
Introducing A. L. Stinville (1868-1949)

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At the 5th International Conference on History of Chemistry, held in Estoril/Lisbon (2005), a poster “*Do you know Mr. Stinville?*”,¹ reporting the state of the affairs in the search of biographic data about Auguste Lucien Stinville (1868-1949), a French chemist and engineer who was called to Portugal a century ago to establish in Barreiro, near Lisbon, and for the Portuguese corporation Companhia União Fabril, S.A.R.L., head of the CUF Group, a remarkable chemical complex for the production of fertilizers, acids and other inorganic chemicals. The features of this complex, were the integration of chemical processes and the well engineered lay-out of individual plants, workshops, utilities and facilities, transport connections (road, railway and harbour) to reach and hold an internationally competitive scale, up to the deindustrialisation that marked the last decades of the 20th



Photo of A. L. Stinville abt. 1906

century. Participating in the history of this complex the name of A. L. Stinville (as he commonly signed) is still remembered in Barreiro (as by the nameplate of “Stinville street” in the old worker’s quarter), but the dimness of other biographical data and the proximity of the centennial of the establishment of CUF chemical plants in Barreiro suggested a follow-up of this quest. However, only the valuable contribution of Stinville’s relatives in France, meanwhile met, (including one of the present co-authors),² allowed for a remarkable progress in this search and provided answers to many questions that were unanswered in 2005.

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Moreover the establishment of a biographic profile, the “Stinville experience” not only confirmed how an active transnational know-how exchange could provide industrial opportunities to peripheral European countries, like Portugal, with suitable technological adaptation to local raw materials and conditions, but also typifies the evolution of the relationship between independent consultants, know-how providers and industrial entrepreneurs, depicting an intense technological career that rose in the last decades of the 19th century and lasted to the first years after the World War II.

The biographic elements collected about Auguste Lucien Stinville show a vivid personality, eager of further knowledge, aware and proud of his capabilities, that, in his professional life, has met strong characters like Jules Lefebvre, the PDG of Guano-Phosphate, Alfredo da Silva (1871-1942), the Portuguese industrial tycoon that established the CUF Group, and the French minister Louis Louchet (1872-1931) known as “an engineer, a statesman and a moderniser of France”.

If in the last meeting of the ICHC, the question “*Do you know Mr. Stinville?*” was put and more relevant data about his biography was asked for, we may now say that “*we (begin to) know Mr. Stinville*”. Intentionally, the portrait hereunder shows Stinville at the epoch when he met Alfredo da Silva and he knew Barreiro for the first time... about one hundred years ago.

Stinville’s youth

Auguste Lucien Lamouche, the eldest of the six children of Auguste Adolphe Lamouche and his wife Lucie Radal-Charay, was born the 19th July 1868 in the 15th “arrondissement” of Paris. His name and the year of his birth, 1868 and not 1864, are confirmed by his military enrolment registry twenty years later.³ However, following the option of his father, which for family reasons used to sign as “Auguste Adolphe Stinville” or as “Auguste Adolphe Lamouche dit Stinville”, he will adopt the patronymic “Stinville” in his professional and civil life, commonly signing as “A. L. Stinville”.

Auguste Stinville made his first studies, up to the “baccalaureat” (i.e. the access to upper studies) in the Collège Colbert, in Paris, being recognized as an excellent scholar. Albeit demonstrating a certain propensity to Chemistry, his aim, at the time, was to be admitted to the Naval School. This admission, at that time, would require a financial contribution (that his father made in 1885), and was preceded by a strict selection, based in the prior academic career and in a specific exam, and a demonstration of physical capabilities. Surpassing the two first prerequisi-

tes, up to the point of being one of the best qualified candidates, he was finally rejected due to his myopia. Finding himself jobless, Auguste Stinville got an employment at the “Laboratoires de Paris” (possibly the “Laboratoires de la Ville de Paris”) where he found a former teacher working as an “engineer”, (whose name is not known), but this experience opened to him the world of Chemistry and its industrial relationships. So successful was that experience that it inspired the future career of Auguste, that the familial memory registers his own expression to describe that period of his life: “So I got my happy lot!”.

