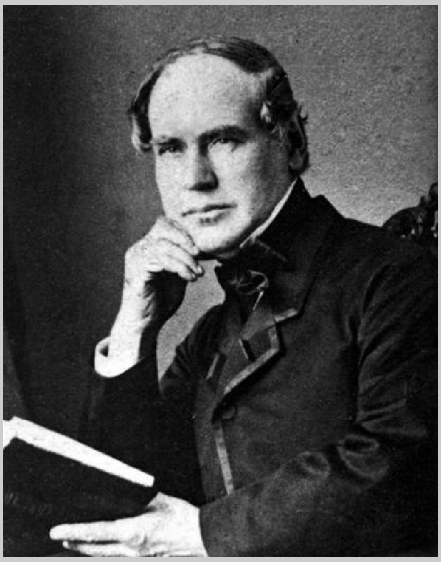
Edouard de Verneuil, cinnabar from Almadén and the first geological map of Spain

Miguel Calvo

The "Mineral Species Conservation Service» (abbreviated SCEM in french), was created in 1957 on the initiative of Claude Guillemin as part of the «Bureau de Recherches Géologiques et Minières». Until 1990, when it was forced to close, the SCEM conducted several expeditions to significant deposits in various parts of the world to obtain notable mineral specimens for French museums and for exchange with other museums and private collectors around the world. The first of these expeditions, in 1958, to Reneville, in the Congo, allowed him to obtain a wide representation of specimens of dioptase; in 1963, in Anloua (Cameroon), he mined the currently well-known vivianite crystals typical of this deposit, up to a meter in length. In 1964 it was the turn of thallium minerals from Allchar, in Macedonia (Mantienne, 1984). In 1957, Claude Guillemin joined the Paris School of Mines, being responsible of the reorganization of the mineral collection of the School's museum. This allowed him to obtain old specimens from various world localities for the SCEM, which had entered the collection of the School through multiple donations received in its nearly two centuries of existence.

