

Caves in the Abode of Clouds

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ABSTRACT

Meghalaya, as the name suggests it is 'Adobe of Clouds' and one of the heaviest rainfall areas. The continuous dripping actually hollowed out even mountains and Meghalaya is house for many famous caves too. Out of which, the Mawsimai cave (Krem Mawmluh) is the eighth longest cave of Meghalaya with a length of 7194 meter but only 150 meter is open for tourist. This paper is focused on these wonderful geological formations due to dissolved solution by water seeping in. A pre-visit research on calcareous caves of Yamaguchi, Japan made a strong visual impact. While going through series of photographs and a literature study focused on Yamaguchi Caves of Japan, it was visually experienced how a cave could be a non-haunting place rather a mesmerizing beauty!! But a practical experience in the Mawsimai cave of Meghalaya, India was completely different from what image was already set in mind. This paper deals with the comparison of what was thought to be experienced and what was actually experienced in the cave. It also incorporates some ideas and suggestions to improve the image of Indian caves among the future tourist and attempts to increase the footfall by incorporating simple changes. The geological formations have taken over decades to attain such rare and extraordinary forms. The entire cave is full of such beautiful marvels and just need a little attention for admiration.

Keywords: Caves, meghalaya, formation, maintenance, illumination.



Fig 1: Mawsimai cave Meghalaya. Source: Author

INTRODUCTION

In the north east of Indian sub-continent is “The abode of Clouds” or the state called Meghalaya. With Shillong its capital (also known as Scotland of East), the state not only holds the record of the wettest place on earth (Mawsynram near Cherrapunjee) but also is proud to stand out in the international caving map with some of the continent’s longest and deepest caves. At an average altitude of 4908 feet (1496m) Meghalaya is surrounded by Garo, Khasi & Jaintiya hills. The state surges with

beautiful culture, waterfalls and amazing caves.

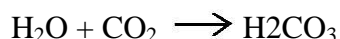
Amazing fact is, Meghalaya possesses around more or less 1700 caves. The number of caves that have been identified or located are 1620 among which 1030 have been explored and mapped. With these many caves content in a small region, the area is definitely the target for Speleology. Among the thousands of caves, below is a table listing top 20 longest caves found in Meghalaya.

Table 1 (Source :Wikipedia)

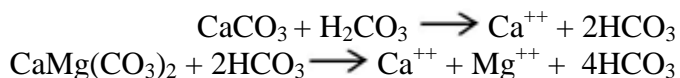
S.No.	Name	Length	Location
1	Krem LiatPrah-Um Im-Labit System	30,957 m	Jaintia Hills
2	Krem Kotsati - Umlawan System	21,530 m	Lumshnong village, Jaintia Hills
3	Krem Tyngheng Diengjem	21,250 m	Jaintia Hills
4	Krem Umthloo	18,181 m	Chiehruphi village, Jaintia Hills
5	Krem Chympe (Piel Khlieng Pouk)	12,434 m	From village Khaddum to Sielkan, Jaintia Hills
6	Krem Shrieh (Tangnub)	8,862 m	Tangnub village, Jaintia Hills
7	Krem Tyngheng	8,671 m	Jaintia Hills
8	Krem Mawkhyrdop (Krem Mawmluh)	7,194 m	Khasi Hills
9	Krem Lympat (Nongjri)	6,641 m	Nongjri village, Khasi Hills
10	Krem Rongdangngai Mondil Kol	5,831 m	Jaintia Hills
11	Krem Shyrong Labbit Shyieng Khlieh	5,715 m	Jaintia Hills
12	Tetengkil Balwakol	5,681 m	Nengkhong village, Garo Hills
13	Krem Umsynrang	5,612 m	Jaintia Hills
14	Siju Cave- Siju-Dobhakhoh	4,772 m	Siju village, Garo Hills
15	Krem Risang	4,565 m	Jaintia Hills
16	Krem Synrang Ngap	4,172 m	Jaintia Hills
17	Krem Synrang Labbit	3,933 m	Jaintia Hills
18	Krem Wah Ryngo – Khongrang	3,416 m	Jaintia Hills
19	Krem Iawe	3,398 m	Shnongrim-Tangnub Ridge, Jaintia Hills
20	Krem Mawshun	3,339 m	Near church Lelad, Khasi Hills

EVOLUTION AND FORMATION

Cave formation begins when rainwater absorbs carbon dioxide from the atmosphere to become a weak carbonic acid.