The English (or Welsh) period

In 1888, at 20 years of age, Auguste Lucien Lamouche, i.e. Auguste Stinville, was exempted from the military service (most probably by the same reason that blocked his ingress in the Navy) and, about that time, quitting the “Laboratoires” and being fluent in English, he leaves for England and/or Wales, to undertake an intensive industrial training practice. No documental evidence was yet found to reveal where and how this training was carried out, but Swansea is pointed out as a probable place. Judging his experience from what Auguste Stinville would later prescribe for a well-succeeded intensive preparation of one of his relatives, he may have stayed mainly at the shop floor and successively exerted all the basic functions then required of plant operators, from the hard labour working with roasting furnaces to the mastery of the chemical processes, equipments and materials. On his return to France, two years later, he described himself as “architecte d’usines”, a description that (as for the title of “ingénieur constructeur”, that he assumed later) represented more than the simple architecture and construction of plants and the arrangement of industrial sites, to also include a full knowledge of the chemical processes involved, joining today’s “process design” with the “basic and detailed engineering”.

Jules Lefèbvre and the Compagnie du Phospho-Guano

About that time (1888) the Compagnie du Phospho Guano, with headquarters in Paris, with Jules Lefèbvre as chairman of the board, considered the construction of two plants on the Atlantic coast of France, to produce “superphosphates” by solubilisation of natural calcium phosphates (phosphate rock) mined in Tunisia. Each plant was to operate according to the best technology then available and to which Auguste may have had access during his stay in England or Wales, that

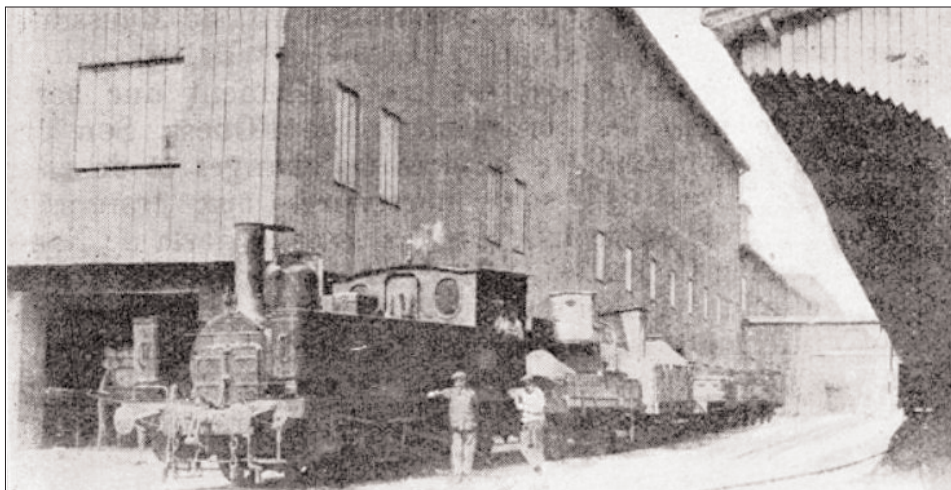


Honfleur plant abt. 1903

included two physically separated works: (a) the sulphuric acid unit (by the lead chamber process, starting from sulphur dioxide obtained by sulphur burning or, more currently in Europe, by the roasting of iron pyrites) and (b) the phosphate solubilisation unit (in French, the “malaxage”), where the phosphate rock was mixed with sulphuric acid, successively followed by a rest period in large caves lined with acidproof bricks (the “dens”), the extraction of the reacted mass, its grinding and packaging (commonly made, at that time, by shovel-filling of bags made of natural, resistant, hard fibres such as jute) These production facilities were to be built in Honfleur (Normandy) and La Pallice - La Rochelle (Poitou-Charentes).

