ON A NEW SPECIES OF DADOXYLON, *D. SHUKLAI* SP. NOV. FROM DECCAN INTERTRAPPEAN BEDS OF CHHINDWARA DISTRICT, MADHYA PRADESH

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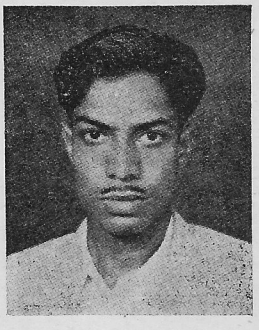
ABSTRACT.—The author describes a new species of *Dadoxylon*, *D. shuklai*. It possesses the characters of both *Dadoxylon* and *Mesembrioxylon*, those of the former predominating.

INTRODUCTION

QUITE a few coniferous woods have been described from the Intertrappean beds of the Deccan, a good number of which belong to the form genus *Dadoxylon*. The more important species of these are *D. resinosum* (Shukla, 1944) and *D. Deccani* (Shukla, 1938). A detailed study of the present wood collected from the Intertrappean beds of Chhindwara district was undertaken primarily as it showed the characteristic features of *Dadoxylon* besides some of those of *Mesembrioxylon*.



MATERIAL AND METHODS

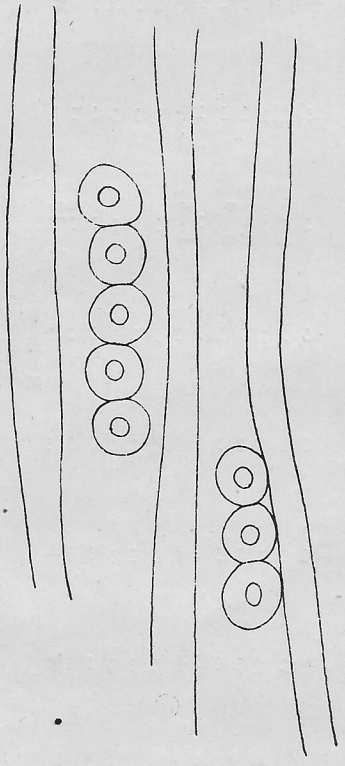
The material is a slab of secondary wood possibly far removed from the pith. Peel sections were tried but only some of these revealed anatomical details. Thin sections prepared from slices were quite satisfactory.

DESCRIPTION

In the t. s. the growth rings are visible to the naked eye. The autumn wood which appears like a thin brown line, nearly 0.25 mm. broad is usually represented by 3 to 4 narrow layers of thick walled tracheids (average 0.016 mm. to 0.025 mm.). One spring zone measures on an average 10 mm. The tracheids are 0.066 mm. to 0.075 mm. in width (Pl. 19, figs. 1, 2) and are often isodiametric in cross section. Vertical resin canals or resin-filled, parenchyma is absent. The medullary rays are narrow, being often separated by only one or two rows of tracheids (Pl. 19, fig. 1). These are mostly uniseriate though sometimes biseriate particularly in the middle (Pl. 19, fig. 3 ; Pl. 20, fig. 7). The height of the medullary rays is 1 to 28 cells (average 10 cells). Ray cells are thick walled and narrowly oblong with tapering end cells. Tangential pits not present.

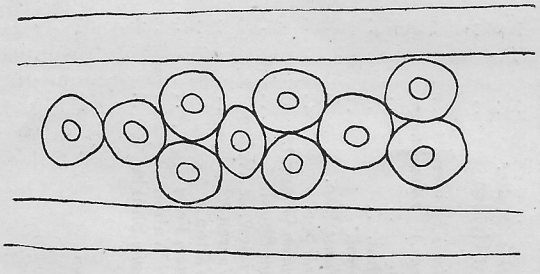
The radial pits are 1-2 seriate ; biseriate condition is common (Pl. 19, fig. 4 ; Pl. 20, fig. 8). Sometimes triseriate condi-

tion also occurs though rarely (Pl. 19, fig. 5). In a few cases the uniseriate and biseriate condition may be found in the same tracheid (Pl. 20, fig. 8). The pits are bordered and mostly contiguous (Pl. 19, fig. 4 ; Pl. 20, fig. 8).

