PENTOXYLALES

-By Prof. BIRBAL SAHNI IN 1948 – fossils in RAJMAHAL HILLS IN BIHAR

- Unique combination of Benettitales, Cycadales & Coniferales

- Petrified -1962 - Newzealand

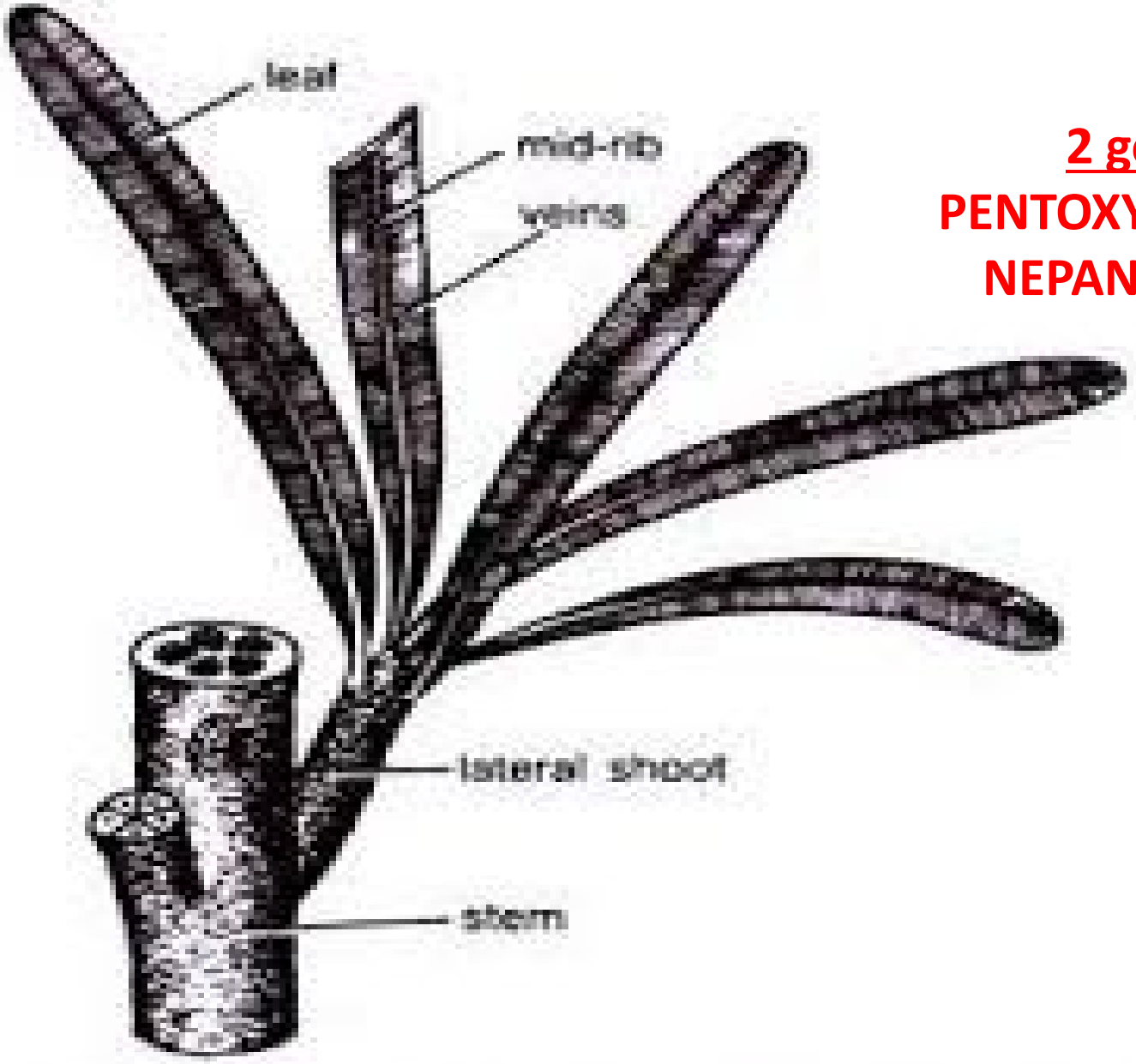


Fig. 7.2. *Pentoxylon sahni*: Reconstruction of stem and leaves (*Nipaniophyllum raoi*). (after Sahni).