The chemical fertiliser market was then very competitive, either in offer (including the access to raw materials and technologies) as in demand, reason why Lefèbvre would favour the services of a “free-lancer” who could provide a suitable engineering to his new plants. Reciprocally, Auguste Stinville was young, ambitious and self confident to the point of adding 4 years to his actual age to remove any investor’s reluctance based in his youth. After the inauguration of Honfleur, Auguste Stinville made Jules Lefèbvre aware of his actual age, but, since then, his year of birth became definitively and constantly 1864 , as stated in his death certificate and in the inscription in his grave!

As successful contractor he built the Honfleur plant in the scheduled time, between 1890 and 1892. A photo of that industrial unit, dated 1903, shows a warehouse of 3 ridge sheathings, built out of wood in the same design pattern kept for the



The “Sulphuric Acid Row” in La Pallice plant

La Pallice and Barreiro plants, with the “malaxage” as a more raised transverse section, to be seen in the background, and at left, the separate box-shaped body of the sulphuric acid unit. A part of these premises is still used as warehouse by the modern industrial unit currently in the place.

In 1896, also under his project management, was launched the second of these superphosphate projects i.e. the project of La Pallice / La Rochelle (a photo gives a view of its sulphuric acid section). A description of this plant, available in the Internet,⁴ mentions a construction period from 1897 to 1901, which seems rather large and perhaps includes later developments. For this unit, Auguste Stinville had the support of his brother in law, Jules Yollant (married to his sister Lucie), who came from a quite different activity but, as already mentioned, was submitted to an intensive “on-the-job training” in other plants near Paris (Ivry and Aubevilliers) not only to supervise the plant construction but also, after the start-up, to second him in the technical management. In 1902, Auguste Stinville, finding that this technical routine jobs became rather limiting to development of his own activities, decided to resign and made his first voyage to the United States of America, passing on to Jules Yollant the technical management of the plant at La Pallice. Then, at the beginning of 1907, a swap of the two plant managers took place: the manager of Honfleur, Castéras, an engineer, graduate of the “Arts et Métiers”, to be meet again later, assumed the technical management of La Pallice and Jules Yollant was assigned technical manager of the Honfleur plant, position he would keep up to a non-friendly retirement in 1918, after the armistice that

ended the World War I. The extent of the successful technical career of Jules Yollant demonstrates not only his own solid qualities but also the validity of the intensive training provided by Auguste Stinville to train him from a non-chemical professional background to become a reliable technical manager in two important industrial plants.

The gas plants around Paris

If we don't know exactly the aim of Auguste Stinville's first visit to the United States of America, in 1902, it may be inferred from his frequent contacts abroad in the years to come, and as an indefatigable voyager he was, that he was seeking for potential business and opportunities that might increase his potential in the project and engineering markets (in both directions, whenever possible). After returning to France, he married in 1906, and established in Paris his office as "ingénieur constructeur" (construction engineer). In 1907, this office was at the Square Pétrelle, near his domicile at the time, but in 1908 he moved to 56, rue de Londres, and before 1916 he moved again to larger premises in the 14, rue Chauveau Lagarde, near La Madeleine, where he centred his commercial activities and stayed at least up to the 1930's, most probably, even later.

From 1905 to 1910, Auguste Stinville undertook for the Société d'Éclairage, Chauffage et Force Motrice (a predecessor of Gaz de France) a large-scale project for the town gas supply network to Paris and surroundings, including the gas plants of Gennevilliers, Alfortville and Boulogne sur Seine. The establishment of Gennevilliers plant was particularly demanding, taking into account some speci-