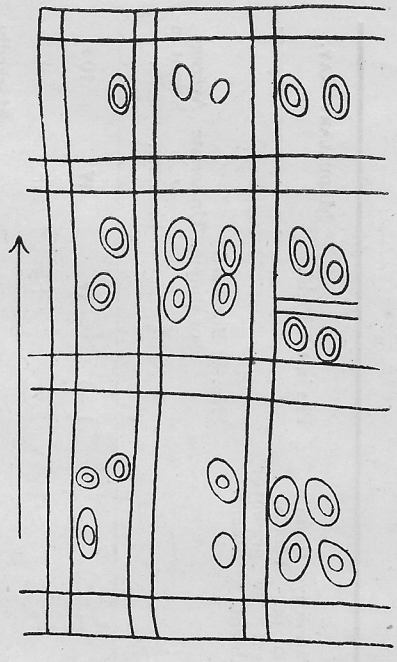


TEXT FIG. 1 Radial longitudinal section showing round uniseriate pits × 525

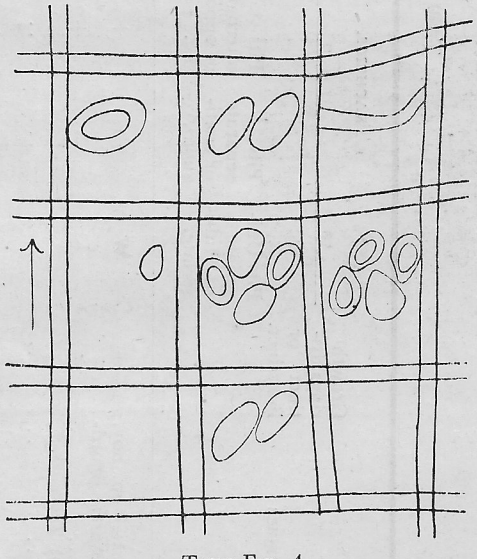
There may also be seen uniseriate (Text-fig. 1) round and biseriate sub-opposite pits (Text-fig. 2). Pits are 12 μ to 15 μ. Rims of sanio absent.



TEXT FIG. 2 Radial longitudinal section showing round biseriate sub-opposite pits × 525



TEXT FIG. 3



TEXT FIG. 4

TEXT FIGS. 3 and 4 Radial sections showing bordered and simple pits in the field. Vertical pore in several cases may be noted. (× 600 Each.)

TABLE No. 1

Name of Species	Growth rings distinct or indistinct.	Tracheids.				Parenchyma present or absent.	Resin canals present or absent.	Pits in the Field.		Medullary Ray.	
		Pits Uniseriate or Multiseriate.	Pits separate or contiguous.	Pits alternate or opposite.	Tangential pitting present or absent.			No.	Bordered or simple.	Uniseriate or biseriate.	Average height in cells.
1. *Dadoxylon Shuklai* sp. nov.	+	W	—	+	—	—	—	1—4	W	W	10
2. *D.(Arau.) jurassicum* Bhardwaj	—	±	—	+	—	—	—	6	+	+	4
3. *D. (Mesopitys) Tchihatcheffi* Frentzen	...	..	..	..	..	..	..	..	..	..	Markedly low.
4. *D. Zalesskyi* Sahni.	..	±	..	..	..	..	..	..	—	+	Low,
5. *D. Krauseli* Sahni and Singh	..	..	..	..	..	..	..	..	..	..	1—20
6. *D. lafoniense* Halle. ..	—	Secretory pits present.			..	..	..	..	..	+	Low.
7. *D. indicum* Holden ..	..	± (Pits having tendency to fuse and unite to form a single big pit)				..	..	..	..	+	Low.
8. *D. bengalense* Holden ..	..	..	..	..	..	..	..	2—7	..	+	1—20
9. *D. (Arau.) rajmahalense* Sahni.	+	—	—	+	..	..	..	..	..	+	6
10. *D. α.* Sahni.	..	..	..	..	..	..	..	..	..	+	Low.
11. *D. β.* Sahni.	—	—	..	..	..	..	..	..	..	+	Low.
12. *D. parbeliense* Rao. ..	..	±	..	..	..	..	..	8—9	..	..	1—24
13. *D. teilhardi* Sze. ..	..	—	..	..	..	..	..	8—9	..	..	1—6
14. *D. rhodeanum* Göppert. ..	..	—	..	..	..	..	..	..	..	..	3—20
15. *D. Deccani* Shukla. ..	..	±	—	+	—	..	..	1—6	+	+	2—49
16. *D. Bakeri* Sew. & Walton	..	..	..	..	..	..	..	..	..	..	1—16
17. *D. sp.* Warren ..	..	..	..	..	..	..	..	..	..	..	1—20
18. *D. sp.* Walton ..	..	..	..	..	..	..	..	..	..	..	1—20
19. *D. angustum* Felix ..	..	..	..	..	..	..	..	..	..	..	1—25
20. *D. Arberi* Walton ..	..	..	..	..	..	..	..	..	..	..	1—25
21. *D. resinosum* Shukla ..	+	±	W	W	+	..	Resiniferous tracheids mixed with medullary rays.	1—10	—	W	22

