

CRYPTOPALAEONTOLOGY: MAGICAL DESCRIPTIONS OF TRILOBITES ABOUT TWO THOUSAND YEARS BEFORE SCIENTIFIC REFERENCES

Eladio Liñán¹ and Rodolfo Gozalo²

¹ Departamento de Ciencias de la Tierra, Facultad de Ciencias, Universidad de Zaragoza, 50009 Zaragoza, Spain. linan@unizar.es

² Departamento de Geología, Facultad de Ciencias Biológicas, Universitat de València, Dr. Moliner 50, 46100 Burjassot, Spain. rodolfo.gozalo@uv.es

Key words: Trilobites, lapidaries, Cryptopalaeontology.

INTRODUCTION

Lapidaries are a particular type of literary text that describe and give names to a list of stones, which, like minerals or gems, have always stood out among the natural elements for their particular shape, shine or colour and to which magical and curative properties were attributed by ancient tradition. The first texts came from Mesopotamia and Persia; they then moved to classical Greece and later, highly impregnated by the Chaldean-Egyptian astrological tradition, were introduced into the west through the Arab culture. This emphasis on magical properties differentiates them from the more specifically pharmacological works of Hypocrates, Dioscorides and Galenus, in which references are also found to minerals and their by-products used as remedies, but without the mythological or astrological connotation of lapidaries.

Most of the original lapidary texts have been lost, but fragments of their content are known because they were the sources of subsequent works, among the most outstanding of which are Pliny The Elder's *Natural History* (1st century) and the Greek apocryphal "*Orpheus' Lapidary*" or "*Lithica Orphéôs*". It has been speculated that the latter is a copy based on a Greek original dating before the 2nd century B.C. (Halleux and Schamp, 1985). It is also worth pointing out that "*Lapidario Kerygmata*" or "*Orpheus' Lithica Kerygmata*" is an epitome or summary of "*Orpheus' Lapidary*".

Most of the stones referred to in these lapidaries are minerals and rocks, but there are also fossils, which are sometimes difficult to identify because their descriptions are ambiguous, whether because the emphasis is placed on their magical-medicinal properties alone, or because they intentionally use cryptic language that is only accessible to experts. The study of these ancient literary, medical and magical-religious texts with the aim of finding historical references to fossils and the meaning conferred upon them by primitive cultures can be referred to as Cryptopalaeontology. This discipline also includes findings of fossils in archaeological sites and the study of oral traditions that have survived until our times (Liñán, 2004).

Among the lapidaries mentioned, there are stones that are fossils beyond any doubt. Some have been known since ancient times, such as the Ammon's Horns Stone, but there are many others that still remain to be deciphered. One of the most enigmatic and interesting stones is the Scorpion Stone, which is present in Pliny's *Natural History*, Isidoro's *Ethimologies* (7th A.C.), Alfonso X's *lapidary* (1279) and also in the

Orpheus' two lapidaries. There is no doubt that this stone refers to a fossil, which we wish to analyse in this brief note, from a palaeontological viewpoint.

STONE DESCRIPTIONS

Stone of Scorpions ("*Líthica Orphéôs*", v. 494-497): "*Scorpion, the brilliant hero Orion was not aware of the existence of a stone with the same name as you, as I believe that, when his feet were crossed by sharp pain, he would have preferred to possess the stone than his constellation*".

Scorpion Stone ("*Orphéôs Líthica Kérygmata*", 18): "*Stone called scorpion <skorpíos>, due to homonymy with the reptile (sic), which is said to have power against scorpions*".

As Liñán (2005a) pointed both texts very probably refer to the fossil group of the trilobites, which are extinct arthropods that populated the sea of the Palaeozoic Era. This supposition is based on three observations. In the first place, trilobites were already known and collected by Cromagnon Man in the Upper Palaeolithic Age as is suggested by the finding of trilobites drilled for use as a pendant in caves from Yonne, Central France (Oakley 1965, 1985; Chlupáč, 2000; Henry, 2001, St. John, 2007). In the second place, trilobites are by far the most common fossil arthropods on geological record worldwide and usually have the ability to roll up into a ball, thus taking on the appearance of scorpions, which roll up their abdomen when they feel attacked. The third circumstantial relation is constituted by the different common denominations that these fossils receive today in Spain. Thus, the locals refer to the Early Cambrian trilobites in San Nicolás del Puerto (Seville) as "stone scorpions" due to their segmented body and in Constantina (Seville) they are called "large ants of stone". Furthermore, as is well known, trilobites lived by forming communities of numerous individuals that left their skeleton when they shed their skin or died on the surface that fossilised them, giving rise to frequent accumulations on the rock surface, which could easily explain the plural used to designate this stone in "*Orpheus' Lapidary*".

Scorpitis Stone (Pliny XXXVII 187). From the Greek *Skorpíos*, scorpion: "*Some stones take the name of animals: ... scorpitis, from the colour or shape of the scorpion*". (Isidoro, *Etimologías* 16 19 "*scorpitis scorpionen et colore et effigie refert*").

The double reference to colour and shape may indicate the existence of two different sources. It would not seem likely that Pliny was referring here to real fossil scorpions, which even today are extraordinarily rare in the fossil record. He would not appear to be referring to fossil crabs because these are easy to recognise and because he previously mentions **Carcinias** (Crab stone, derived from the Greek *karkínos*) and says that they take their name "*from the colour of the sea crab*". He was most likely referring to trilobites, deposits of which are widely recorded in the classical world from Italy, Spain, Great Britain, France, Germany, Morocco, Algeria, Egypt, Turkey, Israel, Palestine, Jordan, Pakistan, Afghanistan and India.

