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GIANTS, DRAGONS, SAINTS AND GEOLOGICAL PHAENOMENA

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Prologue

The creation of myths and the supernatural interpretation of natural phenomena by primitive man, is a real mystery, lost in the depths of time. The definitions given by man are an effort to approach the cause of such phenomena, a fact showing Man's raising to a higher intellectual level.

Fossils of organisms defined by paleontological data, are ascribed in folklore traditions to dragons, giants, supernatural beings and saints and are supposed to have healing qualities. In this essay such examples are cited.

We cannot claim that the subject is completed , however, we made an effort to include as many cases as possible, either through personal research or by literature data.

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Giants, Supernatural beings

For a long time, Man had set innumerable questions in order to interpret changes and phenomena concerning the world and his attention was attracted by several fossils. The definitions he gives, create imaginary stories and myths.

The Greeks first, had deified the multiple, different and often contradictory forces of Nature. In this way, they could accept that unknown forces rule or seem to rule the world.

It is a fact that Creation myths refer actually to the history of Earth, where various events are defined as supernatural. Hesiod, in "Theogonia", considers that before everything there was just "Chaos": "It is the Space that contains "in sperm" everything that is to be part of the Universe. Chaos, is the beginning of all things. It's the initial and the creative element. Broad-chested Earth consists the eternal and the unshakable prop of all humans".

Ancient Greeks in their mythology offer noticible informations and interpretations of impressive geological events. They claim that the volcanic action of Aegeis and of the East Mediterranean generaly, has to do with the battle among Giants and Gods after Cronos' and Zeus' quarell. Thus, when Zeus faces the Giants, along with Hercules' and Minerva's help, they skinned giant Pallas and crushed giant Engelados with Etna. Giant Polyvotis chased in the sea by Poseidon, seeks refuge in Kos and near there, he was crushed by Zeus with Nisyros. In this way, the ancient Greeks interpreted the presence of the still active volcanoes of Etna (Sicily) and Nisyros. From the last known explosions we mention those of the years 1422, 1830, 1871, 1873, 1888. Some of them were so intense, that the shaken off volcanic

Fig.1: Map of the Mediterranean presenting the ancient world and certain location mentioned in the text.

ashes can be localized today at the bottom of Eastern and Central Mediterranean during the deap-sea-drilings.

Another myth concerning a synchronus volcano, that of Lihades islands in Malliakos Bay, refers to the Battles among the Giants and Hercules' expedition against Evrytos. Evrytos, had promised his daughter, Ioli, to the man who would defeat him and his sons in target practice. However, he refused to give Hercules this prize and the hero killed him with all his people;only Ioli was saved. Hercules, took her along and disembarked on Euboea, Cape Cinaio, where he built an altar to Cinaius Zeus. "Wishing to sacrifice to Zeus, he send a herald to Trahina, to bring him official dresses". This herald, called Lihas, talked to Hercules' wife, Dheianera, about the beautiful captive.She feeling jealous gave Lihas a white shirt coated with the erotic filter of Centaur Nessos.Hercules, wore this shirt.But when it warmed up,the poison intruded his flesh which started to rot and fall. Then, Hercules grabbed Lihas by his legs,and threw him in the Euboec sea .

That's how Lihades islands <Stroggyli, Nolonia and Ponticonisia> were created, consisting a volcanic group, active also during the Holocene, with plenty of gushes of calcinumalcalic composition <GIDARACOS,1988>.

The myth of Frixos, Elli and the Golden Ram, combined with the Argonauts' expedition for the Golden Fleece can be interpreted as the human eagerness for gold. The imagination of the ancient Greeks created a Golden Ram with divine origin which helped Frixos and Elli escape when their life was threatened because of a false request of Delphes' Oracle. The districts of Thrace, Colhida and of the so called today Armenia, which the Argonauts are reported to have visited in 1200 BC, in search of the Golden Fleece, are even now known for the presence of gold. A very old technique, used also by the European settlers of the new world, was to empty a backet of water and the sediment with the gold-dust on a skin of sheep or ram. The hair kept the gold-dust which,was heavier, and when it dried, they shaked it and gathered the gold.(fig.2)

The discovery of large fossil skulls and teeth has repeatedly directed to conclusions for the former existance of Giants. The bones observed in Megalopolis by Pausanias as well as the skull and skeleton Boccacio observed in Sicily, are of the most impressive examples.

Trapani's giant is especially fascinating since the Italian poet Boccacio, author of "Decaimeron", writing in 1472, seemed to believe that this skeleton belonged to the carnivorous, one-eyed Cyclop Poliphemos, who is mentioned in Odyssey by Homer. The myth mentions that the son of Poseidon and of the nymph Thoosa, imprisoned Ulysses and some of his men in a cave. Those of them who were not eaten by the Cyclop, blinded him and escaped.(fig.3)

The German paleontologist, Othenio Abel, had already mentioned a possible definition for the Cyclops myth. It is a fact the if somebody who has no anatomic knowledge comes to an elephant skull, the nasal openings of the skull would seem as two cavities of the eyes joint in one. If the wandering travelers of Homer's age had found skulls of fossil elephants in coastal or maritime caves on the coasts of Sicily <where excavations during the 20th century, proved that indeed exsist> these could be

Fig.2: Representation of Frixos and Elli on the golden Ram.

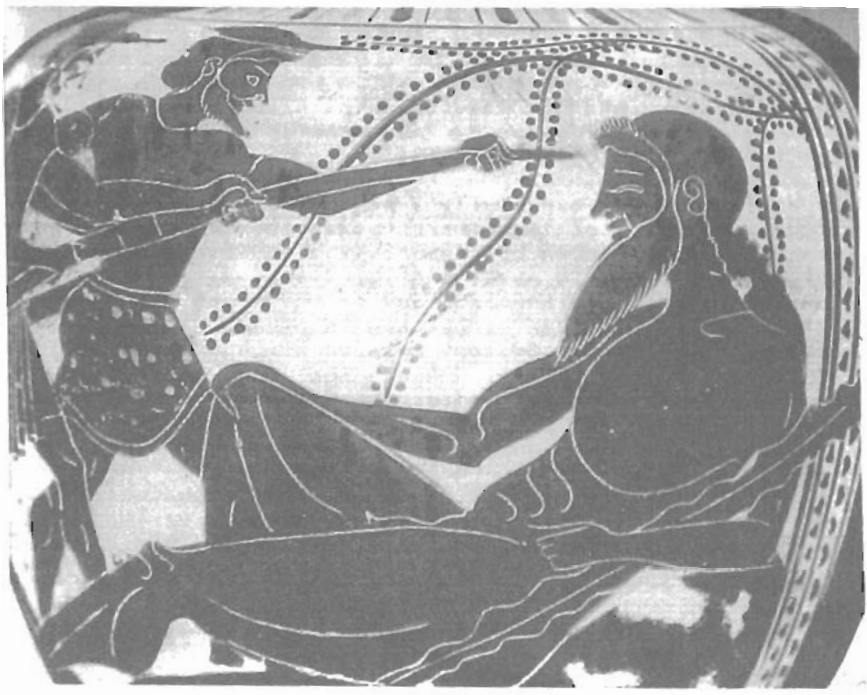


Fig.3: Ancient Greek painting on a vase showing the blinding of the one eye Cyclop Polyphemus by Odysseus and his companions.