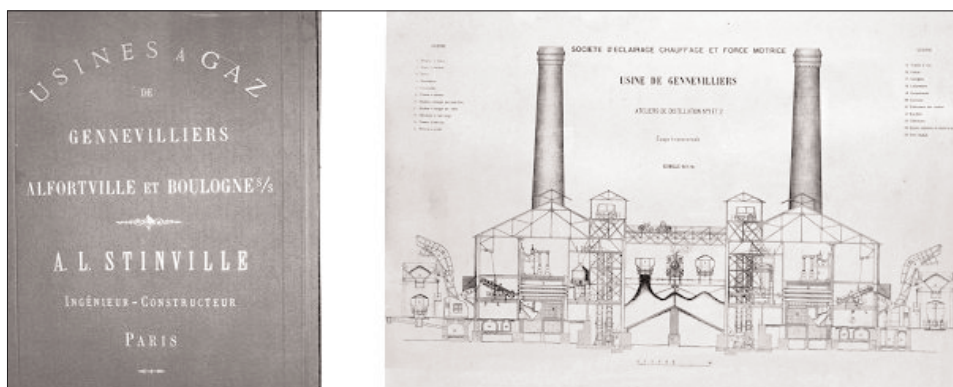


Photo album and plan of Gennevilliers plant

fic requirements, namely a good port by the Seine and effective coal handling mechanised facilities, as well as excellent land connections, by road and railway with an important access layout agreed between Stinville and the Director, Sartiaux, of the Chemins de Fer du Nord.

According to a practice he would also observe for Barreiro, Auguste Stinville collected in well-bound hard cover albums photographs of the erection of these big projects. The album for the gas plants around Paris contains 71 photos and 3 plans⁵ and the album for Barreiro, with several phases of the construction (1908-1909), contains 38 photographs. Both these albums are in private ownership.

The CUF's plant, in Barreiro, Portugal

In 1906 Alfredo da Silva, PDG and executive manager of CUF, finding that its industrial plants in Lisbon were constrained by an increasing urban pressure and with limited prospectives for further development, decided to acquire a large area land in the township of Barreiro, on the southern bank of the river Tagus, facing Lisbon. The site had a small pier as an access to the large estuary, allowing for the subsequent arrangement of larger harbour facilities, and easy rail and road connections. The presence of CUF in the market of fertilisers was partially assured by their own limited production in one of its Lisbon plants and by dependence on a potential competitor for the supply of the required sulphuric acid. Because their own production of fertilisers was not enough to meet the market demand, it had to be complemented, year after year, by substantial imports. This implied recurrent hard negotiations with producers abroad and a continuous strong competition with other rival representatives inland. Having a possible deep water harbour, for the import of the phosphate rock, as well as railway (and also maritime) connections to receive Portuguese pyrites, that also might be used for the distribution (including exports) of the plant products, why not break the dependency threads and produce phosphate fertilisers in Barreiro, in an Europeanized competitive plant? And with an available surplus of sulphuric acid, why not enter in the production of other inorganic chemicals in a full integrated complex? Convincing the CUF Board to approve such developments, Alfredo da Silva had to face the same problem that Jules Lefèbvre had met before: where to find the adequate lay-out for the integrated complex, detailed know-how for the chemical processes and professional skills to run it in a larger competitive domain?

Alfredo da Silva was personally aware of Jules Lefebvre's experience: the minutes of CUF Board meetings reveal that he wrote to Lefebvre and waited for an



The plant at Barreiro under construction (1906-1908).

answer to his letter before inviting Auguste Stinville to Lisbon. As a consequence, Auguste, came to Portugal and in 1907 was contracted to direct the Barreiro project, to follow its erection by a delegated engineer (Pellet, replaced the first designated Lemaire, soon returned to France by health reasons), to recruit in France specialised workers, to assist the formation of Portuguese industrial teams and to keep the office of Barreiro technical manager for two decades, acting via a resident engineer (a role that, after several unsuccessful experiences, was assigned to Casterás mentioned earlier, as technical manager of the La Pallice plant). The photos of the Barreiro construction album (1908-1909) show the impressive use of wood (pitch-pine) as the material of choice in the acid conditions found in the industrial buildings (as in Honfleur and La Pallice). The Barreiro chemical complex, with its facilities for metallic constructions, foundry, and mechanical workshops, power generation and a shipyard, soon was added with hard-fibre textile plants (to provide bags for the packaging of the produced fertilisers).

