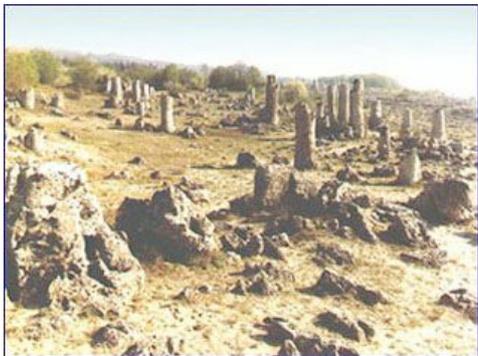


# Pobitite Kamani

## Lower Eocene Bubbling Reefs

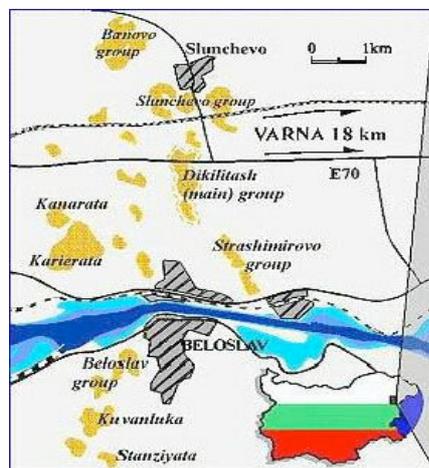


Stone Forest is a fabulous natural pheno-mena most known with its Bulgarian name of "Pobitite Kamani", which means "stones beaten into the ground", a name completely corresponding to the reality. These are numerous limestone pillars as high as 10 m, hollow or solid cylinders, truncated cones, different bulgings and single rocks and cliffs. Nowadays is believed that these carbonate - cemented sandstone structures were formed due to microbial methane oxidation around natural gas seepages - so called "bubbling"

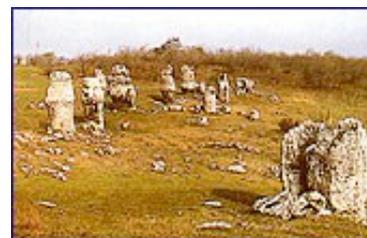
reefs". The cementation occurred in the subbottom marine sands some 50 million years ago and now are exposed by subsequent erosion of the surrounding unconsolidated sediments and vertical tectonic movements of the earth crust.

The spectacular landscape of "Pobitite Kamani" is spotty spread in a North - South orientated belt about 3 km wide and 8 km long. The stones are clustered in seven large groups and several separate small areas embracing a total area of more than 7 square kilometers. They are localized running from south of Beloslav town, northward of lakeroad and railway, around the Strashimirovo village and fertilizer plant crossing the road E70 and highway finished around Slunchevo and Banovo villages.

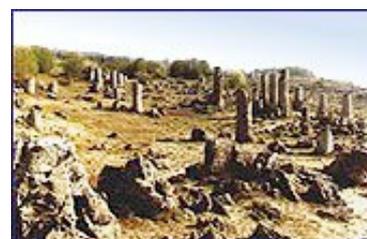
The poles have been known as sacred place for centuries but are documented for the first time in 1829 and since then it have been of interest to many scientist. This unique place is announced as national natural landmark in 1938 and now it is lobbying to be included in the UNESCO World List of Geological Forms.



The structures of "Pobitite Kamani" consist of carbonate - cemented sand and silt deposits of Lower Eocene age, the same sediments in which they occur. Except of the exposed on the earth surface forms they are develop in another one to three underground levels more (all four levels can be observed clearly on the outcroppings in the "Karierata" site). The forms of any level usually grow upon a solid limestone substratum most probably with the same origin.



For centuries the nature was shaping the stones, to turn them into awful sculptural creation - animals, peoples, monsters, mythical creatures. "The Stone Guardians", "The Camel", "The Throne", "The Stone Forest", "The Big Falos" are the names of some of these natural phenomenon.





