

Topographic mineralogy and the book “Minerales y Minas de España”

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Topographic mineralogy

Topographic mineralogy consists basically of the description of the minerals present in a specific geographical area, an area whose size can vary between one mine and the whole world. Along with what is properly mineralogy, you can also find geology or petrology, the history of mining, and a more or less detailed bibliography. Publications on topographic mineralogy appeared already by the end of the 18th century. For Spain, we should note the articles of Herrgen (1799-1801), the first attempted work of this type. Soon after, Leonhard (1805) began a much more ambitious publication, over several volumes, covering the whole world, or rather all the parts of it more or less well known by German scientists. In it, Leonhard indicates the presence of jasper in Spain, without further details, and of chialstolite in La Carolina and

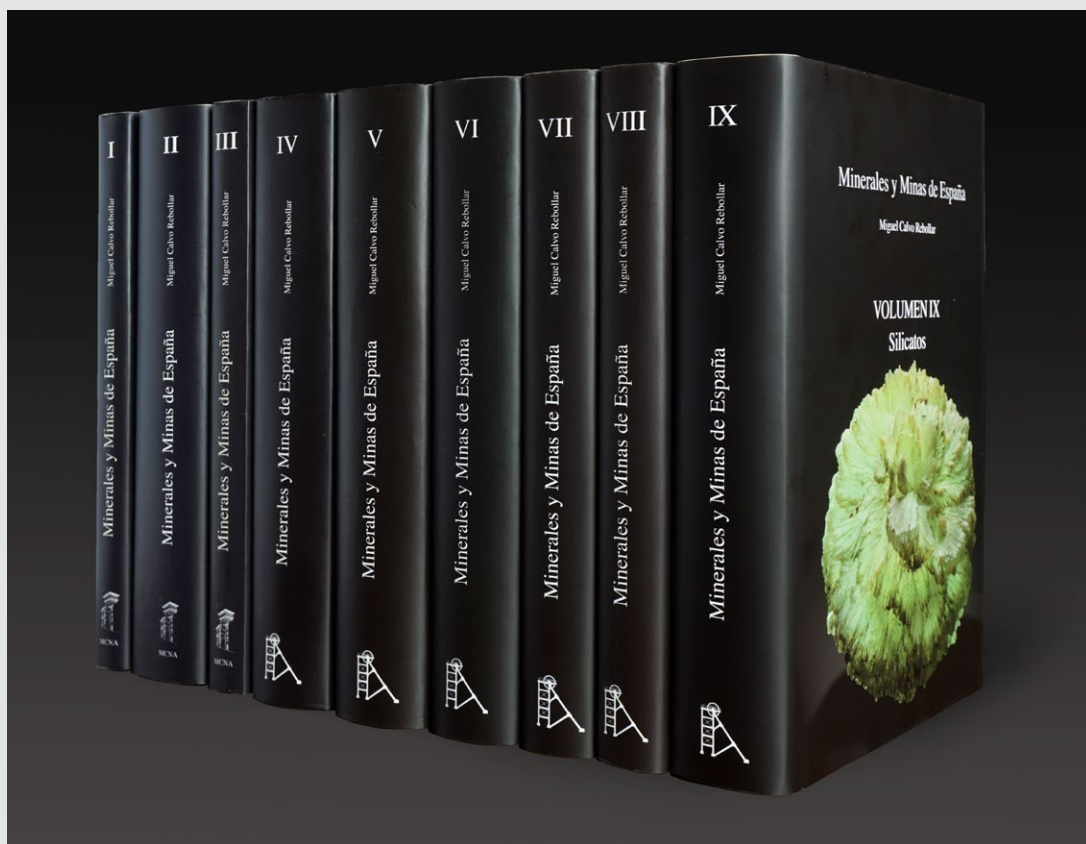
also in Compostela, a town in which it was sold as a souvenir to pilgrims, but which was not the real locality of origin.

