

FACIES CHARACTERISTICS OF BHADRAR BEDS AND THEIR COMPARISON WITH CHORGALI AND SAKESAR LIMESTONES

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The Bhadrar Beds (*vide* A. N. Fatmi, 1973) in the Salt Range are the synonym for Chorgali Formation as amended by the stratigraphic committee of Pakistan (memoirs of the Geological Survey of Pakistan, 1977, vol. 12). In the geological maps of the Salt Range (Gee, 1980) Bhadrar Beds (Chorgali Formation) are shown in the Bhadrar and adjacent area. According to Fatmi (1973), at the principal reference section of Bhadrar, the Bhadrar Beds show two-fold division. The lower unit consists of calcareous shale of greenish-grey, green or buff colour and argillaceous limestone. The upper unit is mainly composed of limestone which is white to cream coloured, porcellaneous and well bedded.

The Bhadrar Beds were studied at the Junction of Talagang-Kushab-Chakwal road near Pail, Bhadrar village and adjacent area through Nurpur to Nilawahan Valley (Figure 1). In all these areas as well as at the entrance of Kas Ratani into the Nilawahan, about 10m thick slope-forming Bhadrar Beds (Chorgali Formation) form the top of the underlying Sakesar Limestone (Figure 2.)

The Bhadrar Beds (Chorgali Formation) in Bhadrar and adjacent areas can be differentiated from underlying Sakesar Limestone on the following basis:

(1) Lithology

The underlying beds of Sakesar Limestone are medium to thick bedded, slightly nodular limestone while the Bhadrar Beds consists of limestone, thin bedded, with alternating marl beds.

(2) Colour

The underlying limestone is grey to light-grey in colour while Bhadrar Beds are greenish-grey to yellowish-grey.

(3) Topographic Expression

The underlying Sakesar Limestone forms steep

cliffs while the Bhadrar Beds form gentle slopes and low ridges.

Figure 3 compares the stratigraphic sequence at the type locality of Chorgali Formation (Chorgali Pass in Khair-e-Murat Range) with the stratigraphic sequence at the Nilawahan according to Fatmi (1973), Shah (1977) and E. R. Gee (1980). If we consider the lithology of the Bhadrar Beds and compare it with that of Chorgali Formation and the Sakesar Limestone, this correlation does not fit the evidence. The Chorgali Formation at its type locality shows that the lower portion consists of dolomitic limestone or dolomite, which is laminated. Stromatolites are present in the upper part of the lower portion. Except for blue green algae structures other fossils are very scarce.

On the other hand the Bhadrar Beds in the Bhadrar and Munarah area, as well as the Sakesar Limestone throughout the Salt Range, are of the same composition:

- (i) Both consist mainly of limestone and limestone with marl alternations.
- (ii) Limestone and marly limestone contain fossils in great abundance:
 - a. ALGAE
Gree algae
 - b. FORAMINIFERA
Alveolinidae
Soritidae
Nummulites
Assilina
 - c. ECHINIDS
 - d. MOLLUSCS
 - e. OSTRACODS.

On the basis of these criteria, the Bhadrar Beds are considered as similar to the Sakesar Limestone, and dissimilar to the Chorgali Formation. The Sakesar Limestone together with the Bhadrar Beds are different from the Chorgali Formation, as far as their facies characteristics are concerned. As we have seen

the Bhadrar Beds are distinguishable from the underlying Sakesar Limestone, but both are deposited essentially under the same sedimentary conditions as concluded from the identity of their fossil content. In this context, the Bhadrar Beds may be taken as a member of the Sakesar Formation. According to our interpretation, the Bhadrar Beds are not an equivalent of the Chorgali Formation, but form a member of the Sakesar Formation (Figure 4).

References

1. Gee, E. R., 1980, Geological Map, Salt Range, Scale 1: 50,000, Published by Director of Overseas Survey, U. K. for Government of Pakistan.
2. Fatmi, A. N., 1973, Litho-stratigraphic units of the Kohat-Potwar province, Indus Basin Pakistan. Memoirs of the Geological Survey of Pakistan, vol. 10.
3. Ibrahim Shah, S. M., 1977, Stratigraphy of Pakistan. Memoirs of the Geological Survey of Pakistan, vol. 12.