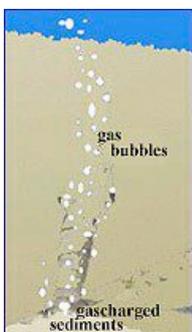
The main, "Dikilitash" group is the most impressive and in a best state of preservation. The place is easy reachable by the road E70 which crosses it approximately 18 km west of Varna and is site of organizing tourism. It comprises some 300 big and small pillars in a large strips (about 850x120 m) and over 50 ones in a smaller spot southward. Some of them are broken into two or three segments, other laid down, looking as being excavated from their roots. The "Strashimirovo" group is also very spectacular. It locates southward of the main group and is composed of four rows from north to south. A characteristic feature of the pillars here is that the middle part of any level is bulging, like two communicating truncated cones. The circum stance of some bulgings is over 9 m. The "Slunchevo" and "Banovo" groups located in the vicinity of the corresponding village are charming too. A pillar resembles a frozen fountain; another with base of 12 m in circumference is a rock lion; others are colossal awesome mushrooms. The "Karierata" group includes several natural and manmade outcrops which are the most instructive for development of these unique carbonate structures. They attract attention of scientists from the beginning of the 1970s when this area was an active sand-pit, abandoned now. All four levels of the pillar development with a diversity of forms can be observed here as well as limestone layers at their bases and all these in a wall over 25 m high.



Other groups are situated south of Beloslav town and also deserved to be seen, that's why I recommend to whom is already convince to visit this world unique place to reserve one whole day for the trip preparing for walking 15-20 km in food and taking 30-40 snapshots et least.

Several basic hypotheses about the genesis of the phenomenon have been developed ranging from designing of the structures by mechanical acting of the environmental factors (wind, rain, sea waves)

to the precipitation of carbonate from percolating groundwaters (stalactite mode of formation) to coral complexes, algal bioconstructed build-ups (bioherms) and lithified forest. The answer of the origin was recently found in the Kattegat area of gas seepages, offshore Denmark where the modern submarine landscape "the bubbling reefs" is very similar to those of "Pobitite Kamani" (see two images et the end of the page).



**genesys 1**



**genesys 2**



underwater

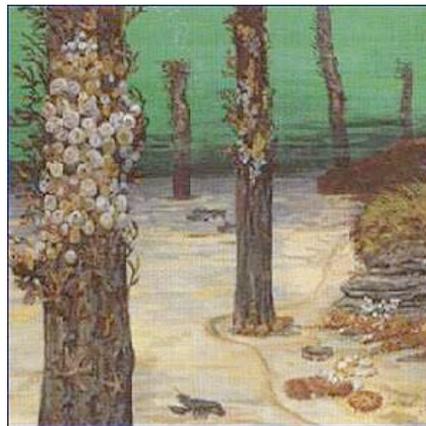


Karierata

Natural gas seepages are known from many places all over the World, both on land and offshore. They occur where suitable pathways have been developed from the gas source (source rocs, deep sited gas field or shallow gas-charged sediments) to the surface (seafloor or the ground). Once gas migration path established a methane oxidation occurs inducing precipitation of carbonate (so called "methane derived carbonate") which litifies the sediment along gas channel (see "genesys 1").Cementation of the sediment goes on around the methane pathway, fills channel and the pillar structure grows from outside. Similar process may occur laterally forming a substratum layer (see "genesys 2").Exposure of the carbonate - cemented sandstone structures on the seafloor happens. as a result of submarine and earth surface erosion of surrounding unconsolidated sediments due to sea levels droppings (regressions) and risings (transgressions)(see "underwater"). After many, many years with the help of vertical tectonic movements of the earth crust the result of these processes is exhibit now to make us admire to these miraculous sculptures. (see outcrop "Karierata").



Pobitite Kamani



Bubbling Reefs

However, the recently obtained scientific results suggest that carbonate formation in the area of "Pobitite Kamani" may have more complex origin and continues today by precipitation of carbonates from meteoric groundwater. These two images show very similar landscapes, are they?

The left one is a picture taken from the main, "Dikilitash" group of the "Pobitite Kamani" area, near Varna, Bulgaria and the second one is an art expression of the modern submarine landscape "the bubbling reefs" in the Kattegat area of active gas seepages offshore Denmark.

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