considered by mistake as skulls of giants' with one single eye on the fore-fead. This charming supposition can't be verified, but there is no doubt that the belief in giants was reinforced by findings of bones from elephants, deer, hippopotamus and other animals (fig.4)

An interesting case concerns the Upper Miocene <Pikermian> fossil bones of Pikermi fauna on Samos island, for which there have been myths since the ancient times.

The Roman sophist Claudios Aelianos, who lived in Rome about 225AD, in his 7th book on Animals Nature <De Natura Animalium>, mentioned Ephorion who was an epic and elegiac poet of the Hellinistic period. In his very few saved epillia he says that in ancient times, Samos became uninhabitable because of the appearance of large, fierce monsters which prevented people from travelling. These monsters were called Naiades and could cause breaches on the land with the sound of their voice alone. The people of Samos had a proverb: to scream louder than the Naiades. The poet mentions that even today one can find large bones of these beings.

Plutarch's interpretation in his work "Greek Questions" was different; he claimed that the bones one may observe in Panaima location of Samos island, belong to the Amazons who were killed by Dionysus there, and the location was called "Panaima" by the plenty of blood that was poured.

Even today the villagers of Samos mention that in the bottom of gullies one can hear the ultramundane moans and voices of the fairies <Neraides>. According to Heraclides of Pontos and Photios' lexicon, the name Neraida <Fairy> comes from Naiades or Neades <ionic dialect>.

In 1880's the English paleontologist Forsyth-Major rediscovered these legends and concluded that their basis was probably real. However, her research for fossil vertebrates was rewarded with the discovery of Upper Miocene appearances of Picermi fauna. <Forsyth-Major, 1891>. This was the begining of the scientific research for these, nowadays famous, sites with many vertebrates, research that continues even today <Melentis, 1967>.

On Kos island of the S.Sporades, there have been found plenty of fossil mammals of Neogene and Pleistocene age.

Major, in 1887, was the first to describe from Antimachia the species Mastodon arvenensis, Elephas meridionalis, Equus stenonis, Hippopotamus major, Cervus sp. [illegible] 1928, Airachi described from Antimachia, Armyri and Kardhamena Pleistocene species as: Machairodus crenatidens, Felis arvenensis, Hyaena sp, Elephas meridionalis, Equus stenonis, Sus cp strozzi, Cervus dicranius, Bos elatus. Desio <1931>, characterises the formations with Mastodon arvenensis, Elephas meridionalis etc, of Lower Calavrian <Lower Villafrancian> age. All these findings gave to the natives the idea to creat the myth for the bones of Meropi, a huge female giant of 11 ells height with a dragon living in her head.

But also other speciments found in Asclepeion, indigate the interest of ancient Greeks for fossilized mammals. Bornum Brown, an American paleontologist, discovered in 1920, one part of a fossil elefant tooth in the ruins of Asclepeion, the most famous

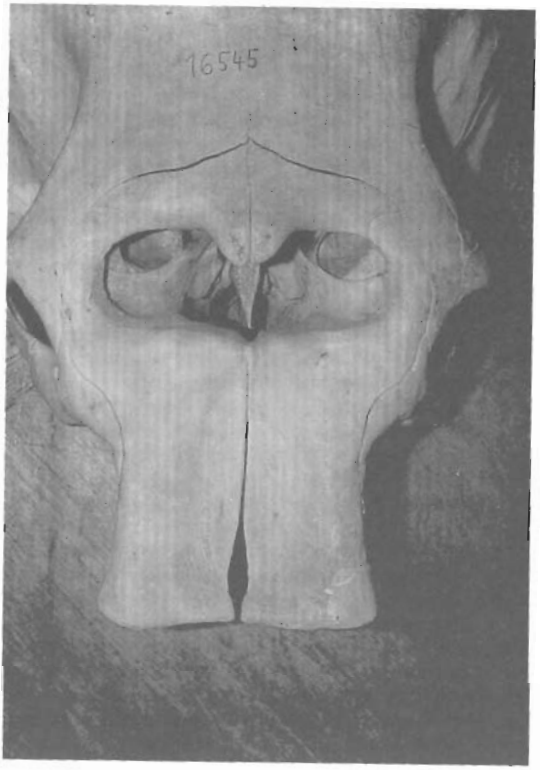


Fig.4: Front view of an elephant skull where the nasal openigs could seem as two cavities of the eyes joyned in one.

Fig.5: View of the elephant tusk.2,20m long, found in megalopolis Th.Skoufos at 1905.

ancient medical school were Hippocrates is supposed to have studied, 500 years BC. Of course it cannot be proven if Hippacrates himself studied this speciment, as Brown recommented, but there is no doubt that this elefant's molar was considered an item precious enough to be taken by the ancient Greeks from the site that was found with other fossils, to Asclepeion.

Bones of large fossil mammals, mostly Proboscideans, are among the most remarkable vertebrate fossils. They appear often enough, in Pleistocene deposits and many early findings caused much attention. Some of the reports date back to the Classical Antiquity. Empedocles (492-432 BC), reported findings of large bones in Sicily and considered them remnants of a generation of Giants. Pliny mentioned fossilized ivory found in the ground, and according to Suetonius, the emperor Augustus owned a collection of huge bones found on the island of Capri.It is also mentioned that they belonged to Giant's remnants (ARCHIAC, 1864).

The sediments of Pleistocene age, rich in fossils in several locations of Megalopolis, attracted the ancient Greeks' attention a long time ago (fig.5). They noticed the enormous fossil bones of Archidiscodon meridionalis,Palaeoloxodon (Elephas) antiquus and also the remnants of deer, Bovidae, etc. They regarded and defined them as bones of Giants fallen during the Battles of Giants that were caused by Rea's effort to protect her baby,Zeus, from Chronos. Pausanias describes the observed bones that are larger than normal human bones. These bones, as the tradition goes, belonged to one of the Giants, who were Rea's allies.

