



PE990197

Report on Plant Fossils in Core 22 (7947 - 7957 feet)
of the Planet Casterton No. 1 Bore.

Summary: Core 22 was submitted for examination. Excellently preserved fossils are present and seven plants are identified. The plant assemblage indicates a Jurassic age and the fossil horizon is equated with the Walloon Series of Queensland.

Introduction: Core 22 contains carbonised impressions of plant fragments. Small detail of venation and form are clearly visible and close determination of the plants is possible.

Specimens containing good examples of the species identified have been numbered 1 - 9 and packed separately from the bulk of the samples which contain no additional evidence and can be used for palynological investigations if so desired.

Details of specimens 1 - 9 and information on the range and occurrence of the plants concerned follows :-

Description of specimens:

Specimen 1. (a). A frond of conifer foliage 4.5 cm long is referred to Elatocladus planus (Feist.) Maximum pinnule length is 1.5 cm at the base of the frond, tapering to 1 cm near the tip. (Frond marked "A" on specimen) Each pinnule shows a median vein. The rachis of the frond is fine.

Elatocladus planus is a form species erected to include such sterile conifer fragments which cannot be assigned to genera whose cones are known. It is a most characteristic Jurassic form but ranges from Upper Triassic to Lower Cretaceous. It occurs abundantly in the Walloon Series in Queensland; also in the Burrum Series, Queensland; Talbragar Fish Beds, N.S.W; Julia and Nanutarra Formations in W.A.; Lower Cretaceous horizons in the Northern Territory; (and Kota and Jabalpur Series in India) etc.

(b). Portion of a frond of Ptilophyllum pecten (Phill.) 2 cm long, .75 cm wide with 5 pairs of pinnules per cm is marked "B". This form is abundant in Jurassic and Lower Cretaceous strata in Australia, and in the Jurassic of Europe, Turkestan, India, Grahamland etc. It is the dominant form in the "Ptilophyllum flora" of the Upper Gondwanas in India (now classified as Lower Cretaceous).

Specimen 2 shows Ptilophyllum pecten (B) and a fragment of Elatocladus planus (A).

Specimen 3.(a). At "A" a frond of Otozamites sp. is seen. 3.5 cm of fine rachis averages 5 pinnules per cm. Each pinnule is approximately .2 cm wide at its base and tapers to a point. Pinnules are falcate and average .5 cm long. The frond has a somewhat lax appearance when contrasted with the compact, almost overlapping arrangement of pinnules seen in the common species O. bengalensis, O. bechei, and O. feistmantali. As the delineation between even the common species is arbitrary, and there is characteristically much variation of pinnule form within each "species" no attempt has been made to refer this specimen to a recorded species. All the Otozamites fronds in Core 22 can be referred to one species which is probably a new species not as yet recorded in Australia. It resembles a form illustrated by Douglas (1962) from the Upper Jurassic in Victoria.

The range of Otozamites in Australia is Jurassic and Lower Cretaceous. It has been stated repeatedly in literature that distribution of the genus was limited to the northern areas of Australia as it was recorded in north W.A., Northern Territory and Queensland but not in Victoria, South Australia and Tasmania. Douglas recorded and illustrated some poorly preserved specimens from Boola Boola Forest in S.E. Victoria. The present examples in Core 22 are therefore the first good specimens obtained in Victoria. There seems little doubt that the genus will be found to occur in N.S.W. as well.

(b). At "B" on specimen 3 are two small fragments of a delicate fern - Coniopteris delicatula (Shirley) This species occurs in Triassic and Jurassic strata in Queensland.

Specimen 4. At "A" are further fronds of Otozamites sp., at "B" portions of fronds of Ptilophyllum pecten and at "C" Elatocladus planus.

Specimen 5. A frond of Otozamites sp. "A" and a fragment of Coniopteris delicatula at "B".

Specimen 6. The frond of Otozamites sp. marked "A" on this specimen is 3 cm long and .4 cm wide. There are 4 pinnules per cm. and their arrangement is more compact than in the larger fronds. Pinnules are blunter and less falcate.

Specimen 7. Portion of a frond of the fern Cladophlebis australis (Morr.) 4 cm long is marked "A". The alternate pinnules are up to 1.5 cm long and show the characteristic venation of the species.

Cladophlebis australis is a most characteristic plant of the Jurassic of Australia. It ranges from Upper Triassic to Lower Cretaceous.

Specimen 8. (a). At "A" is a terminal portion of a pinna of the fern Sphenopteris superba Shirley. It is 1.5 cm long and the pinnules are .25 cm long at the base of the specimen and barely .05 cm long at the tip. Each pinnule shows Sphenopteroid venation. Sphenopteris superba ranges from Upper Triassic through Jurassic. It is a characteristic plant of the Walloon Series.

- Specimen 9. (a). At "A" part of frond of Ptilophyllum pecten is seen.
- (b). At "B" is part of a frond of Pterophyllum abnorme Eth fil. Part of a strong rachis 2.5 cm long gives rise to four pinnules at right angles to the rachis. Each pinnule is attached by its entire base, and each has about 20 fine parallel veins. Preservation is not complete and it is impossible to see the decurrent portions of lamina. The determination of this specimen as P. abnorme is made on the following criteria :- It is assigned to Pterophyllum as the attachment of pinnules is lateral; to P. abnorme as the veins enter each pinnule at right angles to the rachis and the number per pinnule is in accordance with the vein density in P. abnorme; and the size of pinnules etc. is consistent with that sp.

Pterophyllum abnorme is recorded from the Walloon Series of Queensland.

Conclusions.

The following plants have been identified in Core 22:-

- Elatocladus planus (Feist).
Ptilophyllum pecten (Phill.)
Otozamites sp. (possibly sp. nov.)
Cladophlobis australis (Morr.)
Sphenopteris superba Shirley.
Coniopteris delicatula (Shirley)
Pterophyllum abnorme Eth. fil.

The weight of plant evidence indicates a Jurassic age for the assemblage and it is equated with the Walloon Series in Queensland. (Walkom, 1917). The unidentified species of Otozamites may be a new species, and it differs from the typical Lower Cretaceous forms which occur in abundance in N.T. collections from horizons proved to be Neocomian. (White, 1961)

References:

- Douglas, J.G. 1962. The occurrence of Otozamites in S.E. Victoria. Proc. Roy. Soc. Vic. 75,1; 41-43.
- Walkom, A.B. 1917. Mesozoic floras of Queensland. Flora of the Ipswich and Walloon Series. Qld. Geol. Surv. Publ. 257, 259.
- White, M.E. 1961. Report on 1960 collections of Mesozoic plant fossils from the Northern Territory. Bur. Miner. Res. Records 1961/146.

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