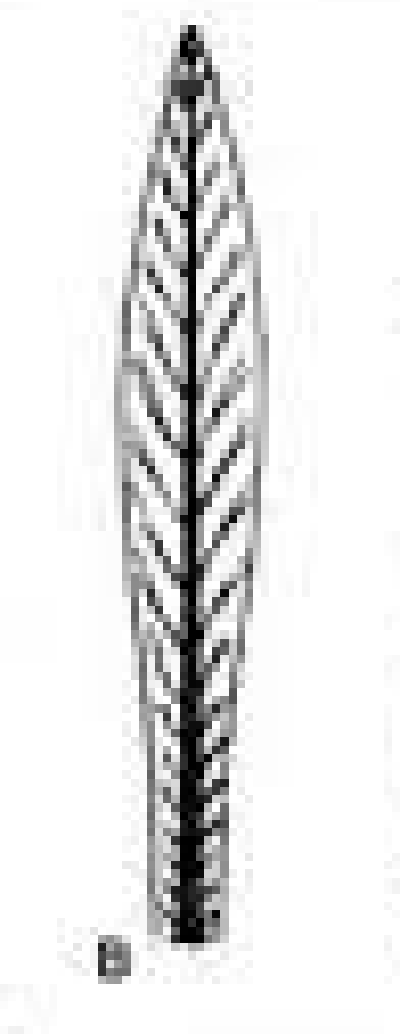
<u>2 genera</u>

PENTOXYLON SAHNI

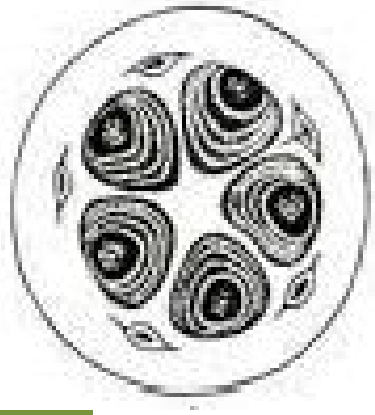
NEPANIOXYLON

MORPHOLOGY:

- Shrubs / small trees
- stem – 3mm to 2cm
- long & dwarf shoots
- leaves only on short shoots
- leaves – simple, petiolate, margin entire, obtuse apex, distinct midrib with lateral veins towards margin (parallel)
- leaf – 7cm long & 1 cm broad
- Rep organs – terminal on short branches



ANATOMY



- 5 primary steles – POLYSTELIC
- Concentric with cambium
- Secondary tissues in older stem towards the centre sec wood is EXOCENTRIC
- Primary xylem & phloem – external to cambium- as ring
- 5 smaller vascular strands alternating main strands
- smaller – strands of lateral shoots
- No. of strands varies at different levels
- 3 @ lower, 5# middle , 6 @ top
- secondary xylem – pcynoxylic, with growth rings
- Tracheids – bordered pits (uni/bi seriate)
- Both types of stomata
- Combination of Benettitales & Cycadales

Female Reproductive organ:

