William Maclure, glauberite and the Academy of Natural Sciences of Philadelphia

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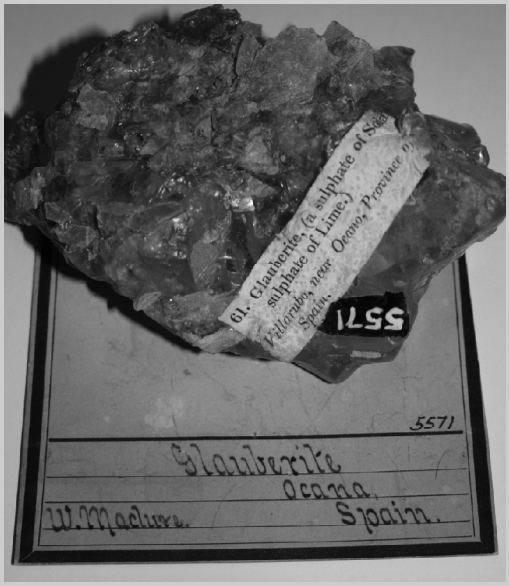
The Academy of Natural Sciences of Philadelphia was founded in 1812, becoming the first American institution dedicated to the study of natural sciences. One of their goals was to obtain a good collection of minerals, which they achieved mostly thanks to donations. In 1817 they already had about 5,000 specimens. In 1828, the Academy was opened to the public, thereby combining research and dissemination.

By the early twentieth century the mineral collection was composed of 30,000 specimens, with important suites of specimens from European and American classic localities. However, after the 1950's, the Academy focussed its scientific work almost exclusively on the life sciences, so the minerals, buried in the storerooms, were more a burden than an asset. But the collection was valued at $5 million, and its sale could represent an important resource. After an internal and external public debate, in October 2006 most of the collection, except for some specimens of exceptional interest, was finally sold (in an amount not made public) to a consortium formed by three mineral dealers, two Americans and one English (Wilson, 2006), which dispersed it in batches and as individual pieces.

One of the specimens in the sold part of the collection of the Academy of Natural Sciences of Philadelphia appears in the photograph. It is a group of glauberite crystals associated with halite from Villarrubia de Santiago, which is the type locality for glauberite. The label accompanying the specimen indicates that it was donated by W. Maclure.

Glauberite was first described by Brongniart who, on the 28th of December of 1807, read a communication from the Academy of Sciences in Paris, published the following year (Brongniart, 1808), examining the chemical composition and physical and geometric properties of a crystal that was inside a salt mass from "Villarrubia, prés d'Ocagna, dans la Nouvelle-Castille" that Dumeril had collected that year. Currently, glauberite is considered a common species, present in about a hundred localities, but in the early nineteenth century the only known locality was Villarrubia de Santiago (Toledo), and so it remained for many years. Dufrenoy (1845) cites for glauberite, only the Villarrubia locality and another one in Vic (Meurthe, France), where compact nodules appeared, impure and poorly characterized.



Specimen with glauberite crystals inside halite (10 cm total length). Maclure donated it to the collection of the Academy of Natural Sciences of Philadelphia, which was dispersed in 2006. Now in the collection of Miguel Calvo.

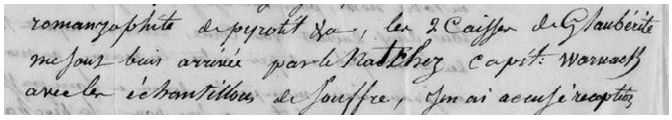
Around 1815, Brongniart sent glauberite specimens to various institutions, and the Academy of Natural Sciences of Philadelphia was one of them (Tyson, 1997). But this institution had a singular representative in Spain, its own president, elected in 1817, William Maclure (1763-1840). This geologist, of Scottish origin, accomplished notable contributions to the knowledge of American geology (in 1817 he published the first geological map of the United States), and also to the funds of the Academy, both in terms of money and books (1,500 volumes donated to the library), and also specimens for the mineralogy collection. Maclure's first visit to Spain, accompanied by Tondi, an Italian geologist, took place in 1808 and was ended abruptly by the outbreak of the Peninsular War. After traveling to different parts of the world, Maclure returned to Spain in November 1820, initially settling in Madrid. Two things inspired him to do this trip, which was meant to be permanent, the first being the weather conditions, which were much more favorable for his health than those of central Europe and secondly, the political climate, because since the restoration of the Constitution in July 1820, Spain was a liberal island in the sea of European absolutism. Maclure was connected with the "utopic socialism" movement and particularly interested in the promotion of popular education in practical arts, and especially agriculture. In November 1822 he moved to Alicante, bought several farms near Orihuela, with the aim to turn them into "model farms". However, the "liberal triennium" ended in 1823 with the invasion of the French army who restored absolutism. The political climate was not the one he wanted, and in May 2, 1824, he abandoned Alicante on a ship bound for Ireland.