During the Middle Age and the Renaissance and up to the end of the 17th century, the bones of fossilized mammals were defined generally as remnants of Human Giants or mythical monsters and the heroic period of Paleontology (if we can name it so in this first stage) is mostly a story of Giants and Dragons. The comperative anatomy didn't develop before the end of the 17th century and until then the most logical explanation for bones found in the ground was that they belonged to Giants, the presence of which was also confirmed by the Bible and the Mythology . The Old Testament in the Book of Genesis was unequivocal :"there were Giants in those days".Therefore, it is not peculiar that the old chronicles often reported discoveries of Giants bones. Such reports stimulated the imagination of the people and the scholars, and "Gigantology" became a branch of specialized knowledge.

The bones of Giants were often kept in churches, castles or public buildings. In 1443 a mammuth thigh bone was found in Vienna, in the foundations of St. Stephan's Cathedral. Emperor Frederick III's saying decorated this bone: "A.E.I.O.U." (AUSTRIAE AST IMPERAXA ORBI UNIVERSO), and was kept in the temple for long (it was still there in 1729) before it was taken to the University of Vienna (Abel, 1914; Pfizenmayer,1926).

In 1557, large bones were found near Renden Abbey, Switzerland, at the roots of a big oak-tree, uprooted by a storm. The counsil of the city of Lucern declared that these bones belonged to an angel fallen from heaven, but the physiologist Felix Plater from Vasilia, recognized them belonging to a giant 5,75m tall. A picture of this "Giant of Lucern" was drawn on the

Tower of Lucern Town Hall with an explanation in verse, but the bones were burried with a chistian funeral (Pfizenmayer,1926). Also, in Archangel Michael's church in Schwaebisch Hall of SW. Germany, a mammuth tusk was exhibited with the following engraved comment (Pfizenmayer, 1926):

"In the year sixteen hundred and five
On February thirteenth I was found
Near Neubronn in the region of Hall
Tell me, dear, to which species I may belong"

Another characteristic and also important case is the Giant Inder's case that was created by the Russian tradition based on the mammuth bones found in Kostienki (meaning Village of Bones) in Don valley. The tradition mentions that giant Inder lived under the ground and died there.

This popular story, based on the abundant remnants of mammuths found in Siberia, led the Chinese to form the aspect that mammuths were a kind of gigantic mole living permanently in underground caves. According to a Chinese book on Nature of the 16th century, (Cuvier, 1836, p. 124) this supernatural being was called Tien-Schu or Tun-Schu, meaning "hiding mouse". Its size approached that of a cattle or buffalo, without tail, dark colored, incredible strength and ability to open underground arcades in rocky or bushy areas. The Tun-Schu, were to die immediatelly if they were exposed to sun or moonlight. A similar interpretation was given by the natives of S.America for the fossil bones of Pleistocene mammals found in Pampas. When Darwin visited these lands with the ship "Beagle", he described these fossils and reported that the natives considered this beings living in underground caves like the common rodents, Viecucha, of S.America.

Many similar examples from various places of Central Europe (Hungary, Sicily, etc) are given by Abel (1939a).

At the begining of the 17th century a discovery of Proboscideans remnants in SE. France, caused an intense and prolonged quarrel among the scholars of the time.

In January, 1613, workers digging in a sand-pit near the castle of Chaumont or Langon, 4 leagues from the city of Romans, Dauphine (a district of SE France), discovered some large bones which they brought to the local nobleman,the marquis Nicolas de Langon. The marqius consulted some scholars from the University of Montpellier, who believed that this bones were human. The duke of Lesdiguieres, governor of Dauphine, borrowed some bones and sent them to "specialists" in Grenoble, who also considered them human. At this point someone named Pierre Mazurier, a barber-surgeon at the near city of Beaurepaire, enters the story. He borrowed some bones from the marquis de Langon and started to travel from town to town exhibiting them to the public for money. A booclet, written by someone named Jaques Tissot (for whom very little is known), was sold to people interested mentioning that the bones belonged to the Giant Theutodochus, king of Teutons, Kimbri and Ambrones, who was killed when his army was defeated by the Romans, and he was burried near the castle of Langon where his bones were found.

The part that concerns the defeat of these German tribes by

the Romans is historically proven, but the controvercy for the origin of these bones continued.

The supposed historical bones of Theutodochus were taken finally to Paris by Mazurier and his assistant Chenevier. King Louis XIII, 11 years old then, expressed some interest and the bones were taken to Fontainebleau <where his Majesty resided> but not having any other proof for their historical value, he didn't keep them.

The quarrel continued for long, until Habicot published his Antigigantology ou Contre-discours sur la Nature des Geauls <Antigigantology or Counter-discourse on the Nature of Giants>, in 1618, where he accepted the conclusions of the specialists from Montpellier and Grenoble who believed that the bones were human.

The controvercy seemed to have died down after this publication but there has been an unexpected sequel in 1830's, when Mastodon bones were found in an old theater of Bordeaux and were sent to the Museum of Natural History in Paris, as Theutodochus' bones. Brainville, manager of the Museum's Department of Comparative Anatomy, primarily agreed that they were indeed the bones found at Langon <Brainville,1835> but later <1837> changed his mind and decided that the bones from Bordeaux were not the original cause for "Theutodochus'quarell"; he believed that the tooth from Langon was that of a large rhinocerus.

This tooth was re-examined lately by Ginsburg <1984> who concluded that it belonged to the species Deinotherium giganteum. It seems that there is little doubt that what the workers found at Langon, in 1613, was a skeleton of a Deinitherium. Additional fossils from that area proved an Upper Miocene age <Ginsburg, 1984>.

Findings of big mammal fossils didn't always cause fierce quarrels, but often attracted much attention even under circumstances where no scientific research was possible. So, in 1645, during the 30 years War, Swedish soldiers who occupied the Austrian city of Krems, found several huge skeletons of "Giants" while digging a ditch. Some of the findings were sent to various places including a Jesuit church in Krems. The geographer Merian, made a picture of one of the teeth in his work, Teatrum Europeum, showing clearly that the skeletons found by the Swedish soldiers, belonged to mammouths. The tooth Merian descibed, was rediscovered in a convent <Benedictine> near Krems by Abel in 1911 <Abel, 1939a>.