As technical manager, Auguste Stinville took part in the development projects and substantial capacity increases of the Barreiro plant up to his formal replace-

ment in 1927. These included the sulphuric acid by the chamber process (from Portuguese pyrites), acid concentration, superphosphates, acid leaching of the pyrite cinders for copper recovery, copper sulphate, sodium sulphate and hydrochloric acid, iron (ferrous) sulphate, purification of the purple ore by sintering (for iron making).⁶ In 1925 together with Alfredo da Silva (then in France), Manoel de Mello (Silva's son-in-law and, later, his successor in CUF management) and a Portuguese corporation related to CUF, he was a partners in the SIC-CUF (Société des Industries Chimiques CUF), then incorporated in Paris (with headquarters in Stinville's office) for the production of aluminium in Southern France (Balarucles-Bains), project that was shelved in 1933. In 1937, Auguste Stinville changed letters with Alfredo da Silva giving him some details (and a very critical advice) on the "Basset process", then proposed for the reduction of iron ores in rotary kilns of Portuguese cement plants. During the World War II, CUF obtained technical expertise from British industrial chemists, described in another poster. Very recently, evidence has been found that, after the War, an exchange of technical information between Auguste Stinville and CUF staff was still active up to 1948, i.e. one year before Stinville's death.

The fertiliser plants erected in Barreiro, with the same typical wood structure of the French fertiliser units, as already mentioned, and that still survive in a substantial extent at Honfleur, were gradually replaced since the '80's by more modern units and were demolished in 2000. If a basic knowledge about the fertiliser technology might be achieved during a limited practice abroad, i.e. in Stinville's limited stay in England or Wales, the successful design of full-scale integrated complexes starting from grass-roots and fulfilling the four critical requirements for any project (time, cost, technical achievement and capable personnel) called for a great degree of engineering skill.

A trip around the world

With the relative affluence provided by these successful projects, Auguste Stinville built his own house in Versailles, moving in 1907. The comfortable "villa" was surrounded by a park and the two floored building also lodged a studio and a chemical laboratory.

In 1916, his wife died. They had no children and he did not marry again. Then a quite diversified situation intervened and suspended his project activities. The World was at war and several foreign industrial plants in allied, friendly or dependent countries (United States, Japan, China, Indochina, Australia, South Africa

and England) were working to deliver essential supplies to France, to uphold her war effort. An inspection trip for technical auditing was required and Auguste Stinville was invited (reportedly by the statesman Louis Loucheur, himself a wise and determined engineer) to accomplish that mission. This engaged him from 1916 up to 1918 and represented an official recognition of his capabilities.

The electrostatic gas cleaning and the multiple-earth roasting furnaces

His frequent contacts with technological developments in USA made him aware of the works and patents of Prof. Cottrell related to the then emerging field of electrostatic dedusting and cleaning of gases. Impressed by the capabilities of that technology and foreseeing its increasing use in process plants, Auguste Stinville published in 1918, as “scientific editor”, a monograph with 42 pages describing its fundamentals and use, with several striking examples taken from American industry.⁷ He also obtained the exclusivity for France of the Cottrell (and later Cottrell-Möhler) patents and this may represent a very important part of his project activities between the two World Wars. The role of Auguste Stinville in the establishment of commercial societies for the further exploration of this technical field is still under investigation.