During his stay in Spain, besides social improvements, he became interested in mineralogy, establishing contact, among others, with Rafael de Roda, operator of the Espartinas salt works. This contact was useful to both parties. Rafael de Roda had discovered the presence of sodium sulfate in the saline water, which was extracted and used to make soda ash, caustic soda or "artificial barrilla", indispensable for the manufacture of soap and glass. The availability of natural sodium sulfate (other plants in the world had to preparate it by treating sodium chloride with sulfuric acid) allowed them to obtain a purer final product at a lower cost. In a letter sent in June 1822 he asked Maclure for some data on the soap industry in the United States, informing him that he could sell his soda ash, produced better than in Paris, at 165 "reales por quintal", quite a bit cheaper than that of the the French factory, which cost 220 to 240 "reales por quintal" (one quintal equals 46 kg, and 8 reales equalled one silver dollar).

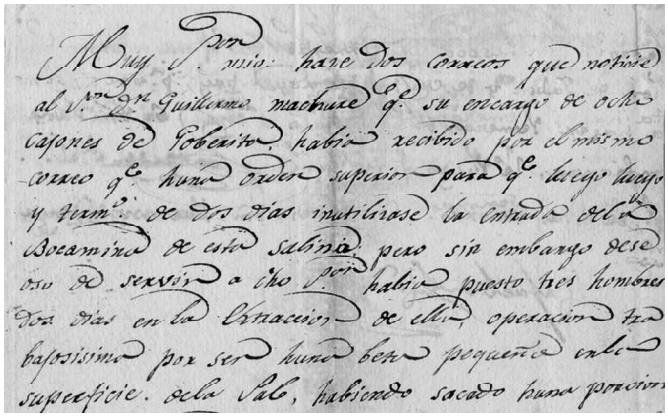
Moreover, Maclure was interested in glauberite, a new mineral whose only known deposit was relatively close to his residence in Madrid. However, proximity does not imply accessibility. Because of the state salt monopoly, salt and salt mines were subject to strict monitoring, preventing access to anyone except its employees.

Rafael de la Roda undertook the necessary steps with Francisco Javier Lopez Lerena, administrator of the Villarrubia de Santiago salt mine, so Maclure could get glauberite specimens on at least two occasions. His application of June 1822 came just in time. In the same letter, the administrator of the salt mine received an "order from above" to completely seal the mining works within two days.

During those two days, with three men working in the area where glauberite appeared, with difficult access, he was able to obtain enough material to fill three custom made drawers, that were sent to Rafael de Roda, and then to Maclure. The Scottish-American appreciated the gesture and sent to Lerena Lopez 192 reales worth of rocks, plus a pound of cigars and 12 pounds of chocolate, which cost another 200 reales. It seems, however, that this collaboration with Rafael de Roda never provided any anvantage in trying to sell soda to America.



Excerpt of a letter (November 10, 1821) from Lesueur to Maclure, acknowledging the shipment of glauberite specimens. Reproduced by courtesy of Working Men's Institute, Indiana University.



Excerpt of a letter (June 24, 1822) from Francisco Javier Lopez to Rafael de Roda Lerena about the glauberite specimens (goberita in the letter) that Maclure requested. Reproduced by courtesy of Working Men's Institute, Indiana University.

Glauberite specimens were sent to the United States and distributed to different individuals and institutions by C.A. Lesueur, Maclure's correspondent, naturalist illustrator, and one of the founders of the Academy of Natural Sciences of Philadelphia. Donations of glauberite specimens by Maclure are documented by the correspondence and catalogs of the targeted institutions. In the second half of 1821 the Linnean Society of Boston, and of course, the Academy of Philadelphia (Anonymous, 1821) received glauberite specimens. In 1822, the American Geological Society received a box (Anonymous, 1822), and in May and July 1823 the Academy received two boxes with glauberite (Anonymous, 1823).

The closing of the Villarrubia salt mines, ordered by the Treasury during the salt monopoly, would remain for almost half a century, with only a small interval of activity. During that time, specimens of Maclure glauberite were the only ones that were available to mineralogists around the world.

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(The correspondence cited here has not yet been published and is held in the Working Men's Intitute, Indiana University.)