A Research on the Forms and Characterics of the Ondal Cave

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I. Introduction.

Ondal cave is located in Ha-ri Yŏngch'un - myŏn, Tanyang - gun, Ch'ungch'ongbuk - do, which has its site at the valley of southern side of Namhangang which winds up to the southwest.

Namsan is kurungbong which is at the mid - slope of the steep and high mountain, Songsan which is 427 m high above sea level, and shows the aspect of the limestone area, a rough and steep mountain one.

We can find a famous ancient castle near the top of the hill, which is now called as ancient the Ondal castle.

This castle is designated as the 2nd local memorials as a historical place of number 264, which has Ondal cave with a deep tunnel down through the foot at the mountain.

This is what they call, the Ondal cave.

This cave is a cultural asset, the 216th of natural memorials.

Originally, The caves worthy of cultural assets must be based on accademical values after evaluating the various sectional importance of its accademical and cultural worth.

This scholastic research intentions to disclose its academical and cultural values, and to investigate the basic matters such as of Ondal cave the damage of geomorphological forms and the change of ecological sunoundings.

This will be the basic material for the cave to be studied and researched

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on the whole scale.

It's natural that the environment is not everlasting but changing owing to the condition of air, water, situations, etc

So the result of the research must be used as the basic materials for making the method of environment conservation.

To achieve this aim, We cannot conserve the cave until we can see more closely the forms and characterics about this cave,

We examined the characterics as well as the kinds by the classification of cave patterns by which we can reveal the characterics, the causes and progresses of its forming.

The total length of the cave known by now is measured by main tunnel 302m, its branches 283m and total 586m but our inverstigation proves that the total length is 683m including the main cave, the branch one and the curvature.

We can get a longer total length than before by measuring up to the cave stream place in the end of the cave which its measuring was omitted before.

It is expected that the length will be longer if we keep measuring the various sections along the cave streams.

II. The Classification of the cave patterns

Caves are to be classified into various kinds according to the investigater's opinions.

First, from the viewpoint of formative cause.

This cave is classified into a limeston cave, which is same as the limestone area, as it has been developed in the level of limestone, we can call it a limeston.

Second, by the main cave's inclination considered as a basis of a cave, main cave almost stretches horizontally so that it is called a horizontal cave or cross one.

Third, when it is divided by the cave's axis, it belongs to the straight line cave, it has, of course, branch caves, but it stretches mostly as the linear style of a main cave.

It means that the cave doesn't have square or empty lot, leting alone having many main caves like straight tunnels.

Fourth, when we consider it from the numbers of branch caves connecting outside, this cave can be called on the open-through cave, not the closed one's but penetrating one.

Fifth, if we classity the cave by the direction of cave's stream, the Ondal cave is regarded as not a flowing-inside type but a flowing-outside type.

Of course, the underground water in the main cave flows out on and on all the year. And so it can be called vomitting-form cave.

Sixth, in view of the distribution of the branch cave's distribution, this cave is considered as one of a double-storied cave of multiplied forms. On the whole, most passages of it are arranged in a straight lines, but the existence of the two large branches caves between at the entrance and in the middle spot is looked upon as a middle storied cave, because they are situated at the spot 7-10m higher than the main cave .

These branch caves must have developed from their separate upper side squares, but now connecting passage by artificial digging makes the cave multi-storied.

Seventh, The space and size of the cave tells us it middle sized.

Of course, from the world-wide viewpoint, this Ondal cave belongs to

the small sized one, because its total length is not more than 1km, but on the basis of our limeston's cave's reality, it belongs to the middle sized cave.

From the above-mentioned separation patterns, we can have many kinds of caves as follows; limeston cave, horizontal cave, straight-line cave, open through cave, vomitting cave, multy-storied cave, middle-sized cave, etc.

III. Characteristics

Ondal cave has the characterics as followings;

First, this cave has very monotonous and straight-lined structure. And it has been making its passages by erosion, along which it helps the developing of stalactite and dripstone in many places.