Although the "case:Giant" was still acceptable by many authors at the second half of the 17th century, there were also alternative explanations concerning the presence of large bones in the ground. Thus, in his famous book Mundus Subterraneus, the Jesuit Athanasius Kircher gave a long list of gigantic bone findings but he didn't accept some of the most excessive size estimations <fig.6>.Kircher mentioned also the possibility that some bones found in Sicily came from elephants brought there for military purposes < an explanation that became very popular when finally the vital origin of fossils became generally accepted >.

Most of the stories about Giant's bones were based on findings of big Pleistocene or Neogene mammals such as elephants,

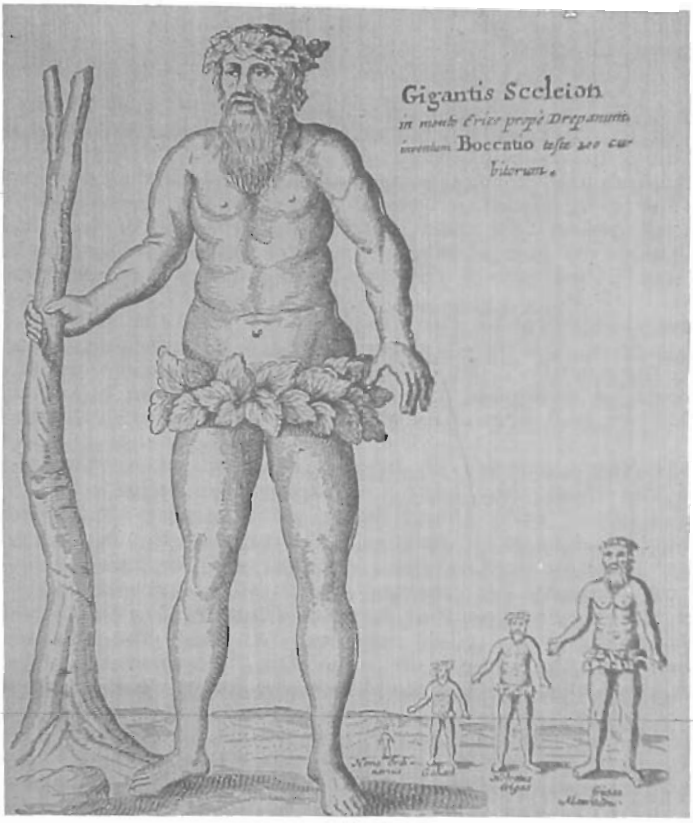
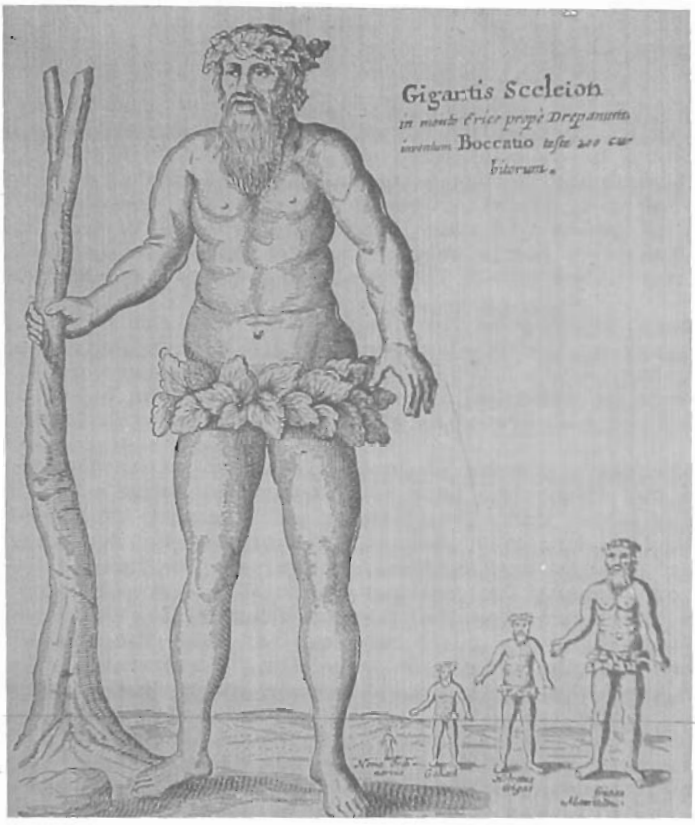


Fig.6: Representation of the Cyclop Polyphemus, compared with a normal man, by the Jesuit A. Kircher.

Fig.7: Representation of Hercules Killing Lernaea Hydra, on an ancient vessel.



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mammouths, mastodons and deinotherium. One report, however, was based on a bone belonging to a Mesozoic reptile and worths to be mentioned as the first "scientific" description of a dinosaur bone (Halstead, 1970; Bufetaut, 1980). In 1676, Reverent Robert Plot (1640-1696), first keeper of Ashmolean Museum, published the "Natural History of Oxford-shire, being an essay towargs the natural history of England". This was one of the first attempts to describe with a certain accuracy the extraordinary natural characteristics of a defined area; fossils occupy a great part of the book. Plot, generally, didn't accept the organic origin of most fossils and followed the opinion of the physiologist Martin Lister (1638-1711), who believed that the fossils were formed by a latent "plastic power" found on earth. This explanation, however, didn't work for a large bone "digged out of a quarry at the community of Cornwell" which had "exactly the form of the lower part of a thigh bone of a human or, at least, of an other animal" (Plot, 1676, p.131). Plot believed that this was a real petrified bone, not a "sport of nature" enlarged by petrification. The gigantic thigh-bone of Plot, disappeared, but its representation allowed John Phillips to recognize it as the distal end of a femur of a large Megalosaur or a small Cetiosaur (Phillips, 1871). It is now beleived that this first already described dinosaur bone belonged to a Jurassic Megalosaurus (Halstead, 1970; Charig, 1979).

Dragons

Under the allegories and the myths there are hidden metaphysical dimensions and cosmogonies. Myths were created in people's or poets' imagination, based on older ones, with or without slight revisions and were transfered from generation to generation or were developed independently from place to place.

One of the oldest myths where a monstrous being is described, is that of Lernaea Hydra. It is known that:

"The second of the feats, Eurystheus ordered Hercules, was to kill Lernaea Hydra." (Apollodorus the Athenean).