When this acid reaches the earth surface and goes underground it reacts with limestone (CaCO_3) and dolomite [$\text{CaMg}(\text{CO}_3)_2$] the host rock. It breaks them into calcium ion (Ca^{++}) and bicarbonate ion (HCO_3) and calcium ion (Ca^{++}), magnesium ion (Mg^{++}), and bicarbonate ions (HCO_3) respectively.



The ions are removed and a cavity is formed by seeping water, this is called chemical erosion. Slowly the cavity becomes larger and larger making space for water to flow through it and gradually an underground stream is formed. And of over a million of years, a cave is formed. These caves are, one of the wonderful geological assets for the country.

Different kinds of formation are formed depending on whether the water drips, seeps, creeps, condenses, flows etc which includes stalactites, stalagmites or

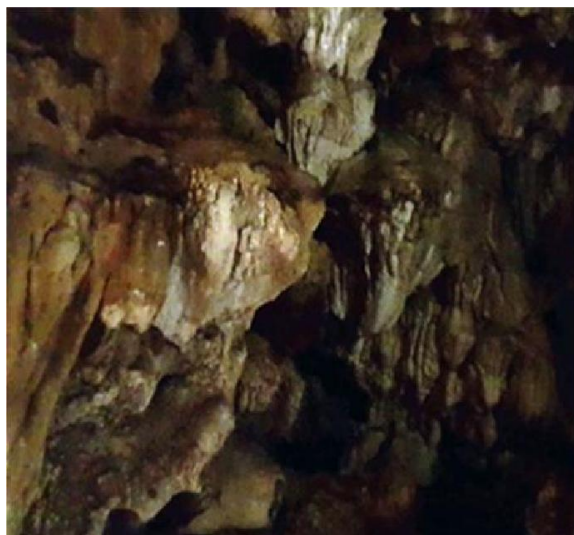


Fig 2: Mawsimai cave Meghalaya
Source: Author

MAWSIMAI CAVE

The cave is 6 km away from Cherrapunjee, in the womb of the east Khasi hill which is rich in limestones. Water flowing through it, followed all its procedure (dripped, seeped and creped) and gave birth to Mawsimai cave. The cave is 40 feet deep at some point and resonates the sound.

The beautiful crafting of water made some terrific shapes apart from the awesome stalactites, stalagmites and column. There are many formation among which some would resemble like a foot, one resemble

columns. The formations are scaled from 6cm to 10mts high. Moreover, the carving by water is continuous, so the shapes or the forms are changing over the time. Inside a cave, it just appears that it is a work of a great sculptor within a perfect ambience of silence and cool temperature. Mother Nature has her own way to chisel out the carvings without using hammer or making any noise. Besides these, there are other formations that may or may not relate to natural forms and shapes but can make one to wonder about their forms.

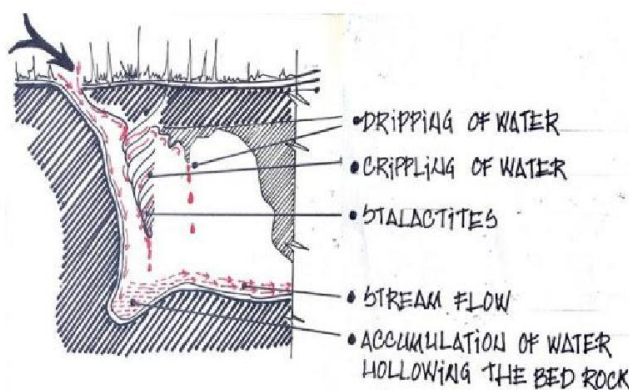


Fig 3: Key sketch showing rock cutting by water
Source: Author

like beadle bead and so many more. The cave is also the host to many flora and fauna.

