

FOSSIL FLORA FROM THE UPPER GONDWANA OF KUTCH AND KATHIAWAR

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ABSTRACT

The paper presented here deals with the Lower Cretaceous (=Wealden) flora from Kutch and Kathiawar. The floral assemblage consists of Equisetales, Isoetales, Filicales, Pteridosperms, Cycadeoidales, Cycadales, Coniferales and two new gymnospermous genera of uncertain affinity. The flora is rich in pteridophytic and coniferous remains.

INTRODUCTION

THE Upper Gondwana rocks occupy a large area in Kutch district of Gujerat, N. W. India. They are for the most part marine formations except the uppermost plant beds belonging to the Umia Series, which is probably lacustrinal in origin. The stratigraphical position and the age of these rocks have been studied by a score of workers from time to time with the help of animal and plant fossils.

The outcrops of plant beds belonging to the Umia Series also occur in the adjoining district of Kathiawar. Practically no major work on the plant remains, has hitherto, been done from here. Whatever is known it is after the works of Feistmantel (1880), Fedden (1884) and Rao & Vimal (1950).

The plant fossils, described here, were collected in three different excursions undertaken from 1959 to 1962. The fossil material from Kutch consists of impressions and incrustations and those from Kathiawar are preserved as impressions. In the following brief account, the object here is to bring into relief the general composition of the flora from Kutch and Kathiawar.

PTERIDOPHYTA

Equisetales is represented by only a few small fragments of *Equisetites*.

Isoetales is represented by two species of the genus *Isoetites*, e.g., *I. serratifolius* and *I. indicus* earlier reported by Bose & Roy (1964).

Filicales — The remains of ferns occur abundantly in Kutch and Kathiawar but

only some of these can be determined. The family represented are Matoniaceae, Gleicheniaceae, Weichseliaceae and probably Osmundaceae.

Matoniaceae — The matonaceous remains have been recovered from both Kutch and Kathiawar. Sahni (1936) reported the occurrence of *Matonidium indicum* from the Himmatnagar sandstone, India. The specimens recovered from Kutch and Kathiawar are structurally indistinguishable from *M. indicum*. The Indian species is just like *Matonidium goepperti* known widely from Middle Jurassic to Lower Cretaceous. Therefore, I propose to describe the so-called *M. indicum* as *M. goepperti*.

The fragments of the genus *Phlebopteris* also occur in Kathiawar. These cannot be determined specifically. Its venation agrees with *P. polypodoides*, a species very widely known.

Gleicheniaceae is represented by the genus *Gleichenites*. Their fragmentary nature prevents specific determination.

Weichseliaceae — The occurrence of the genus *Weichselia* in Kathiawar is of stratigraphical importance. The specimens recovered agree perfectly with *W. reticulata*, a fern very widespread and characteristic of the Wealden stage of the Lower Cretaceous. It occurs more sparingly above Wealden and is not known from the proved Upper Jurassic locality.

?*Osmundaceae* — *Cladophlebis* sp. is the only species which is doubtfully referred to this family.

GYMNOSPERMS

Pteridosperms — *Pachypteris indicus* (Holden) n. comb. and a new species belonging to the same genus are the representatives of this order. It had been known as a conifer and was called *Retinosporites indica* Florin (1940) thought it was a podocarp allied to *Acropyle*. But a careful examination shows that it is nothing of the sort. It is a bipinnate leaf and the pinnules are

not like conifer leaves. These have pinnate venation.

Cycadeoidales — There are a lot of Cycadeoidalean fronds and flowers known from Kutch. Out of these only *Otozamites imbricatus* Feistm. is referred here. Previously it was only known by its external feature. The present study has revealed its cuticular structure.

Cycadales — The only member of this order is *Nilssonia trambauensis* sp. nov. from Kutch.

Coniferales — The conifers are one of the dominant constituent of the flora in most of the localities from Kutch and Kathiawar. The recognizable genera are *Brachyphyllum*, *Pagiophyllum*, *Araucarites*, *Elatocladus* and *Coniferocaulon*.

In addition to the above, two new monotypic genera, viz. *Lorumformophyllum serratum* gen. et sp. nov. and *Trambaua trilobata* gen. et sp. nov. are reported here. These two genera are founded on the basis of their

cuticular features. The taxonomic positions of these remain uncertain.

DISCUSSION

The age of the Umia plant beds (Umia stage) remained a controversial issue for a long time. The conclusions arrived at from the direct evidence of plant remains in these beds and the indirect evidences from the studies of the invertebrates of the under- and overlying beds range from Bathonian — Middle Cretaceous. Recent studies by Singh *et al.* (1964) Mio- and Macrospores from Kutch clearly establish that the beds containing them correspond more to Lower Cretaceous (=Wealden) age than any other older or younger formations. On the other hand, the presence of *Weichselia* in the Umia plant beds of Kathiawar strongly favours a Lower Cretaceous (=Wealden) age of the beds containing them.

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