Hesiod says that this mythical animal was born by Typhoeus and Ehidna, but he doesn't mention, as later authors, that it had many heads. On the other hand, these writers don't agree on the number of heads which changes from 9 up to 100. The most predominating acceptation is that of Apollodorus the Athenean who writes that Hydra was a huge animal with 9 heads, "the 8 being mortal and the 9th immortal". Living in the swamps of Lerni, Hydra was getting out to loot the surrounding areas and to desinate the herds (fig.7).

Hercules, as the myth describes, managed to kill the beast after burning the mortal heads and burring the immortal one in the ground.

This fascinating mythical story of the ancient Greeks,can be interpreted geologicaly,based on the existing geological data of Argolida district. Thus, a geologist can recognise in multiheaded, monstrous Hydra of Lerni,the multiple carstic springs of the area which communicate with eachother in a complicated manner. Many springs and fountain-heads had created swamps, and malaria and other diseases tortured the people.

Fig.8: Representation of the Flying Dragon of Rhodes, by the Jesuit A.Kircher.(1678)

Fig.9: Representation of the Knight of Rhodes killing the Dragon, from a middle age [illegible]

Hercules, with Iolaos' help, burned the swamps, spotting this way, the heads of the springs. But when he cut, or rather blocked a head, because of the carstic communication, the water appeared from other openings with new spring-heads. The whole story ends up with the burring of the main fountain-head, so that the waters that supplied the swamps, where piped through the underground ramifications to the sea and so the area was relieved.

The famous dragon "Leviathan" of the Holy Bible, was recognized in many cases on fossilised findings of elephants and mammouths of the genera Archidiscodon and Mammonteus. The most characteristic description is that of Albert Koth <1841> who defined the skeleton of a Mammonteus found in Hichory, Missury,U.S.A., as the Leviathan described in chapters 40,41 of Job and 27 of Isaiah. "Leviathan" in Jewish is a compound word by "leviath" and "thannem" <formation of Dragons> which means "sea-monster".

Legends about Dragons appear in many places around the world, particularly in Europe and China. In Europe, these beings were especially popular during the 16th and 17th century, in Germany, Austria, Hungary and Switzerland. It was believed that they could fly and that they resided on the lonesome heights of Alps, an idea suggested in Mundus Subterraneus, by Kircher <1678>. There were sufficient prooves of the supposed existance of such dragons in the form of fossilized mammals, primarily of Ursus spelaeus which could be spotted abundandly in the area. A Dragon's skull from a Carpathian cave presented by Johannes Hain in 1673, can be defined easily as Ursus spelaeus. There are many hills and caves with their names taken by dragons, eg. Drachenfels, in Siebengebirge, where Siegfried is supposed to have killed the dragon of the Niebelungen myth, and also Drachenhoehle <Dragon's cave> near Mixtuitz, Austria, the place where relics of 30.000 cave-bears were discovered.

But cave-bears are not the only mammals that gave elements to the dragon's legend. In the central square of Klaggenfurt, Austria, there is a fountain with the model of a wonderful winged dragon made by the sculptor Ulrich Vogelsang, in 1590. It is almost certain that this dragon was made based on a woolly rhinocerus' cranium found in the area around 1335 which today lies in the local museum.

In Rhodes, is still kept and transfered from generation to generation, the legend about the "Dragon of Rhodes" which devoured people and animals and was the scourge of the area. The descriptions attribute to it a monstrous sight with main body like that of a crocodile, wings and thorny mane, long neck, hooked nails and roaring mouth.Main part in the creation of the story played the knights that occupied Rhodes in the years 1309-1522. According to an old chronicle, in the year 1354, when Elio von Villanova <or Helion de Villaneueve, 1319-1346>*, was the Great Magistrate, this horrible dragon was killed by knight Deodatus von Gozon <or Dieudone de Gozon>**, of the Rhodes' Battalion of Knights.<fig.9>

Both, Villaneueve and de Gozon, came from Provigence, where such myths and traditions already existed. So the paleontological findings,comdined with the presence of the endemic reptile Agama agamacould have given the idea to the knight of Provigence to

creat the legend.

The endemic reptile of the species Agama agama has also a horrible sight with thorns on its tail, back covered with successive scales, some thorny and projecting and a kind of membrane between the front and the back legs which allows it to "fly" from one tree to another or from a tree to the ground.

Paleontological findings of Upper Miocene or Pliocene mammals, are known in Rhodes. Such are, the dwarf elephant of Ladico cave (Simeonides et al,1974) or the dwarf deer in St. Paul's cave and in the carstic hole of Critinia beach (Dermitzakis & Sondaar, 1978)

The proof that fossils were known since the Middle Ages, consists on the travelers Pottiers, Thevenot and Billioti's report that over the Sea-Porte of Rhodes were preserved hunging the bones of a huge "serpent" believed to belong to the monstrous Dragon.

"Dragon killing" and generally the presence of Dragous, is the subject of hundreds of variations of this tale while the immage of monsters may alter . In our opinion, the creation of such myths and the source of inspiration of the tale-tellers lies on the various paleontological findings of mammals which the people's imagination, in combination with other traditional elements, defined as monsters in antiquity and even in later times.

While the European Dragon scattered fear, the Chinese one was benefitial. It was one of the four magic animals -the others were: Unicorn, Phoenix and Turtle. It was the symbol of wisdom, the supplier of rain in seasons of drought and the Emperor's guard. Consequently, it was one of the dear subjects of the Chinese sculptors, painters and potters, who usually presented it with body of reptile, nails of tiger and horns of deer.

Vertebrate fossils, mainly mammals, were considered for a long time in China as the bones and the teeth of Dragons with great healing abilities. This belief was coppied, in an admirable way, by the later European beliefs conserning the curing qualities of the Unicorn's horn. Today, 'the "Dragons' teeth"are disposed not only in China but also in stores serving the Chinese communities all over the world.

When examined, these "dragons' bones and teeth" are proved to belong not to reptiles, as their supposed identity should imply, but to fossilized mammals, of different age and stage of preservation. Some have higher prices than others; teeth are more expensive than bones and Quaternary speciments are more valuable than the Plistocene ones.

Because of the increasing and continuous demand for "dragons' teeth", various qualities of mammals' fossils have being ground for medicines without ever been seen by the paleontologists and their scientific study has started only during the last century.