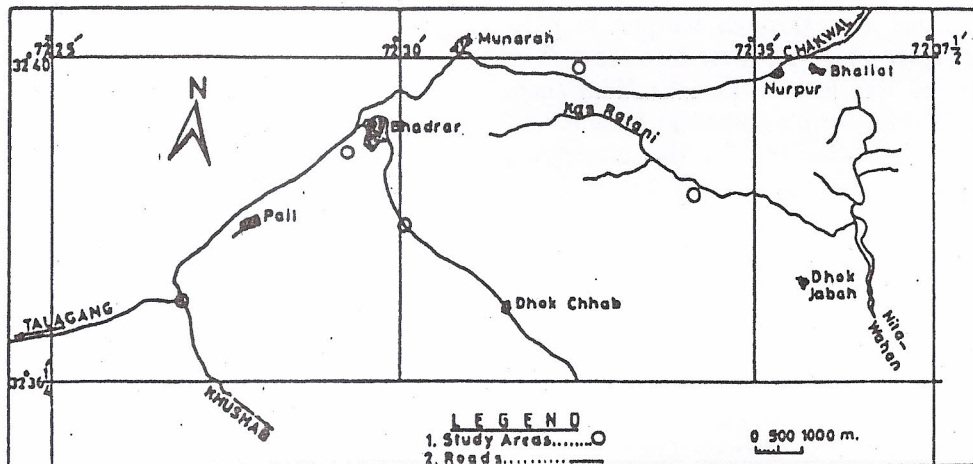


Figure 1. Location of study areas.

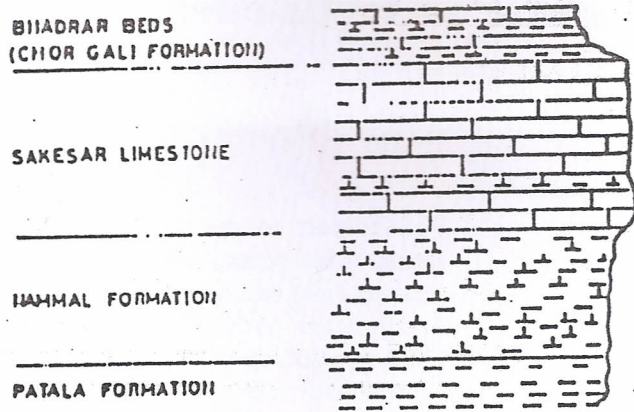


Figure 2. Stratigraphic sequence at the entrance of Kas Raloni into the Nilawahon, Salt Range.

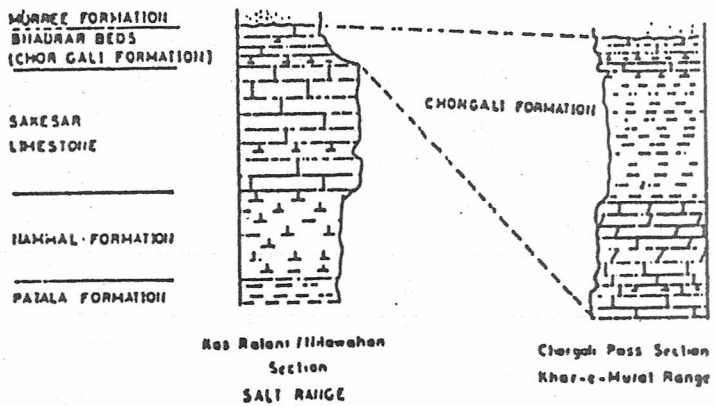


Figure 3. Stratigraphic correlation of Lower Eocene at Chorgali pass (Khar-e-Murat) and at Nilawahon (Salt Range) according to S.M.Ibrahim Shah (1977) and A.N.Falimi (1973)

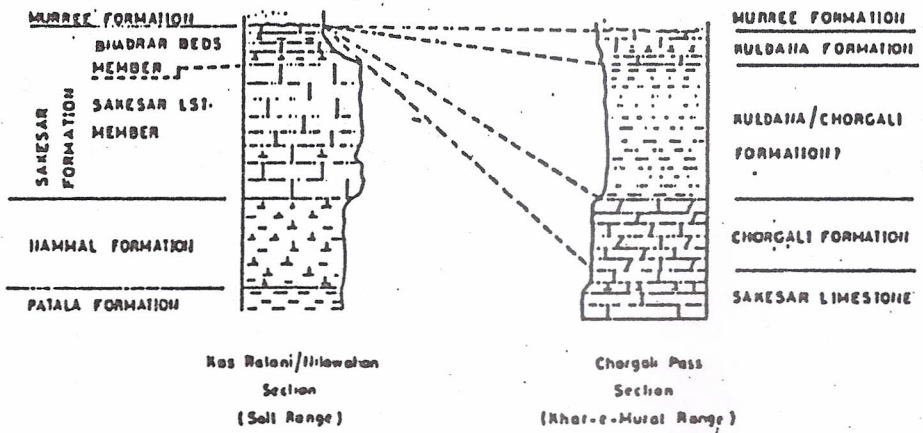


Figure 4. Litho-Stratigraphic correlation of Lower Eocene at Nilawahon (Salt Range) and at Chorgali pass (Khar-e-Murat Range)