However, the appreciation and attention it should receive was lacking due to couple of reasons. In following points, those reasons are discussed and on comparing with other similar caves, a possible solution is suggested.

The Approach or the Entry to Caves

The entry to the cave is bright and wide enough but was not rain protected. As a

result, even the slightest drizzle (which is a very common phenomena in Meghalaya) wets the visitor queuing for the cave. Moreover, it makes the path slippery too. On the other hand, the approach path to



Fig 4a: Approach path to Mawsimai cave, Meghalaya (Source: Suvrata Sahoo).

The Inside Walkways - Both the Caves:

Even if it is bright outside, but as we move inside the cave becomes narrow and dark. One can see the dripping of water at some places. Some rocks would glitter like stars in that darkness, whenever light falls on them. The sight itself is beyond words to express the witnessed beauty. However, the insufficient lighting along the



Fig 5a: Narrow bridges with insufficient lighting in Mawsimai cave, Meghalaya, India (Source: Author)

the Yamaguchi cave is well maintained and partly shaded. This shade not only looks inviting but also protects the path from damage, and helps to keep the paths non-slippery.



Fig 4b: Approach path to Yamaguchi cave, Japan (Source: Author).

pathways and lack of defined Walkways with inadequate width of bridges divert the attention from the beauty. Whereas, in Yamaguchi caves, the paths were well defined and lights aimed to focus the object worth appreciations. In Japan, it was an effortless move with only memory stacking in!!



Fig 5b: Well-lit walkways in Yamaguchi cave, Japan (Source: Author)

GRADATION IN ILLUMINATION

Caves are known for their darkness. And hence, the light plays a vital role in focusing the object and guiding the tourists. Illumination gives the strongest contrast in darkness and grabs the whole attention of a visitor. With modern technology, there are different grades of

light present in the market. Well-lit paths are welcomed but they should not be interfering with Focus light. The light helps to create a drama and a long lasting impact on our memory. The visual memories are the strongest ones and everlasting too.

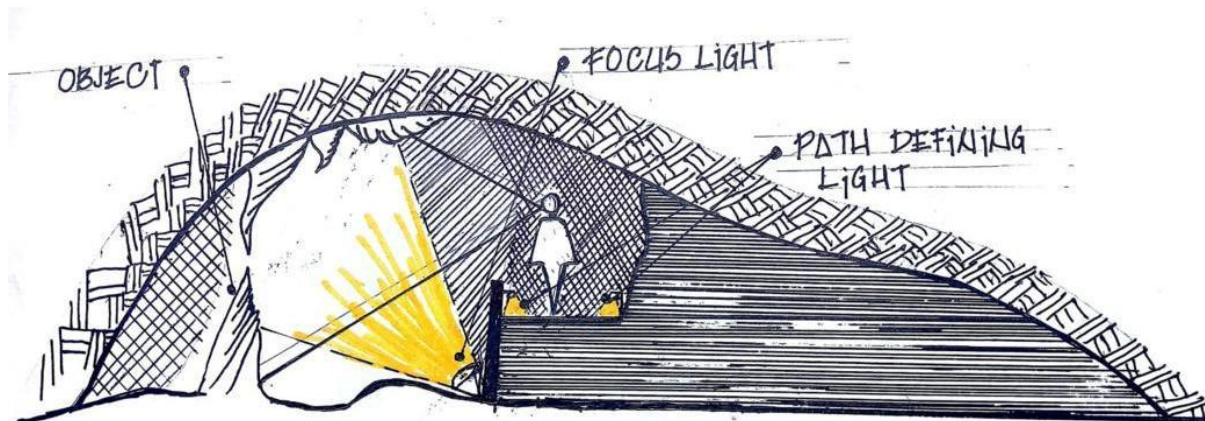


Fig 6a: A key cross section showing lighting arrangements in caves (Source: Author).