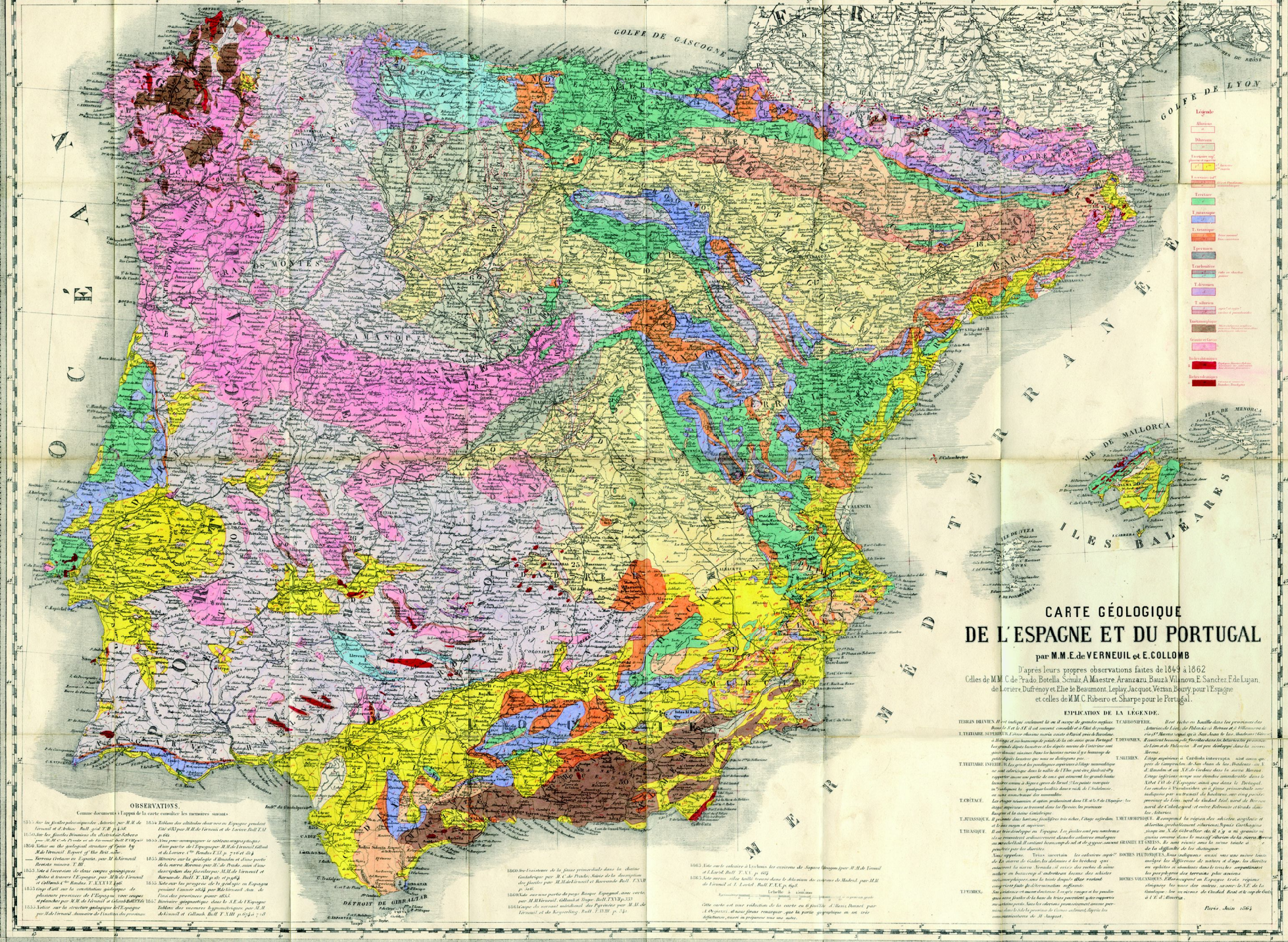
The picture on page 59 shows two small isolated groups of cinnabar crystals, which formed part of the collection of Philippe Edouard Poulletier de Verneuil, donated by him on his death in 1873 to the Paris School of Mines. The collection of this eminent French geologist was enormous, between 600 and 700 boxes (Barrande,1873), of which 10% were fossils from Spain (Verneuil, 1864). The collection also had a detailed catalog, written by Verneuil himself. This collection is currently in the Claude-Bernard University of Lyon, and is accessible to researchers (Babin, 2005). However, although the collection had an enormous scientific value from the palaeontological point of view, its mineralogical content was quite pitiful, since minerals lay outside the scientific interests of Verneuil. Consequently, crystals of cinnabar, along with their labels, having been considered 'not valuable', became part of the exchange materials of the Museum of the École des Mines, leaving it in the 1980s.

