typewritten version of Lavoisier's correspondence covering the period 1787-1789.

The second largest section of Lavoisier's library is that of physics and mathematics. This underlines the shared view of historians of the chemical revolution who usually regard the introduction of the physical method into chemistry as the most innovative contribution brought on by Lavoisier⁴⁶. It is therefore not surprising to find out that Lavoisier owned most of the works by d'Alembert, and scientific works by Lacleuve, l'Hôpital, Maupertuis, Fontenelle, Voltaire, Mariotte, Condorcet, Musschenbroek, Newton, Nollet, etc.

In this section we might distinguish two main currents of Lavoisier's interest in physics; the first, which was directly connected with his chemical investigations, concerned books on the physical properties of fire and heat, the dilatation of bodies, the nature of electricity and the different states of matter⁴⁷. Less immediate was the influence of the physical works structured in a mathematical form, although they certainly inspired Lavoisier in his constant effort to apply, when possible, sharp numerical models to chemical experiments.

Lavoisier's official position in the *Ferme générale* explains the presence of the large collection of books dealing with economy and agriculture. The economical works dealt with national and international trade, tax systems, and administration. The works on agriculture, among which we find the names of Parmentier, Rozier and Duhamel de Monceau, mostly dealt with new methods of cultivation. Despite its «specialized» character, Lavoisier's library offered also highly theoretical and philosophical treatises such as Adam Smith's *An Inquiry on the Nature and Causes of the Wealth of Nations* (1786) and Raynal's *Histoire philosophique et politique des établissements et du commerce des Européens dans les deux Indes* (1780).

Lavoisier's collection of books on arts and technology is not particularly original although the first edition of Diderot's *Encyclopédie*, the first volumes of Panckoucke's *Encyclopédie Méthodique* devoted to chemistry and the 54 *Cahiers* of the *Descriptions des arts et métiers* are listed. The same can be said of the section of *belles-lettres* and history which lists works common to most French private

⁴⁶ Although often neglected by historians of chemistry, Pierre Duhem was probably the first to stress the historical importance of Lavoisier's physical approach to chemical problems in his work *La chimie est-elle une science française?*, Paris 1916, pp. 163-86. In this connection see also the more known essays: H. GUERLAC, *Chemistry as a Branch of Physics: Laplace's Collaboration with Lavoisier*, «Historical Studies in Physical Sciences», vol. 7 (1976), pp. 193-276; E. MELHADO, *Chemistry, Physics, and the Chemical Revolution*, «Isis», vol. 76 (1985), pp. 195-211.

⁴⁷ As a young student Lavoisier followed the physical lectures given by Nollet. Lavoisier's early correspondence (vol. 1, p. 72) testifies his emerging interest in applying physical methods to chemistry.

libraries of the same period⁴⁸. Few exceptions escape from this rather conventional literary taste; the most important of these is undoubtedly the first edition of Rousseau's *Discours sur l'origine et les fondements de l'inégalité parmi les hommes* (1755).

Lavoisier owned many of the works published by his colleagues at the *Académie des sciences*, although he made a strict selection; if, on the one hand, we find most of the publications on chemistry, physics, mathematics and astronomy, on the other hand Lavoisier paid very little attention in acquiring works dealing with natural history, the only two exceptions being Buffon's first edition of the *Histoire naturelle* and Réaumur's *Histoire des insectes*.

In connection with his active role in the *Académie* Lavoisier owned the indispensable collection of «Mémoires de l'Académie Royale des sciences de Paris», together with the transactions of the Academies of sciences of Berlin, Turin, Norimberg, Basel, Dijon, Besançon, Nancy and of the *Société Royale de Médecine* of Paris. This collection was enriched with many journals such as Rozier's «Observations sur la physique», the «Journal économique», the «Annales de chimie», the «Giornale d'Italia», the «Mémoires d'Agriculture», and the «Almanach Royale».

Unfortunately Lavoisier's collection of periodicals and academic transactions was the first to be dispersed by the *Comité des arts* and we only have a very fragmented documentation indicating its composition. Like in the case of the 57 volumes of the «Almanach Royale»⁴⁹ which were never catalogued, it is likely that others journals were dispersed without being catalogued.

Although we always have to keep in mind that the inventory of Lavoisier's books can by no means be regarded as complete, we may venture some general conclusions on his library as a whole.

Lavoisier's library, unlike those of most of his contemporaries, was specialized in the sense that most of the books listed were directly connected with his scientific and administrative professions. The book was not any more regarded as a symbol of higher social status or an implement for developing erudition, but became more and more a productive means of acquiring useful knowledge. Besides, the great number of bibliographical references in Lavoisier's works indicates that in most cases the French chemist read and studied the books he owned. Thus Lavoisier's interest in books was not inspired by

⁴⁸ I have confronted Lavoisier's collection of literary works with Mornet's (*op. cit.*) and Marion's (*op. cit.*) catalogues which confirms that Lavoisier shared the same literary taste with his contemporaries.

⁴⁹ It is thanks to the Duveen collection in Cornell we know that Lavoisier owned a collection of the «Almanach Royale».

an approach of a bibliophile but reflected a more immediate need of bibliographical information and scientific curiosity.

In spite of this «pragmatic» view on collecting books, Lavoisier shared with his contemporaries much of the traditional respect and sensibility for the book which was regarded both as the symbol of learning but also as an object with its own aesthetic value. Lavoisier adorned his books with expensive bindings which varied in their beauty according to the rarity of the edition and, following a very common fashion in the eighteenth century, he used an ex-libris bearing his name and emblem.

The inventory of Lavoisier's library offers a useful source of historical information to the historian of science which leads to a better understanding of the emergence and development of Lavoisier's chemical interests. It also shows the historian of books an interesting example of the change of collectors' attitude that took place by the end of the eighteenth century.