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Kashmir Triassic Fossil Park

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ABSTRACT

From 252 million years back Kashmir has been geological repository on various stages of life that evolved during the eras. Four main attractions are attached with Kashmir Triassic Fossil Park detailed as under:

- (i) Study of two Geological Eras, the Paleozoic and Mesozoic.
- (ii) The FIRST EVER PSUNAMI EVENT
- (iii) FIRST EVER MASS EXTINCTION
- (iv) Status of Natural Heritage Site (it enjoyed till 2004, now overlapped by Chinese International Meishan Section from Global Strata Status).
- (v) Evolution of life.

INTRODUCTION

1.1 Earth in the universe is the only planet which supports LIFE. Between 600 million years and 517 million years ago, the first animals appeared in the oceans; initially invertebrates followed by vertebrates. Some of them grew lungs and their fins changed to legs known as amphibians. When these animals died, soil settled on top of them gradually hardened into rock. Their print on the rock is called fossil. Fossil is, therefore, a relic or a trace of a former living thing, plant or animal life of some geological age preserved in the earth's crust.

1.2 Nature has bestowed the State of Jammu & Kashmir with its bountiful treasure of fossil wealth. Some of the prominent is Permian-Triassic Boundary (GSSP) System at the Guryul Ravine, Khonmoh, Pampore/Kashmir. This section is internationally known as Geological

PT Section which possess the largest Ever Mass Extinction record of 252 million years back of Geological Era. Fossil wealth include primordial corals, small invertebrates, plants and a group of mammal-like reptiles known as therapsids, besides the plant fossils of Gangmopteris, Glossopteris leaves. In addition Foraminifera, Byzones, ranchipodes, Conodontes, Bivalve, Ammonids, Pelecypods, Claria, Fish etc. A well preserved Tsunami event in these rocks is clearly visible. This site has been visited by Geologists from all over the world especially from USA, UK, Ireland, china, Japan, Canada, Switzerland, Austria and Scotland to further their interest. 28 overseas, geological institutes round the world are associated with the research work.

1.3 Two negative-C-isotopic excursions are observed resulting into extinctions that proceeded the biotic crisis giving us step wise extinction pattern; with largest peak in the middle of unit E-I and secondary peak at the base of unit E-II which clearly records Tsunami in the rocks. This area has been studied by Scientists round the world - main contributions are University of Cincinnati, Kentucky, USA, besides UK, Canada, China, Japan etc.

1.4 Taking cognizance of this wealth, Environment Policy Group (EPG) a society of intellectuals of the State arranged various meetings to highlight the importance of this place and promoted the idea of Centre for Himalayan Study. "The Nature University" was promulgated as we believe that Nature is a Powerful teacher and there is a need for our students, scientists and scholars to learn in the lap of mother earth in an open workshop university.

1.5 An understanding was reached between Hamberg Natural History Society, New York, USA who have been ranked number 1 in world on fossil park development and maintenance for collaboration on Kashmir Triassic Fossil Park. Guryul, Khonmoh, forms the back side of Dachigam National Park and protected site for Kashmir Deer 'Hangul', two springs one fresh water, the other sulphurous besides dormant Volcano (Jawala Ji) forms the other attractions. 56 specimens of migratory birds including Cormorants, Coots, Gadwell,

Pintails, Pochard are other attractions at Wetland Reserve. The Eco Park at Kasturwan makes altogether a difference in the study of two ranges; the Pir Panchal Range and the Zanaskar Range and besides fresh air intake.

1.6 Saffron cultivation, red chillies are the important produce of the area which have survived the impact of pollution of the nearby cement plants. Camping, Trekking and Hiking are other highlights in the area amidst waterfalls. Therapeutic hot water springs are other tourist attractions in the area. Come one and Come All to develop and preserve this site for study of environment, forestry, agriculture, floriculture, medicinal plants, astronomy, geology, petrography and paleontology in the other class.

GEOLOGY AND GEOGRAPHY

2.1 Geographically VIHI District is a name given to a place which lies between latitude 34° 0' 0" and longitude 75° 5' 0" starting from athwajan/pantha Chowk turning left along mountain range touching Zewan, Khanmoh, Wuyan, Khrew" 13 km far off from Srinagar and turning around at Whab Khar, Sharshali to Ladoo, wherefrom it touches finally Pampore in Kashmir. Altitudes in the area range between 2510m to 2956m. Road and river Jhelum borders the western side whereas mountain range in north and east contain PT section with plain of Karewas alluvium. A metal led road connects most of the area in a u shaped horse-shoe pattern upto Pampore.