In Yamaguchi cave, grades of lights are effectively used as shown in figure 6c. It actually followed the rule: 'A well-lit area/object catches the whole attention in a dark region and always well appreciated'. The beauty of the object is further

enhanced by using various coloured lighting. Flood lighting of Mawsimai cave just needs reconsideration to create such impact and impose a magic on tourist's memory.



Fig 6b: Halogen lights aiming nothing in Mawsimai cave (Source: Author).



Fig 6c: Well-lit walkways and objects in Yamaguchi cave (Source: Author).

LIGHTING EFFECT

Moreover, shadowing, silhouetting, cross lighting, spotlighting and so many other types of lighting are used in Yamaguchi cave to create the drama, define the outline, highlighting and focusing respectively. For Meghalaya cave, such

kind of play with light could invite more appreciation and respect. In Mawsimai caves, the formations are same as of Yamaguchi caves but lacking only in presentation.... And in little bit of attention.



Fig 7a: Unnoticed Geological formation in Mawsimai cave (Source: Author).



Fig 7b: Highlighted Geological formation in Yamaguchi cave (Source: Author).

MISSING SIGNAGE

Signage plays an important part in transferring the information to the visitors. It even sometimes, supported with audio records explain the object. One can remember the key words and if interested then collect more information even after

reaching back to his/her hometowns. When we look at the Yamaguchi cave of Japan, this step is well executed but in the Mawsimai cave many formations were not even noticed by the visitors due to lack of signage/information.



SIGNAGE

Fig 8a: Geological formation without any Signage or information, Mawsimai cave (Source: Suvrata Sahoo).



Fig 8b: Geological formation with proper Signage or information, Yamaguchi cave (Source: Author).

SUGGESTIONS CUM INFERENCES

Visit to a geological wonder is itself a wonderful experience and no doubt, it was a spellbound beauty in both the caves. But, it could have way much more jaw dropping and memorable, as was being expected after going through the pictures of Yamaguchi cave of Japan. Apart from the points discussed above, with the following suggestions, hope to improve the quality and performance of Meghalaya caves in world of cave explorers:

- Proper maintenance is the prime importance.
- A pre do's and don'ts should be informed and mentioned in the board before entering the cave.
- Efforts on providing non-slippery path should be given.
- Helmets should also be given to avoid any life threat if in case of accidents
- Railings or hand supports should be provided at regular intervals.
- The caves should allow limited number of people in slots, to avoid traffic jam inside the cave and to give them some time to wonder the amazing formations.
- Audio device could be provided which would explain the tourists the evolution, history and different formations.
- Pre warning should be given either by signage or in the audio device for sudden protrusion of stalactite or stalagmites in the path.
- At the entrance and exit spots should be made to take pictures for life long memories.
- Souvenir shops should be introduced with caving tools and other artefacts related to the caves.
- Proper checking should be done before letting people to enter.

CONCLUSION

This was one of the 1700 caves of Meghalaya which is discussed in this paper. There are thousands to be studied and need proper attention. Having an overall view on both the caves (Yamaguchi, Japan and Mawsimai, India), there are more beautiful and amazing formations in Indian caves but waiting to get addressed.

This study leaves with so many questions. Why the region is known only for number of caves, why not for most number of beautiful caves? Why it is so difficult for these caves to enhance its visitors experience by applying the latest technology? Why so less publicity? Why this neglecting maintenance?

With this study, wishing to increase the extents of Nature's crafting and an unforgettable experience to cherish for tourist cum cave explorers. The suggestions mentioned here are very simple but effective. More studies are requested to harvest the potential of such nature's gift..... This could be just the beginning!!

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