In 1929 he claimed and obtained a patent (French Patent 669,595) covering his own developments in the design of multiple-earth roasting furnaces, of the Herreschoff type. This is somewhat surprising and may be regarded as the issue of a “protective patent”, since furnaces of this type, albeit with a limited individual roasting capacity of 7.5 tonnes of pyrite per day, were already designed (in batteries of 4, plus 1 as stand-by) for each sulphuric acid plant he designed for La Pallice, probably Honfleur and later, in 1907-1908, Barreiro.

Last days

One of the last photographs of Auguste Stinville, possibly in the 1930's, was found in Barreiro and was included in the commemorative album published in 1958 to celebrate the 50th year of the CUF plants in Barreiro. After a so intense professional activity, Stinville, finding himself aged and alone, left Versailles and the professional activities based in his office and lodged in the flat of his single sister Adèle, 12, rue du Faubourg Poissonnière, Paris. He died there, reportedly from pneumonia, on Sunday, 7th August 1949, “aged 85” (but really 81). The death certificate issued by the Town Hall (“Mairie”) of the 10th “arrondissement” of Paris,

identified him as Auguste Lucien Lamouche Stinville, chemical engineer, born the 19th July 1864 in the 8th “arrondissement” of Paris (and not the 19th July 1868 in the 15th “arrondissement” as per his birth certificate and military inscription). He was buried the next day in the grave of the Stinville Family, in the Old Cemetery of Colombes, near Paris, under the inscription “Auguste Stinville, 1864-1949”. No notice or obituaries were found in the main newspapers published in Paris in the next days.

References and comments

¹ Silva, José M. Leal da, “Do you know Mr. Stinville?”, in Malaquias, Isabel; Homburg, Ernst and Callapez, M. Elvira (Editors), “5th International Conference on History of Chemistry-Chemistry, Technology and Society-Proceedings”, Sociedade Portuguesa de Química, 2006, Aveiro, pp. 569 to 578

² In November 2005, Miss Corinne Yollant, attentively navigating in the Internet, found the set of unanswered questions there placed about “A. L. Stinville” and caused the two co-authors to meet. Besides their careful examination of family archives (namely the valuable documents and notes left by Lucien Yollant, son of Jules Yollant and father of the co-author Jean Yollant), we are much indebted to Mrs. Anne-Marie Warnier born Foussard, M. Yves Yollant and obviously to Miss Corinne Yollant for all the important contributions provided. Unfortunately it seems that other documents eventually in possession of Auguste Stinville when he died were not kept by his sister Adèle and may be regarded as irremediably lost.

³ Birth and military certificates (these last under Class 1888, Paris/Seine Subdiv., 1st Office, 10th volume, number 891) are available at the “Archives de Paris”.

⁴ <http://inventaire.poitou-charentes.fr/patind/pi/notice.php?id=IA17000235#hautdepage>, consulted the 20th August 2007. The plant is also described in the file IA17000235 of the “Base Merimée”.

⁵ A description of Gennevilliers plant is available at the “Base Merimée” in http://www.ecm.culture.gouv.fr/public/mistral/merimee_fr?ACTION=CHERCHER&FIELD_98=DENO&VALUE_98=usine%20e0%20gaz&DOM=Tous&REL_SPECIFIC=1, consulted the 20th August 2007, However the major interest of this file seems to be about the overall chronology of the complex and the architectural value of its component buildings.

⁶ The circumstances of Barreiro project and Stinville contract to CUF, including the mention to Lefévre’s letter, are detailed in the Minutes of CUF Board Meetings 1906 to 1908.

⁷ Bibliographical reference to this brochure, as well as other references collected up to the 5th ICHC are detailed in the reference [1] above and by reasons of economy of space are not reproduced here. Also due to space limitations, three photos, originally included in the exhibited poster and pre-published Conference text were removed (such as the name plate of “Stinville Street” in Barreiro; b) Stinville and his sister Adèle in the chemical laboratory installed in his “villa” at Versailles; and photo-portrait of A. L. Stinville in the ‘30’s, found and kept in Barreiro). The five photographs here included were selected from family sources (in France) and plant archives (also in Portugal).