2.2 The Valley of Kashmir, 135km long and 40 km wide, extends North Eastward from near Banihal to Handawara. It is an ultramontane basin formed during the post geosynclinal stage of the development of Himalayas, lies between two main Himalayan ranges, the Peer Panjal and Zanskar. Paleozoic and Mesozoic sedimentary are exposed on the North east side of the Valley and Paliozioc to the South west. The Valley is filled with Kerewa formation of the Pliocene-Pleistocene age about 1700m thick molasse-type deposits of fluvial, lacustrine and glacial origin. The Karewas overlies folded Triassic.

Permo-Triassic Boundary

2.3 It has long been observed that the last stages of the Permian period and succeeding early stages of the Triassic period of the world witnessed many changes, particularly in the atmosphere, climate and biota based on the sedimentary sequence of this interval. There are unfortunately only a few areas on the earth where continuity of Late Permian with earliest Triassic could be recognized, and Guryul ravine is the one such area where the continuity of sedimentation is present without any interruption. Amongst Foraminifera as many as fourteen families became extinct during Permian period and many new families evolved in the Mesozoic. There has been a gap in the record of foraminifera from Late Permian and earliest Triassic because of the absence of marine strata representing this time span due to global regression of epi-continental seas. The lack of rotaliod genera in the Paleozoic and their appearance in the Mesozoic was considered to be the most characteristic difference between the foraminifera fauna of the two eras. These rotaliods must have appeared and diversified in upper Permian and lower Triassic as by middle and upper Triassic times most of the genera became well established.

The changes in the physical conditions at the Paleozoic-Mesozoic boundary about 250 million years ago had a strong influence on biota and most groups of organisms in the marine realm became extinct. Upper Permian and lower Triassic marine sediments, known as Zewan and Khunamuh Formation are well exposed in many localities in Kashmir. The best development of continuous Upper Permian to lower Triassic marine stratigraphy is seen at Guryul ravine. These sections are represented by impure sandy limestone and calcareous shale.

Zewan Formation

2.4 The Zewan Formation is composed of carbonate rocks accompanied by sandy shale, shale, sandstones and poor carbonate rocks. The formation comprises biomicrudite and intramicrudite, sometimes poorly washed biosparrodite succeeding terrigenous clastic

sediments like sandstone, sandy shale and shale and sandy limestone. The environmental condition during the early stage of deposition was thought to be shallow to neritic and relatively free from terrigenous materials. Subsequently the second stage of deposition occurred under intra-neritic to shallow bathyal environment conditions. The last stage of deposition is represented by the development of carbonate rocks and shows swallowing of the sea.

Khunamuh Formation

2.5 The Khunamuh Formation overlies the Zawan Formation and shows as abrupt change in the lithology but so far no physical break has been recognized or any unconformity has been recognized between the two. The Khunamuh Formation is mostly composed of interbedded limestone and shale.

Anthropology, Archaeology and History

3.4 consequent upon the mass extinction, Biotic conditions in Kashmir supported life as it evolved from Micro biota from Cambrian times to pelecypods, ammonites in Mesozoic leading to vertebrate fauna, molluscs, spores and plants in Cainozoic times. The find of Mammoth at Pampore, and ancient primate species found that lived 11 to 14 million back by USA researcher have supported the evolution of human in the area. Finally it leads that eco system supported the evolution of life and man first appeared in the Indian subcontinent around five thousand years back

3.5 Event of supernova at Bomai Sopore/Burzahomana, painting draws larger light on the advancement of human in the area recorded in the slab of 48/27 cm, showing to bright object in sky with rays of light coming out, confirming supernova event. Darwin's concept of evolution through stages of variation, adaptations and inheritance is confirmed. The USA researcher at South California discovered ancient primate species in Kashmir in 1917 eleven million years ago and named it Ramadapis Sahnii an ancestral form of orangutans (size of

house cat). This confirmed that the man first appear in Kashmir in the Indian subcontinent.

3.6 Huge Megaliths at Burzohama followed by excavation in 1935 reveal the earlier settlement of human in the area and artifacts recovered include clay pots slabs, sharp tolls, human skeleton, painting of hunting besides gemstones, beads double edged picks, spindle whorls, spear heads, copper arrowheads harvesters, Celts and knife blades.

3.7 A brief history of tomorrow has recently been released in New York under titled "Homo Deus by YN Harai, a Provocative Book on humanity's future", and our quest to upgrade humans into Gods. When famine, war, infectious diseases from uncontrolled forces of Nature into manageable challenges is explicit. He maintains that more people die due to eating too much citing McDonalds than old age, infection, terrorism and criminals put together. Homo Deus explains the projects, dreams and nightmares that will shape 21st Century from overcoming death to creating artificial life. Homo Deus explains two next stages of evolution.

Looking ahead for your cooperation and patience in the development of the human civilization for peace and prosperity.

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