Among those who did the first researches were Davidson (in 1853 he listed in a drugstore in Sanghai, relics of rhinocerus, bear and hipparion) and Owen, the first director of the British Museum of Natural History, who, in 1870, based the first scientific description of such fossils, on remnants of Stegodon, hyaena, rhinocerus, tapirus and Chalicotherium, bought from a medicine-seller in Sanghai The first great quantity of chinese

Plistocene mammal fauna appeared in 1903, when Dr. Schlosser of the Univercity of Munich described 60 species of mammals from a large collection of teeth and pieces of jaws, that the German scientist Dr. Haberer found in drugstores around 1899-1902. He attracted the attention especially to a human molar which introdused the research for remnants of fossilized humans in Pecin district; a research that later resulted to the discovery of Choukoutien site where Pecin-Man was found.

Two decades should pass before the paleontologists could examine by themselves the locations where the "dragons' teeth" were found. One of the first who did that, was the Swedish paleontologist Anderson, who began to collect mammals' fossils from caves in Choukoutien, near Pecin, in 1918. In autumn of 1921, Dr. W. Granger, paleontologist at the Central Asiatic Investigations of the American Museum of Natural History, organized a mission at Szeuhwan, county of China. The fossils he found were taken out from carstic caves by local farmers. Buying the best samples from the farmers , Granger managed to gather, for scientifical study, the largest collection of chinese "dragons' teeth" which is known till today. The species represented comprise: Stegodon, rhinocerus, tapirus, deer, hyaena, tiger, gigantic panta, monkeys, rodents and other mammals (Kahlke, 1961).

But the most spectacular discoveries were to follow. Scientifical excavations at Choukoutien led to the discovery of Pecin Man, which was named Sinanthropus pecinensis. In the middle of 1930's, a dozen of sculls, along with other broken remnants, were found, representing about 45 individuals. The sculls showed that the Pecin Man was a primitive type with heavy eyebrows, resempling a lot with Pithecanthropus of Java. Anthropologists concider now them both belonging to the same early human species, Homo erectus.

Meanwhile, another field of research was being developed by the Dutch anthropologist G.H.R. von Koenigswald. Arriving in Java in 1931, he started a study on mammals' teeth sold in drugstores, out of China. In 1935, while he was examining the dragons' teeth in drugstores in Hong-Cong, he made a spectacular discovery: a molar of an unknown primate, which he named Gigantopithecus blacki. Its systematic classification was discussed violently. It was classified as a gigantic orangutan, as a humanoid -a lost ring in the genealogy of human species right below the Pithecanthropus-Sinanthropus stage. In 1956, a jaw with teeth was found in Kwangsi county, China, and was sent to the Institute of Vertebrate Paleontology of Pecin. The systematical research that started immidiatelly provided more remnants of Gigantopithecus. There was also a rich fauna related to it, which is dated in the Lower Plistocene. After that, Gigantopithecus was found in two other caves in S.China and an even earlier species is known today from the Miocene of India.

Since there aren't yet known skulls or bones, Gigantopithecus still remains a subject in question among the paleontologists. It is recognisible that all remnants of fossilised mammals are not of the same age. Two especially distinguished concentrations are spotted: the Pliocene Hipparion fauna (including rhinocerus,giraffe,antilope,deer, hyaena and mastodon)

excavated from strata of bones in North Central China.And the Stegodon's fauna of the Plistocene with plenty of deer,, pantas, bears,tapirus, rhinocerus and primates from rockflawes in North China.

It is possible to subdivide the two faunas' systems described above in even smaller time units. At least 3 such subdivisions occur in Stegodon-Ailuropoda system. Sinanthropus and its escorting fauna is believed to belong to the Middle Plistocene while Gigantopithecus is obviously younger. The two animals, however, don't belong to the same geneology. The discovery of three Homo teeth, in 1970, along with the remnants of Gigantopithecus in the Dragon Bone Cave, leaves no doupt that the revelation of Human History in China has just began.

Unicorns

Although everybody agrees today that the Unicorns never existed, this agreement is very recent. The belief in that animal reached its maximum point in the Middle Ages, when its supposed remnants worthed high prices as medicines for diseases and as antidote to poisoning (especially from arsenic). But even then the history of Unicorns was very old. Ctesias, a Greek therapist in Percian Court at the end of the 5th century B.C., wrote about the existence of unicorns in India. Unicorns are also mentioned in the Old Testament of the Bible (Job,39/9-13).

Perhaps both cases of unicorns were based on real animals of the time. Ctesias could have heard about the Indian rhinocerus which had one horn; and Job's unicorn was possibly a wild ox, and the name of unicorn replaced it when the Hebrew prototype was translated in Greek. Another possible origin of the unicorn's muth is an antilope (oryx) which from the side seems to have only one, almost straight, horn at its forehead.(fig.10)

Unicorns at some reports are different in appearance and ferocity depending on the epoch and the century of their origin. While most of them were believed to be very fierce, the Chinese unicorn was so jentle that when it walked it watched not to step on even the smallest creature and it didn't eat living grass, only the one faded out.

During the Middle Ages, unicorn had become in Europe a "super animal" and it was the dear subject of the artists. Usually, it lookes like a horse and on its forehead there is a straight, spiral, winded horn.

Such were the pharmaceutical qualities of the unicorn's horn (especially in the 17th century when no medicine was effective),that each item that could be recognized as such, sometimes costed more than its weight in gold. All these horns hadn't the same origin.Valentini, writting in 1704, distinguished 4 types of unicorns, but only some of them he accepted as real (Fig. 11) : the species Unicornu marinum, from the male of the whale called "narwhal" which has a straight, spiral, conic tusk, consisting probably the base for many Middle Aged representations of the unicorn , and the unicorn's remnants unburried from the ground; which he called Unicornu fossile. These are the most interesting for us at this point. His picture shows the representation of a unicorn's skeleton based on mammuth's and,

Fig.10: The myth of Unicorns was possibly based on real animals as the Indian Rhinocerus which has a single horn.

Fig.11: The original idea of the Unicorn's myth some times could have been based on pathological forms of animals with multiple horns as in the case of the skull of the gazella from Gargano, Italy.

possibly, on hairy rhinocerus' bones,found in a gypsum deposition basin in Quedlinburg, Germany, 1663.He also mentioned that similar remnants lie at Daumann cave on Harz mountains <a location known to the anthropologists today as a site where fossils of hairy mammuth are found>and in other locations.

One more century was necessary for Europe to be released from the unicorn's belief and for the finding of the final evidence that fossils came from elephants and other animals. At the same time, the whale industry made narval's tusks a familiar item and in this way the unicorn's horn stopped being considered a medicine and its value dropped fast.