Topographical mineralogy studies can be useful from different points of view, but one is evident, and this was understood by Henry Alexander Miers of the mineralogy section of the British Museum when, at the end of the 19th century, he grouped all the topographic mineralogies existing in the library by the precision of the localities on the labels of the examples in the collection (Spencer, 1948).

Right hand page:

Botryogen. 2 cm. Pozo Alfredo, Rio Tinto mine, Minas de Riotinto, Huelva, Spain. Volume VI. Miguel Calvo Rebolgar collection, Joaquim Callén photos.

“Minerales y Minas de España”, complete work in 9 volumes, one for each of the classes in the Strunz classification of minerals, plus one for quartz and other silica minerals.







Dust jackets of some of the volumes of “Minerales y Minas de España”.

This specialized section was later expanded, so that Spencer (1948) was able to select more than 500 references, including books, articles, and groups of articles in the first published bibliography on works of this theme. In the compilation made by Smith (1995) there appear several hundred more recent works, and that does not include most of the regional U.S.A. mineralogies, collected in turn in Smith and Cook (1979) and in Smith (1987). The size of these works varies between a few pages to several thousand pages. The most extensive works are listed below, in chronological order:

-**Nikolai v. Kokschatow**, *Materialien zur Mineralogie Russlands*, published in Saint Petersburg between the years 1853 and 1891 in 11 volumes of text, plus an atlas of 64 pages, with a total of 4,017 pages.

-**Alfred Lacroix**, *Minéralogie de la France et de ses Colonies*. The original edition, in five volumes, was published between 1893 and 1913, with 3,766 pages. In 1977 a facsimile edition was published, under the title *Mineralogie de la France et de ses Anciens Territoires d’Outre-mer*, adding a further volume with an appendix, by which this edition reached 4,021 pages.

-**Alfred Lacroix**, *Minéralogie de Madagascar*. Three volumes, published between 1922 and 1923, with a total of 1,822 pages. First edition published in 5 volumes between 1937 and 1948, with a new amplified edition published in 8 volumes between 1957 and 1966, with a total of 3,608 pages.

-**Edward Sydney Simpson**, *Minerals of Western Australia*. Published between 1948 and 1952. Three volumes, with a total of 1,922 pages.

-**Kodera, Miroslav, et. al.** *Topografická Mineralógia Slovenska*. Three volumes, published between 1986 and 1990. Total 1,583 pages.

As one might expect, the focus of these books shows notable differences. As the title indicates, Kokschatow wrote some “materials”, without pretending to be exhaustive either with species or with localities,

which makes sense considering the vast extent of Russia and the possibilities of traveling at that time. On the other hand, Lacroix included, in addition to France, its colonies of the time, that is to say a great part of Africa and some areas on other continents too, as well as the border zones of the neighboring countries, among them Spain. Simpson’s work was published posthumously, since he died in 1939. Kratochvil and Kodera organized their works following a geographical, not mineralogical, order.

“Minerales y Minas de España”

With regard to Spanish mineralogy, the most important historical publication was the book by Salvador Calderón, *Los minerales de España*, published in 1910 by the Board for the Extension of Studies and Scientific Research. This work consists of two volumes, with a total of 977 pages, and 11 illustration sheets separate from the text.

Along with these extensive historical topographic mineralogies, we can now include the work of Miguel Calvo Rebolgar, *Minerales y Minas de España*, published between 2003 and 2018, which, counting the illustration sheets too, exceeds 5,000 pages, even more extensive than any of those previously cited.

It describes the presence of 1,230 different minerals, from around 10,000 Spanish locations, representing more than 20 years of work, some of the results having also been published as articles in this magazine; among which those dedicated to the gold mine of Carlés, the zeolites of Ciudad Real, or the phosphates of the La Paloma mine, in Zarza la Mayor, can be highlighted. Each volume includes one class of minerals, following the classification of Strunz, except volume 8, devoted entirely, for reasons of length, to quartz and other silica minerals. For each mineral, the deposits are divided by autonomous communities (from N to S), then further subdivided by provinces, according to the importance of the localities.