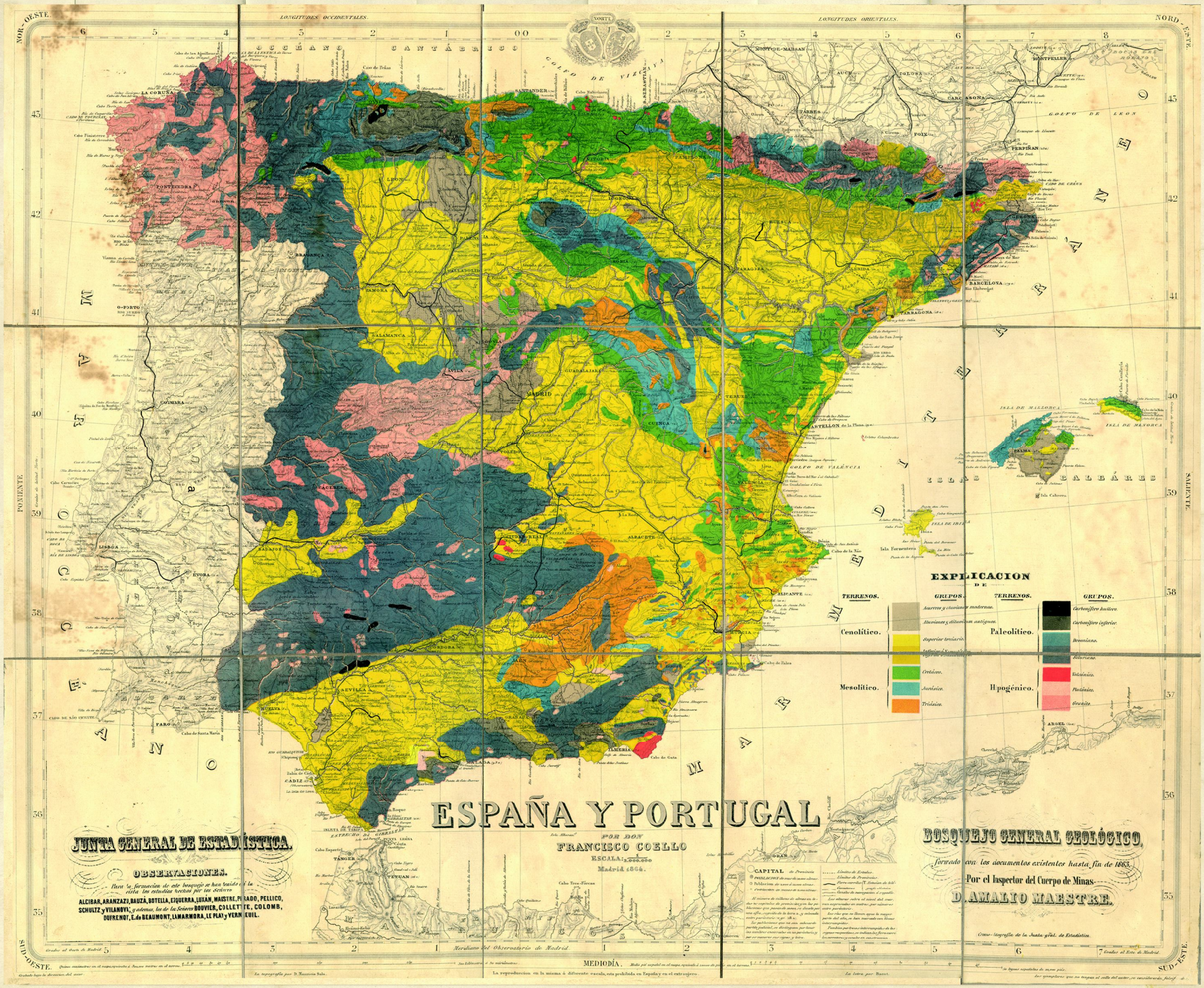


Philippe Édouard Poulletier de Verneuil (Paris, 1805-1873).

Verneuil was a great traveller, studying *in situ* the geology of many places, including the United States, Russia and other European countries. From 1849 to 1862 he engaged in twelve campaigns of geological investigation in Spain (Verneuil, 1864), publishing as many as 26 works on various aspects, especially on Paleontology. One of these works was the characterization of fossils of Almaden and the Montes de Toledo that Verneuil and Barrande (1855) carried out as a complement to the geological description of those lands by Casiano de Prado (Prado, 1855). The studied fossils were obtained by Casiano de Prado and by Verneuil himself, on a trip to the area that took place in 1850, and it was probably on that trip when he got the cinnabar crystals. Among these

Cinnabar crystals (the size of each group is 1 cm) from Almaden, belonging to the collection of Édouard de Verneuil and donated to the Museum of the School of Mines of Paris, now in the Miguel Calvo's collection.