But even today, the unicorn is not forgotten. Its horn is still in use as a symbol by German drugstores, some of which have the inscription "Einhorn Apotheke"; and Unicorn is a common figure on coats-of-arms, including the Royal British Banner, where it represents Scotland. It also appears on the top of the British Museum <of Natural History> letter paper.

Saints

For many centuries, supposed bones of Saints and other religious images were considered as sacred relics and were kept with special care in different places of the world. The study and examination of such remains by modern paleontologists guided sometimes in unexpected results.

In many places of Europe the tadition considers St. Christopher, protector of ferries, a giant. But we have written down many examples were bones and teeth of mammuths were considered as St. Christopher's relics, like eg. a fossil thigh bone of Mammonteus primigenius which had been hung a long time ago near the Great Gate of St. Stephan's Cathedral in Vienna. Also in Munich, a mammouth vertebra was kept as St. Christopher's relic, while in Valentchia a molar was considered to belong to the same Saint.

Places of worship, where it was believed that relics of Saints could have been burried, appear in many places of Cyprus and Crete; eg. near Kytheria and in Prophet Helias' cave over Paschalis coast at Dragontovounari, etc.

The church of St. Phanourios carved in rocks on Cape Pyla, presents special interest.

Di Censola <1877>,excavating in Macarios cave found a leg bone and some teeth. His guide told him with respect that these bones belonged to the "Forty Saints". A few years before, the people of the district had the custom to attend a liturgy and pilgrimage at the cave,until the Archbishop of Cyprus ordered to stop the liturgies.

Although this happened around 1860-70, the first of the authors learned from the people of Ormidia that the pilgrimages are not yet forgotten and that many of the older people believe the cave sacred.

Dorothea Bate was the first who studied the sites mentioned by De Bruijn, Censola and Bergeat and soon managed to to send material to the British Museum of Natural History in London, where it was published by Forsyth Major.

Fig.12: View of Cape Pyla territory, Cyprus, where the fossilized bones of Hippopotamus minutus were considered to be the bones of St. Phanurios.

Fig.13: View of the outcrop Drangondovounari, near the village of St. Irene. The villagers consider the bones of dwarf hippopotamus as bones of dragons petrified by a divine power during the [illegible]

Major had already studied the dwarf hippopotamus of Madagaskare in 1895, and concluded that the bones found in Cyprus by Bate belonged to the dwarf hippopotamus described by Cuvier and named Hippopotamus minutus by Brainville, in 1825.

Bate described her observations and collections in an essay course (Bate, 1903a,b; 1904a,b,c,d; 1906) which remain valuable.

R. Gounnis published (1936) a book for Cyprus with reports on several sites with hippopotamus not studied by Bate, as the one west of Akanthos, another near St.Irene and another one close to St. George.

When the first of the authors visited this location, in 1972, along with my colleague Dr.Sondaar, we found these locations. We heard the villagers of St.Irene, interpreting the great mass of bone-breccia under Dragondovounari, at Cape Cormakitis, as the burrial place of dragons drowned and petrified by divine power during the Noah's Cataclysm.A proof for them is that along with the dragons'bones there are petrified oysters.

This site was indicated to Dr Sondaar by Mr. Ibrahim Cemal from St. Irene village. It lies just north of a river mouth near the limit point No 46 of Cormakitis Forest.

The existance of the bones is related to the presence of a refuge on the rock under the projecting 3m of the cliff which are consisted of hard calcarenite with some Pectinidae shells (fig.13).

Agios Georgios: This site was already mentioned by Bate, in 1902, who couldn't find it; this was indeed difficult, because it is consisted of a small projection of a steep coast west of St. George's oil-factory. The chapel of St. Phanourios, built on the rock, lies exactly over a bonebreccia. The bones are enclosed in yellow calcarenite which are not different from the surrounding rocks. The bones found here belong to dwarf hippopotamus and elephants (Boekschoten & Sondaar, 1975). The older people of the area beleive that these bones belonged to St.Phanourios and his horse, who fell from the steep coast when he tried to climb on it coming from Syria to escape from his persecutors

Akanthou: This site first mentioned by Gounnis (1936) was described by Kuup to Ducloz (1968). It lies on the right side of a small river's valley, 800m SW of St. Michael's church on the coast near Akanthou village. This appearance looks very much like the one of St. Phanourios, but it's larger and more visible.

To the above cases from Cyprus, it's worth adding the similar definitions that exist in the traditions of Crete and Rhodes about sites with fossilized mammals' bones of Quaternary. In Crete, on the north coast of Rethymnon exist, and have been searched, tenths of fossilized sites. Between Gerani and Zourida meet various mammals' bonebreccia, at a location west of Zourida and east of Gerani, the place called Dragontovouvi, and according to the local shepherd, there is a tradition among the people of the area, that the bones belonged to dragons, petrified by God during the Cataclysm of Noah, to save humanity.

In Rhodes, at Ladico coast, appear, as known, bones of dwarf elephants (Symeonidis & Marinos, 1973). Northern to Kalithies on a Plistocene terrace are preserved few bones of micromammals. It

is also known the story of the discovery of St. Phanourios' icon outside the city walls and the building of the homonymous church devoted to the Saint's memory. It is believed that the Saint was burried there, where his icon was found, when he tried to reach the island by boat along with his horse in order to escape from his prsecutors coming from the opposite coast of Minor Asia. Although these informations from Crete and Rhodes are given by simple people, and up to now they have not been bibliographically identified with other scources, it is important the parallel interpretation found in Crete, Rhodes and Cyprus, which emphasizes the faith of the simple villager on divine powers in defining supernatural, in his opinion, phenomena.

But also in other places of Europe the discovery and presence of fossilized bones are interpreted as relics of Saints. Thus, in Kishiner of Vessarabia, bones of Rhinocerotidae were found in 1843 by a shepherd, in a meadow, who put together some parts of a skeleton and showed them to the villagers who danced and sang around them believing they were relics of a Saint.

The paleontologist A. von Nordmann traveled at the area and managed to find a part of a rhinocerus' jaw which is kept today at the Univercity of Elsinski (Nordmann, 1858-60, Fortelius & Kurten, 1979).

In 1873, for example, Caneto, abbot of Auch, in S.W.France, described the lower jaw of a Deinotherium, found in 1838 on a brook bank at the foot of Pyrenees. This fossil was known to the people of the district for long, and the tusks were believed to be Devil's horns.

