Palynological recognition of the Karharbari-Barakar Formations in the sub-surface sediments of Wardha Coalfield, Maharashtra, India

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Palynological investigation of coal and associated sediments in two bore-holes MWS-23 and MWS-33 from Wardha Valley Coalfield, Maharashtra has been done. Results indicate the presence of Upper Karharbari and Lower Barakar Formations in the coalfield.

**Key-words**—Palynostratigraphy, Karharbari Formation, Barakar Formation, Lower Permian, Wardha Valley, India.

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THE Wardha Valley Coalfield, north-western extension of the Godavari Valley coalfields, preserves a rock sequence from Early Permian to Early Cretaceous. The coal-bearing tracts under active mining are confined to a narrow peripheral part along the western fringes of the basin where coal occurs at shallower depths. The geology of the coal-bearing eastward tract on dip side is little known due to widespread overlap of Kamthi sediments. The succession of the Gondwana sequence in the Wardha Valley Coalfield is given below (after Raja Rao, 1982):

1. Maleri Formation
2. Kamthi Formation
3. Barakar Formation
4. Talchir Formation
5. Sullavi Formation
6. Pakhal Formation


The present palynological investigation has been carried out on the coal and associated sediments in the two bore holes MWS-23 and MWS-33 drilled by Mineral Exploration Corporation Limited. Both bore holes, according to MECL, pass through Kamthi, Maitur and Barakar Formations (Text-figure 1). MECL, supplied shale and carbonaceous shales of the drill cores for palynological investigation to ascertain the age of these sediments.

Lithologically there is no marked distinction for the Karharbari and Barakar sediments in the subsurface samples but the palynological investigation supports their distinct presence.
PALYNOLOGICAL ASSEMBLAGES

Studies of the composition of palynofossils (Text-figure 2) indicate two distinct assemblages. They have been described as Assemblage A and B.

Assemblage A—In the bore-hole MWS-33, at the depth of 126-127 m, a palynofossil assemblage is found showing 33 per cent of Parasaccites in association with non-striate bisaccate pollen (52%). The non-striate bisaccates are represented by Scheuringipollenites, Paravesicaspora, Rhizomaspora and Primuspollenites. The Karharbari forms—Crucisaccites and Caheniasaccites are also present. The striate bisaccate forms constitute only 10 per cent of the assemblage.

In the bore-hole MWS-23, at the depth 271 m, a comparable assemblage is known which shows the presence of 28 per cent radial monosaccate Parasaccites in association with nonstriate bisaccates (65%). The striate bisaccates are only 5 per cent of the assemblage. In the overall composition both the assemblages resemble each other, particularly in the predominance of Parasaccites and non-striate bisaccates, and paucity of striate bisaccates.

Assemblage B—In bore holes MWS-33 (at the depth of 30-114 m) and MWS-23 (at a depth of 18224 m), the palynological assemblages are nearly alike in composition. The assemblage contains apiculate trilete spores, monolete spores, nonstriate bisaccate pollen, striate bisaccate pollen and sulcate
forms. Nonstriate bisaccate pollen are nearly 55 per cent, of these the most common form is Scheuringipollenites (34%). The striate bisaccates are 18 per cent of the total. Besides, the assemblage has nearly each of 5 per cent apiculate trilete spores, monolete Latosporites and radial monosaccate pollen Parasaccites.

**COMPARISON**

Bharadwaj (1974) on the basis of qualitative and quantitative occurrence of Sporae dispersae suggested a palynological zonation of the Lower Gondwana. According to his scheme the Assemblage - A recorded in the bore holes is palynologically comparable to that of the Upper Karharbari Formation in the presence of radial monosaccates and non-striate disaccate rich assemblage. On the other hand, the Assemblage B compares to Barakar-I palynozone having a non-striate and striate bisaccate rich assemblage. On the basis of palynoassemblage, the sediments at the depth of 180-224 m in MWS-23 correlate with that from the depth 30-114 m in MWS-33 and represent the Lower Barakar Formation. The sediments at depth of 126-127 m in MWS-33 correlate with those at the depth of 271 m in MWS-23 and thus represent the Karharbari Formation.

**REFERENCES**