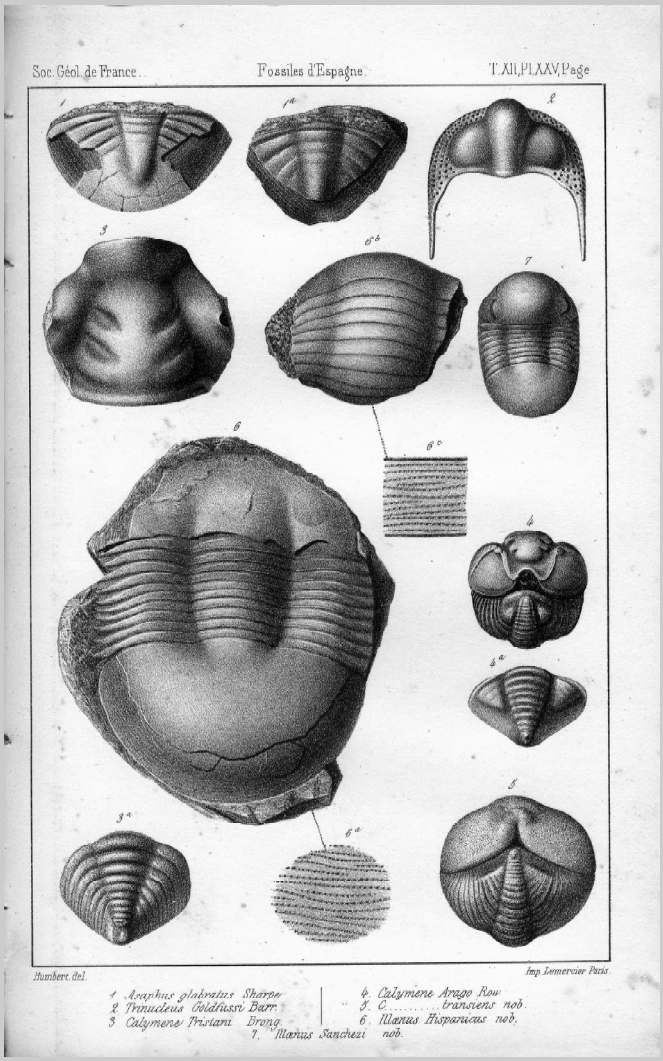

GOLFE DE GASCOGNE
GOLFE DE LYON
MER MEDITERRANEE
OCEAN
ILES BALEARES
DETROIT DE GIBRALTAR
CARTE GÉOLOGIQUE
DE L'ESPAGNE ET DU PORTUGAL
par M.M. E. de VERNEUIL et E. COLLOMB
D'après leurs propres observations faites de 1849 à 1862
Celles de MM. C. de Prado, Botella, Schulz, A. Maestre, Aranzazu, Bauzá, Vilanova, E. Sanchez, Fde Lujan,
de Loriere, Dufrénoy et Elie de Beaumont, Leplay, Jacquot, Vézian, Bourg pour l'Espagne
et celles de MM. C. Ribeiro et Sharpe pour le Portugal.
EXPLICATION DE LA LÉGENDE.
OBSERVATIONS.
Comme documents à l'appui de la carte consulter les mémoires suivants:
Paris, Juin 1864.
En Vente, chez F. SAVY, Libraire, Rue Hautefeuille 24, Paris.



Geological maps of Iberian Peninsula, Verneuil and Collomb (1864) (left), and Spain, Amalio Maestre (right). Both maps are part of the collection of Miguel Calvo.

fossils were twenty new species that Verneuil and Barrande named in honor of Spanish geologists or foreigners who had worked on Spain.

The knowledge that Verneuil had obtained about the geology of Spain led him to consider publishing, together with Edouard Collomb, his usual collaborator, a geological map of the Iberian Peninsula, at a scale 1:1,500,000, which would be the first ever done, since previously only partial maps of some areas had been published, those too having been in large part also his work, and at a general level, only some outlines without details. At their meeting of August 29, 1864, Verneuil presented to the Paris Academy of Sciences the geological map of Spain and Portugal, made by him and Collomb (Verneuil, 1864). He told the audience that he had decided to make his work public quickly (he had been working on it for fifteen years already) because he had news that Amalio Maestre was preparing a similar work, and he didn't want to lose the priority of publication. In fact, in 1855, he had already provided a simplified map to be part of the geological map of the whole of Europe, published by Dumont. He regretted that the engraving was not as perfect as he would have wished, precisely because of the rush to publish it. This communication enables us to say without any doubt that Verneuil and Collomb's map was actually printed and published at the end of August, 1864.