In the Bible, 1st Book of Genesis, on of the most characteristic happenongs is the Sodom and Gomorah destruction. The two cities at the coasts of Dead Sea, were destroyed after an explosion of natural gasses with sulphur. In the following years, ancient Greek authors and Stravon, described smaller explosions of natural gasses and heavy petroil. Genesis, ch.19/24-29:

In many places of Europe, Christians' religious belief along with petroleum's healing qualities gave as a result the use of petroleum and hydrocarbons for different diseases; for example, the miraculous oil of St. Quirimus at Tegernsee's convent in Upper Bavaria, where the admirable Mother Nature's liquid with Lord's power cured arthritics and gouts (1413-1803).

Another example is "Thyrsus' blood", which was nothing but petroleum extracted by fractional distillation from Tirolo's oilslates, was well known around the area.

The giant Thyrsus was killed in 500 AC after a duel with another giant named Aemon, for the power over Inn valley, Tirolo; Thyrsus before dieing cried "let my innocent blood cure people and animals!". Aemon, regreted Thyrsus' death, and one day, he saw falling from the rocks drops of oil with miraculous abilities, which he named "Thyrsus'blood". The healing qualities of Thyrsus' blood became widely known and people were coming in great numbers to be cured.

We also mention the burning springs of St. Barthoiomew in Dauphine and Auvergne, France, where there was oil mixed with water; the flames were evidently caused by ignition of natural gasses. The petroleum was gathered carefully and was provided to the public by the people of the bishop's county for medicinal

purposes.

Nicholaos Myrepsos in his texts, uses the name "oil of Santa Barbara" or "oil of St. Catherine" or "Sacred Oil".

"St. Catherine's oil" was very popular in Italy at the 16th and 17th century for its healing qaulities. Boccono (1697) and Ariosto (1460) too, tried to discover the sources of "St. Catherine's oil" in Monte Zibio or in "the land of Zybia or Syria".

Early people, as various excavated findings reveal, should consider some fossils, especially invertebrates, either as "lucky" or as ornaments. As the civilization developed, they considered them having "magic powers" and later, as the belief in gods and spirits began, the fossils consisted of idols or impersonations of a divine power. But when the religion declined or was replaced by another one, the fossils were not items of faith anumore, but they were degenerated and were becoming again objects of "good luck".

The winding shells of mollusks, known as Ammonites, belong to an extinct class that is related to Nautilus. Almost all over the world these fossils are known as "stone snakes". "Ophites" of the ancient Greeks was surely as Ammonite. A poet of the 3rd century, who wrote under the pseudonym Orpheus, mentions ophite as "the local stone..., where a round, black, hard, soul lives; on its periphery run cavities like wrinkles". This stone was used as an oracle.

In British traditions, Ammonites are often mentioned as "snakes of stone" protecting from snake-bites. Two districts, where the tradition of "stone-snakes" predominates, are Keynsham and Whitby. In Whitby, ammonites of Lias' age, with carved heads, were used as charms for witchcraft since Elizabethian period. Camben (1586) mentions the stone-snakes of Whitby as one of "Nature's wonders in its playful mood". These fossils were supposed to be living snakes until St. Hilda (the saxon Hild) destroyed them when she founded the Nunnery.

There is a similar legend in Keynsham. St. Keyna, as she is known in the myth, lived in a forest full of snakes and she changed them into stones by praying. This is reported in White's Natural History of Solborne (1789), where they are mentioned as "Ammonas' horns".

Clasped ammonites, from the Upper Jurassic of the NW side of Himalaya, especially in Spiti district or Niti Pass, considered for a long time as objects for sale or exchange in all parts of India. They are also used, in parts of India, as idols in Hindooists' temples, as they were considered to be the incarnation of God Vishnu. They are called "salagroms" or "salagrama".

It is also interesting to mention that the mollusc Gryphaea, having a fossilized curved shell and being a very common fossil of marine Jurassic limestones of Europe, attracted, long ago, the attention of the country-tribes, known in England as "Devil's toe-nail" and in Scottland as "bent shell". Some authors, of the 17th and 18th century, mention that they cure arthritic pains -an obvious case of sumpathetic magic, because of the curved shape of these shells.

The bodies of fossilized crinoides are broken into

disk-shaped articulations which can be round, when they come from Carboniferus'' formations, or even, star-shaped when they come from Jurassic's formations, and they all have a hole in the center. These round parts of crinoides are known in Germany as pennies or buttons of St. Boniphaccio and in many parts of the country were considered money. In North England, especially in Northumberland, they are known since the 17th century as beads of St. Cuthbert's rosary (Scott in Marmion).

Belemnites:

These elongeted fossils are extinct mollusks,and cuttle-fishes are considered to be their modern descendants. In many districts of Europe, Belemnites were considered as remnants of "Thunders" while in other places they are known as "Devil's fingers" or "St. Peter's fingers". The ambiguous character of the symbolism is obvious. Also the tradition in districts of England states that grinded Belemnites have healing abilities for diseases of horses.

But, also, the various fossilized genera of Echinoides were thought of having magic or healing abilities. Thus, Pliny, in his Natural History, calls the fossilized urchins, "snake-eggs". This Pliny's aspect, derives possibly from an ancient Celtic tradition conserning that numerous snakes, twisted together during the summer-time, form from their secreted foams an egg-shaped mass. These sphaerical constructions, when taken from the snakes by Celts, had great magical qualities. The one who owned such items had success in battles and quarrels. Also, the fossilized thorns of Balanocidaris became known in Europe as "Jewish or Syrian stones" and were transfered during the Crusades. According to sympathetic magic's principles, could be their shape that created the impression that they are proper for the cure of bladder problems (Woodword,1768).

In Middle Age's Europe, the fossilized teeth of Carcharodon were used, based on sympathetic magic's philosophy, as antidotes to snake's poison, because by misjudgement of their shape, they were supposed to be snakes' tongues. Remainders of these ideas, one can meet in the traditions of modern Italy and also, by informations from Cephalonia; on the Italian peninsula Carcharodon's findings are abundant. Spread out is the belief that "stone-snakes' tongues" protect from "evil eye" or help one to be lucky in money gathering. So, people consider the Carcharodon's teeth, like snakes'skin, as an omportant talisman. In Britain, Carcharodon's teeth were believed to have medicinal influence on rheumatisms and cramps. But the magic value of "stone tongues" changed and even reversed many times during the years. So, while in the Middle Ages and even in modern times, fossilized teeth were used for protection of "evil eye", on the Italian peninsula, in Roman Era, as Pliny mentions, "the magicians considered them necessary to procurers and those who courted honorable women".

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