5mm crystal of **stokesite** on a crust of albite microcrystals. Isabel granite quarry, Valdemanco, Madrid, Spain. Miguel Calvo collection. Volume 9. Joaquim Callén photo.



Jarosite. 2mm crystal. Santa Bárbara adit, Barranco del Jaroso, Cuevas del Almanzora, Almería, Spain. Published in volume VI. Christian Rewitzer collection and photo.



Coquimbite. 5 cm. Pozo Alfredo, Rio Tinto mine, Minas de Riotinto, Huelva, Spain. Volume VI. Miguel Calvo collection, J. Callén photo.



Mimetite. Biggest crystal 2 mm. Filón Sur cut, Tharsis mines, Alosno, Huelva, Spain. Volume VII. Christian Rewitzer collection and photo.



Linarite. 1.5mm crystals. La Endrina mine, Arrayanes, Guarroman, Jaén, Spain. Volume VI. Christian Rewitzer collection and photo.

The work includes 15 plates in each volume (31 in the quartz volume), crystal figures, and an exhaustive bibliography, with references that run from the 16th century to the current year. More than 1,500 references are cited in the volume on silicates alone. The most important localities have their own sections, such as Áliva in the sphalerite section, Navajún in the pyrite section, Reocín in both sphalerite and marcasite, Eugui in dolomite, Carchelejo for prehnite, etc. Although the author, together with Joan Viñals, has already published several articles in this magazine, describing many new species for Spain, the book reports several dozen more. We can mention the first reports in print of absolute novelties for Spain like brianyoungite, pyroaurite, likasite, palmierite, elyite, zincolibethenite, wardite, scholzite, ludjibaite, cornubite, krautite, bendadaite, strunzite, paravauxite, santabarbaraite, faustite, planerite and phosphofibrite, among others.

Obviously, a work this extensive and detailed implies a field knowledge of the localities impossible for one person to obtain all by themselves, and therefore, as the author himself repeatedly indicates, the collaboration of many dozens of people has been indispensable, and whose names appear in the acknowledgments sections of the various volumes. Consequently, due to its length and degree of detail, this work can be considered essential for those interested in the mineralogy of Spain, both from the professional point of view and from that of the advanced collector. Only a global index is missing for localities, preferably computerized, which would allow the parageneses to be more easily grouped.

About the author

Miguel Calvo Rebollar, author of *Minerales y Minas de España*, is a profound expert in the mineralogical sciences and is considered an important authority on the matter.

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From left to right: Dr. Miguel Calvo, author of “*Minas y Minerales de España*”; Dr. Benjamin Calvo, exdirector of the Museum of the School of Mines, Madrid, and ex-president of the Gomez Pardo Foundation; Dr. Joan Viñals, professor of chemistry at the University of Barcelona; Martin Oliete, Museum collaborator. Photo taken at the Museum of the School of Mines, Madrid.

A man of great culture and encyclopedic knowledge, he is a prolific author of recognized prestige. Indefatigable and a methodical worker, he has written several books and articles on topics related to mineralogy and mining, but also on matters as varied as numismatics and industrial history. With a PhD in chemistry, his knowledge is not limited to inorganic chemistry, but also covers the organic side as he is also a professor of food technology at the University of Zaragoza, a subject on which he has done a great deal of research. “*Minerales y Minas de España*” is an absolutely essential work, and considering its magnitude it is probably an unrepeatable job. The first, and previously the only, work on the subject, as we read in the text above, was published in 1912, and was written by a learned man, Salvador Calderon. We had to wait a century for another scholar who could repeat the feat. Mention must also be made of Joan Viñals, a personal friend and collaborator of the author for many years, also a doctor in chemistry, specialized in the analysis of minerals, a professor at the University of Barcelona, who unfortunately passed away a few years ago. Dr. Viñals was the author of numerous analyses used to identify many of the mineral samples mentioned in this work.

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