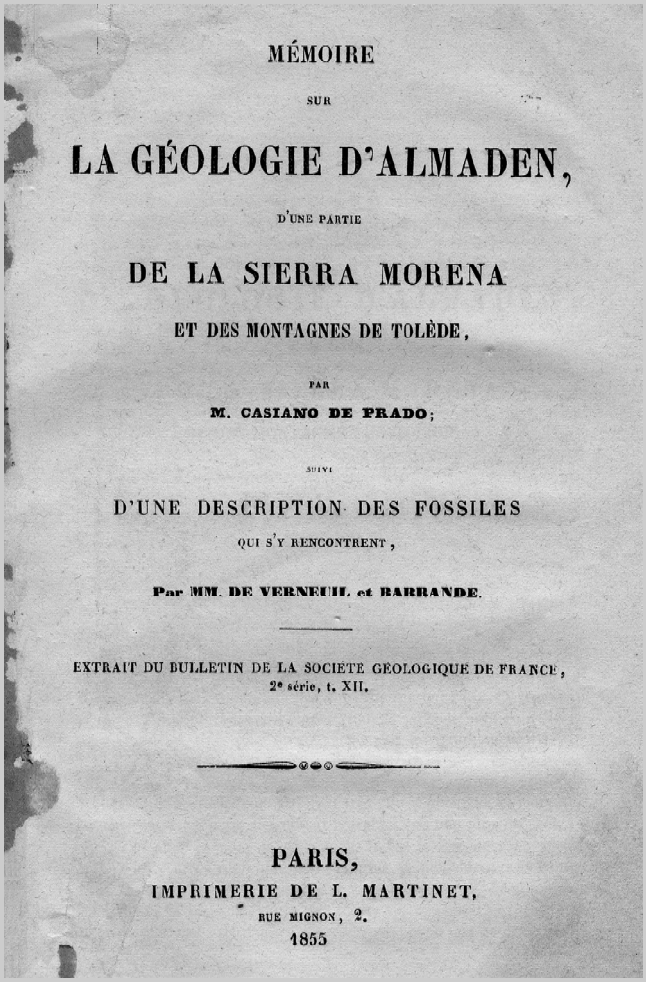


One of the plates of «Geologie d'Almaden» by M. Casiano de Prado, with the drawings of fossils described by Verneuil and Barrande.

Amalio Maestre also published his map, in his case only of Spain, and on a somewhat smaller scale, 1:2,000,000. Later geological literature was not clear about the relative priority of these two maps. Maffei and Rúa (1871) indicate that Maestre's predated that of Verneuil, but they did not take into account the exact date of publication of the former one, for the simple reason that the date does not appear on it, even though two dates are written in different sentences: 'Spain and Portugal by Don Francisco Coello. Scale 1:2,000,000. Madrid 1864", which could refer to the cartographic base used, and «Geological general sketch formed with existing documents up to the end of 1863 by the Inspector of the Cuerpo de Minas, D. Amalio Maestre». The map was printed by «Cromolitografía de la Junta General de Estadística», so somewhere there should be a record of this work establishing the date of printing. Unfortunately, to consult this record, if it exists, would not be easy. It is even difficult to consult the maps themselves, given their rarity. When Solé (1983) wrote his remarkable work on old Spanish geological cartography, having no access to either of the two maps in question, he had to compare a copy of the second edition of the French map with the reproduction of the Spanish map that appeared in the book of Lopez de Azcona y Hernández (1974), a reproduction that, although Solé was unaware of it, wasn't even really the published map.

However, it is possible to establish with certainty priority of publication of the first geological map of Spain. The maps drawn by the French authors and by Amalio Maestre were both presented to the Exposition Universelle de Paris in 1867. Checking the various exhibition catalogues, Verneuil and Collomb's priority is clear. In the catalogue of the Spanish section, published by the Royal Commission of Spain (1867), several geological maps presented by Maestre appear as

individual entries within the 13th section of the catalog (which was also part of the Spanish general commission for this exhibition), among them that of Santander province, which probably had already been published with his memorandum about this province (Maestre, 1864), and those of the three Basque provinces and Navarre, in addition to one about the complete Basque country (which was as yet unpublished), but does not include a Spanish general geological map, although mentioned in the introduction is the presentation of "a general advance", but without more details. However, in the final section, written after the exhibition and copied from the French general catalogue (anonymous, 1867), it is said that the geological map of Spain presented by Maestre had won a silver medal. On the other hand, the general catalog of the Exposition describes the map «published» by Verneuil and Collomb (which, surprisingly, did not obtain any prize), and quotes the presentation of a map that «remained in manuscript», by Amalio Maestre (Daubrée, 1867).