- Like mulberry fruits
- Peduncle – several branches – female strobilus – terminal position
- 2-3cm long
- Central receptacle to which 20 sessile ovules are attached
- No sterile structures – distinct feature
- Ovule – surr by 2 layers of integument – outer sarcotesta & inner sclerotesta
- Micropyle – directed outwards
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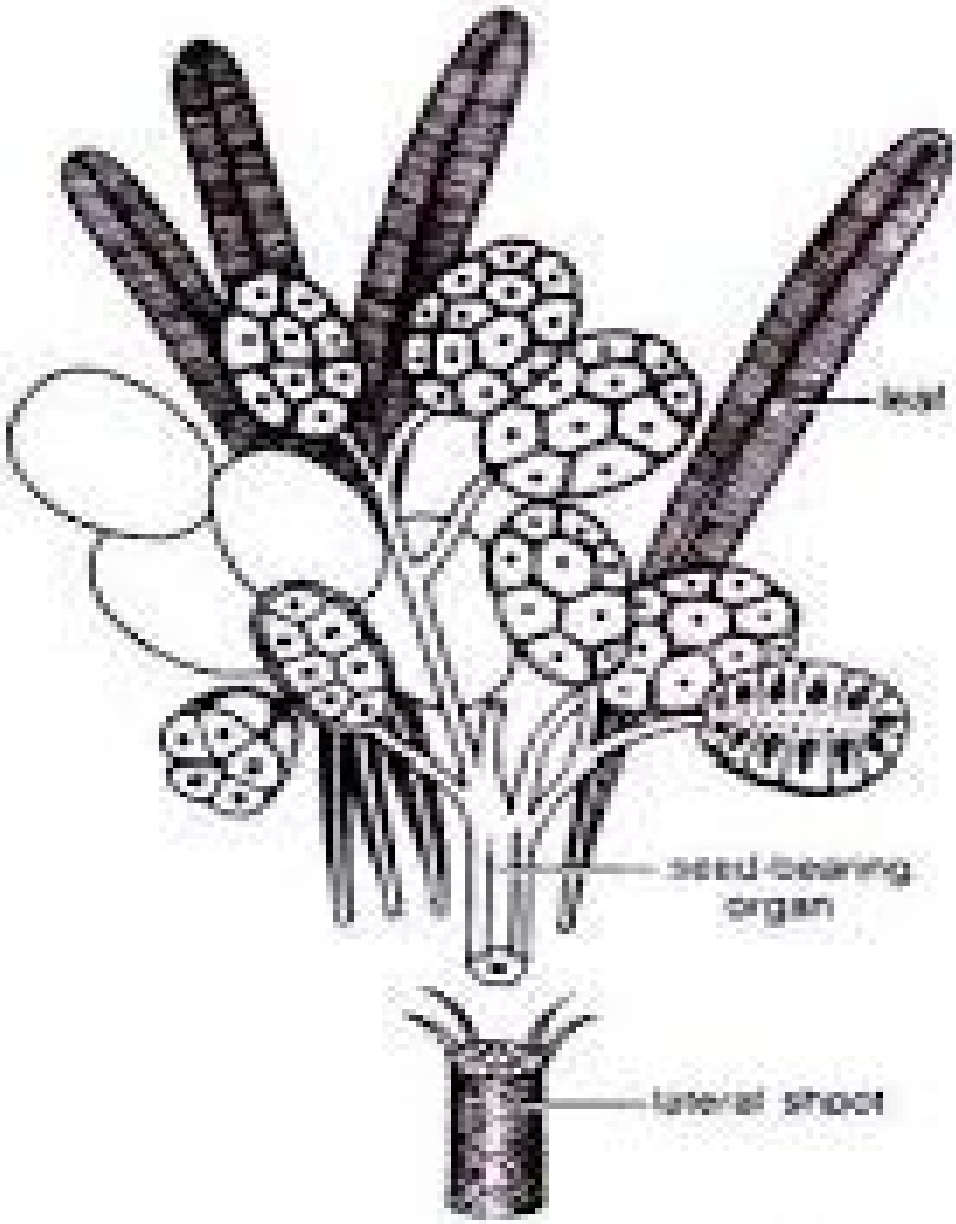

Fig. 7.3. *Carnoconites compactum*. Female cones. (after Sahni)

Male strobilus

- ✓ Terminal of lateral shoots ‘
- ✓ Dome shaped receptacle – 20 microsporangiophores – arranged in a whorl
- ✓ Pear shaped unilocular microsporangia terminally
- ✓ Several boat shaped microspores

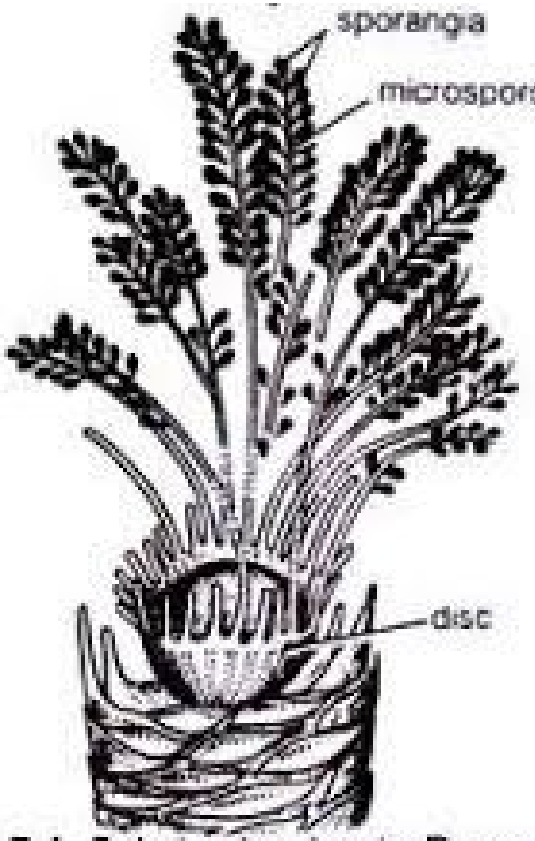

Fig. 7.4. *Sahnia nipaniensis*. Reconstruction of male "flower". (after Vishnu-Mittre).