Second, it is a water-cave, through which much water flows out continuously on one side of bottom of the passage. Of course, it is a vomitting form, about which it is supposed that the original flow of the underground water comes from penetrating water of the surface of Namsan in to the cave.

Third, as it belongs to the limestone level like the one at KoSung village, it's a pity that it contains so diverse and impure contents of sub-forming materials that we have few calcite material.

That is the weathered soil of red terarosa clay lain by watering through and became the deposition with the dissolved water.

Fourth, because the cave was developed near the water circulating area, we can find here and there the casual trace of surfacial side erosion, which shows the great changes of the water level in the underground water owing to the outside cause.

Fifth, since the inside of the cave has been submerged many times because of flood of the Namhangang, we can't find the unique lives such as the original cave lives.

Sixth, we can see on the surface shapes on the ceiling and walls of the cave and in the lower part of which there is underdeveloped stalgmite seen.

Seventh, the activity of erosion along the inside cracks make the flows go on and the sideland and the lower part erosions get more active.

Eigth, most of the cave's products, developed in the branch cave at the upper side of east level of it, the constituents of the stone contain impure materials and have a few pure white calcites.

IV. The cause and process of cave formation

The limestone level of Kosong-ri containing Ondal cave is assumed to have become a today's hilltop gradually diposited with limestone and arisen up the surface of the mountain before 400-500 million years from now on.

Originally as it was reported that the sea water erosed by the limestone dissolves carbonic acid calsium(0.12%), and sulphanic acid calsium (0.12%), in this case, these marine lives are continuously changing the calsium in the sea water into the solid carbonic acid calsium.

Namely, coral insects, in the form of a beehive or a ting apartment made of carbonic acid, continuously deposit at the top head of corals, so called forming carbonic acid layers.

This become the very limestone layer arisen up the surface.

The layers of limestone or rocks at the Ondal cave or Kosu cave sometimes show the fossils of animals in this layers. For the sea lives

contain deposited layer solidated by carbonic acid.

And when the lime layer formed at the bottom of the sea rose on to the surface of the sea, it remains stilll on the rock area or it sometimes forms the earth arrangement like sand which caused by waving movement.

We can see waving and declining structure at the main hole in Ondal and small sized one everywhere.

When the earth rises from the bottom of the sea on to the surface, we have water waving curve dislocation, or a big crack on the ground, the rain permeats into the crack until a cave is formed.

At Ondal cave, we can find many traces of water-waving earth operation. Futhermore, the most main caves as a passage of a whole cave are to beside that they have been erosioned in the valley along the sides of cracks.

Namely, a limestone gradually has come to dissolve limestone in the surface and in the middle of earth, as it has the nature to dissolve with the rain having carbonic gas dissolved.

In the mean while, as the limestone dissolved is not pure, it leaves behind impure materials and as gemble onto the basin valley until it changes into dirt soil.

This organic substance or dirt having absorbed lots of carbonic gas comes to dissolve limestone and finds its wary into the earth until making a tunnel, through which underground water begins to flow for the tunnel to be a wide and large one by degrees.

Increasing amount of water, chemical operation of dissolution, and the weathering operation make the cave larger and longer continuously.

During the lowing span of rain or showering, falling piceces of rock

hasten the expansion operation of it until we have broad squares in the cave to bring about rocks falling.

And we can find some fallen rocks in the passage and in the bottom of stream.

But there's not so many broad squares, owing to the lack of plenty rocks.

We can say it has developed a straight-lined, horizontal cave.

The gathered rain pouring around the mountain area permeat's into a valley, Doline, sink-hall and it become the underground water in the Ondal cave.

The passage is made by underground water, along which the entrance of the cave is opend.

Just 20 years ago, we can find the trace that the outflow of the water from the entrance was so much that they used it as the means of turning the windwills.