As indicated above, trilobites are called stone scorpions and stone ants in some areas of Sierra Morena (South Spain). In this respect, the **Myrmecias Stone** (from the Greek *myrmex*, ant) "*The myrmecias is black and has excrescences similar to warts*" (Pliny XXXVII 174) and the **Myrmecitis Stone** ["*The myrmecitis is shaped like an upright ant*" (Pliny XXXVII 187), "*Myrmecitys formicae reptantis effigiem imitatur*" (Isidoro 16 19)] may also be a variety of trilobites. The shell of many trilobites is ornamented with spots and spines and its colour is often shiny black. Moreover, the partially rolled up shapes may look as though they are coiled up on themselves using the pygidium as a support point.

The interpretation of the **Cantharias Stone** (Pliny XXXVII 187) is more difficult (Liñán, 2005b). It comes from the Greek *kántharos*, meaning beetle: "*The cantharias, the beetle stone*". Besides being rare,

fossil beetles are delicate as they are conserved as fine carbon films in exceptional deposits of the *fossil-lagerstätte* type, which are formed in former lakes. However, agnostoids (pelagic trilobites exclusively from the Cambrian and Ordovician ages) are very common in the Mediterranean area and their appearance is very similar to that of beetles. If the Cantharias Stone is the interpretation of agnostoid trilobites, it could be one more explanation of why the beetle was considered a sacred animal in Egypt, as its "generation" inside rocks as well as the "Cornu Ammonis" stone, which would be a divine attribute.

The last reference is the **Albarquid** Stone contained in the Alfonso X the Learned of Castilla lapidary (I 13, 35) "...appears in this stone a scorpion figure; and we found the same figuration in the interior if they break" which is considered the first palaeontological book in Spanish language (Liñán, 2006).

CONCLUSIONS

For his work, Pliny the Elder consulted writings that have not always been conserved but that date from before the 1st century B.C., one of which is "*De Lapidibus*" by Theophrastus (4th century B.C.) and other references are of Zoroastre (7th century B.C.) The disappearance of the Scorpion Stone and that of the Ostrite Stone in medieval lapidaries supports the relative antiquity proposed by *Orpheus' Lapidary*, the last codice in which these stones are found. That is, there are rational indications that trilobites were known in classical Greece and during the Roman Empire and were commercially valued as a sympathetic remedy against bites from poisonous animals. The different names Scorpion Stone, Myrmecias Stone, Myrmecitis Stone, Cantharias Stone and Albarquid Stone must have referred to different trilobite types and different geographical origins.

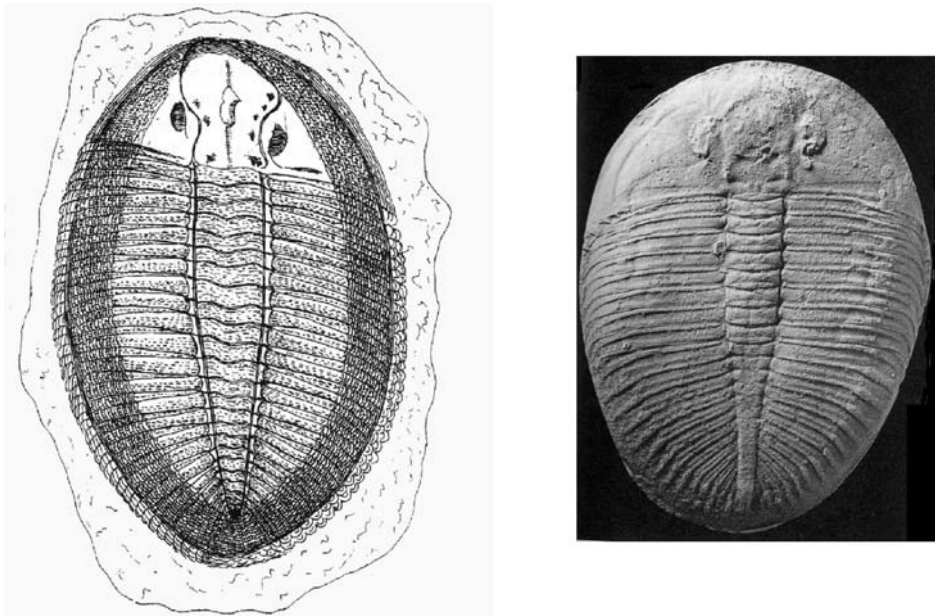


Figure 1. The 'flatfish' figured by Dr. Lhwyd (1698) and a photograph of probably the same specimen of *Ogygiocarella debuchii* (after Fortey, 2000).

If this is the case, we must conclude that trilobites, like other fossils, were recorded in the primitive books of medicine and magic called lapidaries: almost two thousand years before Wan Shizhen (1689) mentioned trilobite pygidia in North China as “batstones” (John, 2007), before Lhwyd (1698), curator of the Oxford Museum, made the first known drawings of trilobites (Figure 1) representing the species *Ogygiocarella debuchii* of the Ordovician age (Fortey, 2000) and called them “Trinuclei”; before Zeno (1770) depicted the trilobite *Dalmania haussmanni* and called it “three-lobed shell” and before the German Walch (1771) coined the term “Trilobitae” (Whittington, 1992). In this way, lapidaries may be capable of filling part of the great information gap that exists in the History of Palaeontology for Palaeozoic invertebrates. The time that passed between the archaeological finding of trilobites *Ormathops* in Magdalenian from 15,000 years ago in France and Lhwyd’s drawings. The latter might be considered as the point at which trilobites ceased to be interpreted as magical-medical stones.

Acknowledgements

We acknowledge support from the Spanish Dirección General de Investigación-FEDER, Project CGL2006-12975/BTE and Gobierno de Aragón, Grupo E-17. Patrimonio y Museo Paleontológico. Mss. Martina Acena kindly revised the manuscript English text.

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