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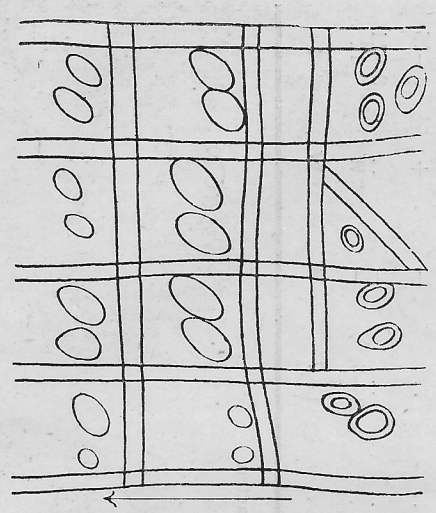
22. *D.* (*Arau.*) *novaezeelandiae* Stopes (Sew.) ..	+	—	—	+	..	..	+ Resiniferous tracheids.	5—6	+	+	3—4
23. *D. sp.* Holden (Sew.) ..	..	—	—	**W**	..	..	..	..	..	+	..
24. *D.* (*Arau.*) *breveradiatum* (Lignier) Sew ..	..	±	—	+		+	+	8—15	—	+	1—3
25. *D.* (*Arau.*) *kerguelense* Sew	+	±	—	+	..	..	..	5—8	—	..	7
26. *D. pseudoparenchymatosum* Gothan	+	±	—	+	..	..	..	Several small	—	+	2—10
27. *D. keuperianum.* (Goepp) Sew	—	±	—	+	..	..	..	2—4	—	+	2—50
28. *D. septentrionale* (Gothan) Sew	+	—	—	+	..	+	..	2—4	—	+	30
29. *D. mahajambjense* (Fliche) Sew	..	—	—	+	..	..	..	..	—	+	8—16
30. *D. divescence* (Lignier) Sew	..	—	—	+	..	..	..	..	—	..	8—11
31. *D. Chandaensis.* Chitaley ..	..	**W**	**W** (rarely)	+	+	..	..	2—6	—	**W**	12
32. *D. eocenum* Chitaley ..	..	**W**	—	+	+	..	..	1—7	**W**	**W**	4

(+), Primary Character ; (—), Alternate Character ; (**W**), Mixed Character.



TEXT FIG. 5 Radial section showing bordered and simple pits in the field. Vertical pore in several cases may be noted. (×550.)

The pits in the field 1-4 in number (Text-figs. 3, 4 & 5 ; Pl. 20, figs. 9 to 12) are bordered or simple with a narrow pore. It is interesting to note that at certain places there may also occur vertically narrow pores—a feature resembling *Mesembrioxylon*. In a few cases the pore may even be slightly oblique (Pl. 20, figs. 11, 12). Bordered and simple pits seem to occur in the same field though the simple nature may be due to the disorganisation of the border (Text-fig. 4). Round thickening deposits as seen in *D. Chandaensis* (Chitaley, 49) are also present on some tracheid walls (Pl. 19, fig. 6).

SYSTEMATIC POSITION AND COMPARISONS

On the basis of its distinguishing characters viz. well defined growth rings ; absence of xylem parenchyma ; presence of 2 to 4 simple or bordered cross-field pits ; radial pits uni- to biseriate, contiguous, alternate, the present wood can be referred to the genus *Dadoxylon*. The feature of vertical or oblique pore may perhaps suggest bringing it under *Mesembrioxylon* but since the balance of evidence points towards the former genus, comparisons have been made with the important species of that genus (Table No. 1). The '*Mesembrioxylon* feature' is, however, discussed separately.

It is thus clear that the present specimen is different from all the other species, though it may appear to resemble some in certain isolated characters.

Reference to Mesembrioxylon.—It may perhaps be argued that the presence of vertical pore in the field and round uniseriate, sometimes sub-opposite pits may be taken as a feature resembling *Mesembrioxylon*. Though the uniseriate condition of pits both separate and contiguous is a feature defined in *M. bedfordense* (Stopes) (Seward, 1919), *M. fusiforme* (Sahni, 1920), *M. Sahnii* (Ramanujam, 1953), *M. trichinopoliense* (Varma, 1954) and *M. Sarmai* (Varma, 1954), biseriate and sometimes contiguous pits have also been mentioned in one species of *Mesembrioxylon* viz. *M. tiruvakkaraianum* (Ramanujam, 1953), as seen in the present wood.