MÉMOIRE

SUR

LA GÉOLOGIE D'ALMADEN,

D'UNE PARTIE

DE LA SIERRA MORENA

ET DES MONTAGNES DE TOLÈDE,

PAR

M. CASIANO DE PRADO;

SUIVI

D'UNE DESCRIPTION DES FOSSILES

QUI S'Y RENCONTRENT,

Par MM. DE VERNEUIL et BARRANDE.

EXTRAIT DU BULLETIN DE LA SOCIETE GÉOLOGIQUE DE FRANCE,
2e série, t. XII.

PARIS,
IMPRIMERIE DE L. MARTINET,
RUE MIGNON, 2.
1855

This handwritten map is probably that reproduced by López de Azcona y Hernández (1974), very different in aspect to the version finally printed. It is clear that the printed map of Amalio Maestre was not yet available in mid-1867. That is, its publication is later, by at least three years, than the map of Verneuil and Collomb. Verneuil's work is among the earliest in the study of Spanish geology in the mid-nineteenth century. Contrary to what unfortunately was normal, the Spanish Government recognized the enormous value of his scientific work, awarding him the Gran Cruz of the Order of Isabel La Catolica and the insignia of Comendador de la Order de Carlos III (Daubrée, 1875). We must also recognize him, without any doubt, as having priority in the publication of the first geological map of Spain... and having collected and preserved a few beautiful Almadén cinnabar crystals.

Miguel Calvo
Dep. Producción Animal y Ciencia de los Alimentos
Facultad de Veterinaria
Universidad de Zaragoza
calvoreb@unizar.es

References

-Anonimus (1867). Exposition Universelle de 1867, a Paris. Liste Générale des Récompenses Décernées par le Jury International. Imprimerie Impériale, París. 599 pages.
-Babin, C. (2005). Édouard de Verneuil (1805-1873), un pionnier de la biostratigraphie du Paléozoïque. Travaux du Comité Français d'Histoire de la Géologie, [3], **19**, 1-26.
-Barrande, J. (1873). Collection paléontologique de M. Edouard de Verneuil léguée a l'Ecole des Mines de Paris. Annales des Mines, [7], **4**, 327-338.
-Comisión Regia de España (1867). Exposición Universal de 1867. Catálogo de la Sección Española. Imprenta General de Ch. Lahure, París. 505 págs.
-Daubrée, (1867). Cartes géologiques. Seconde partie. En: Expositión Universelle de 1867. Rapports du Jury International. Imprimerie Administrative de Paul Dupont, París. Volume 2, 637-653.
-Daubrée, M. (1875). Notice nécrologique sur Édouard de Verneuil. Bulletin de la Societe Géologique de France, **3**, 317-328.
-López de Azcona, J.M. and Hernández, J. (1974). La Geología y Minería Españolas. Notas Históricas. IGME, Madrid. 100 pages.
-Maestre, A. (1864). Descripción Física y Geológica de la Provincia de Santander. Imp. de F. Gamayo, Madrid. 127 pages
-Maffei, E. y Rúa, R. (1871). Apuntes para una Biblioteca Española de Libros, Folletos y Artículos, Impresos y Manuscritos, Relativos al Conocimiento y Explotación de las Riquezas Minerales y a las Ciencias Auxiliares. Imprenta de J.M. Lapuente, Madrid. Vol. 1 pag. 436.
-Mantienne, J. (1984). Service de Conservation des Espèces Minérales (SCEM). Monde & Mineraux, (64), 28-31.
-Prado, C de (1855). Mémoire sur la géologie d'Almaden, d'une partie de la Sierra Morena et des Montagnes de Tolède. Bulletin de la Sociéte Géologique de France [2], **12**, 182-204.
-Solé, L. (1983). Los más antiguos mapas geológicos de España. Mundo Científico, **3**, 252-262.
-Verneuil, E. de (1864). Note sur la Carte géologique de l'Espagne. Comptes Rendus des Seances de l'Academie des Sciences, **59**, 417-422.
-Verneuil, E. de and Barrande, J. (1855). Description des fossiles trouvés dans les terrains silurien et dévonien d'Almaden, d'une partie de la Sierra Morena et des Montagnes de Tolède. Bulletin de la Sociéte Géologique de France [2], **12**, 964-1025.