Coming to *Dadoxylon*, there are often not many species possessing horizontal or vertical pits in the field. One such species which may show some resemblance with the present specimen is *D.* (*Arau.*) *jurassicum* (Bharadwaj, 1953) but that species differs in possessing (a) mostly oblique pores in the field ; (b) pits in the field 4-8, border usually not easily seen ; (c) medul-

EXPLANATION OF PLATE 19

FIG. 1—Part of a transverse section of the type specimen showing autumn and spring wood elements × 40.

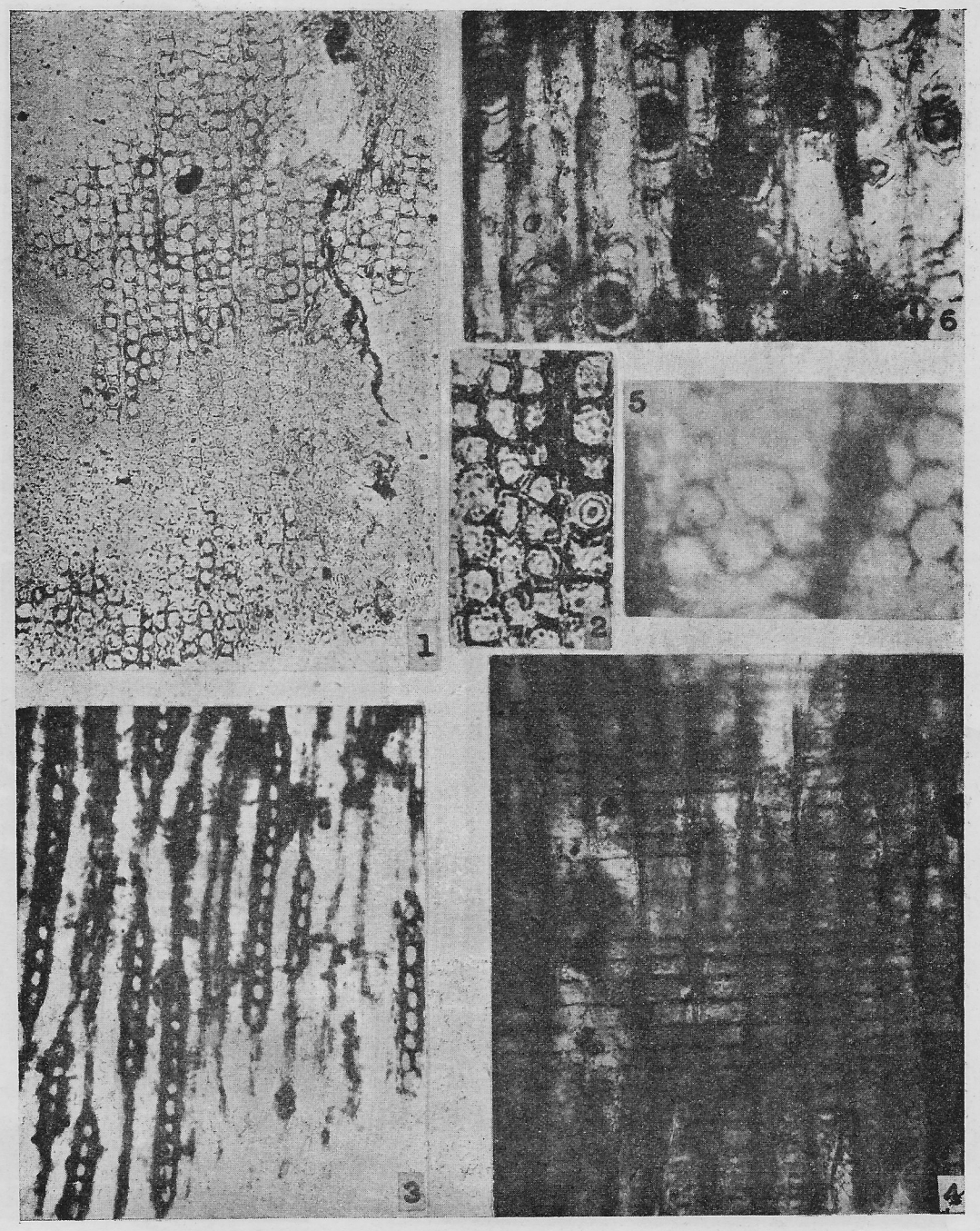
2—Part of a transverse section enlarged × 95.

3—Part of a tangential section showing distribution and height of medullary rays × 40.

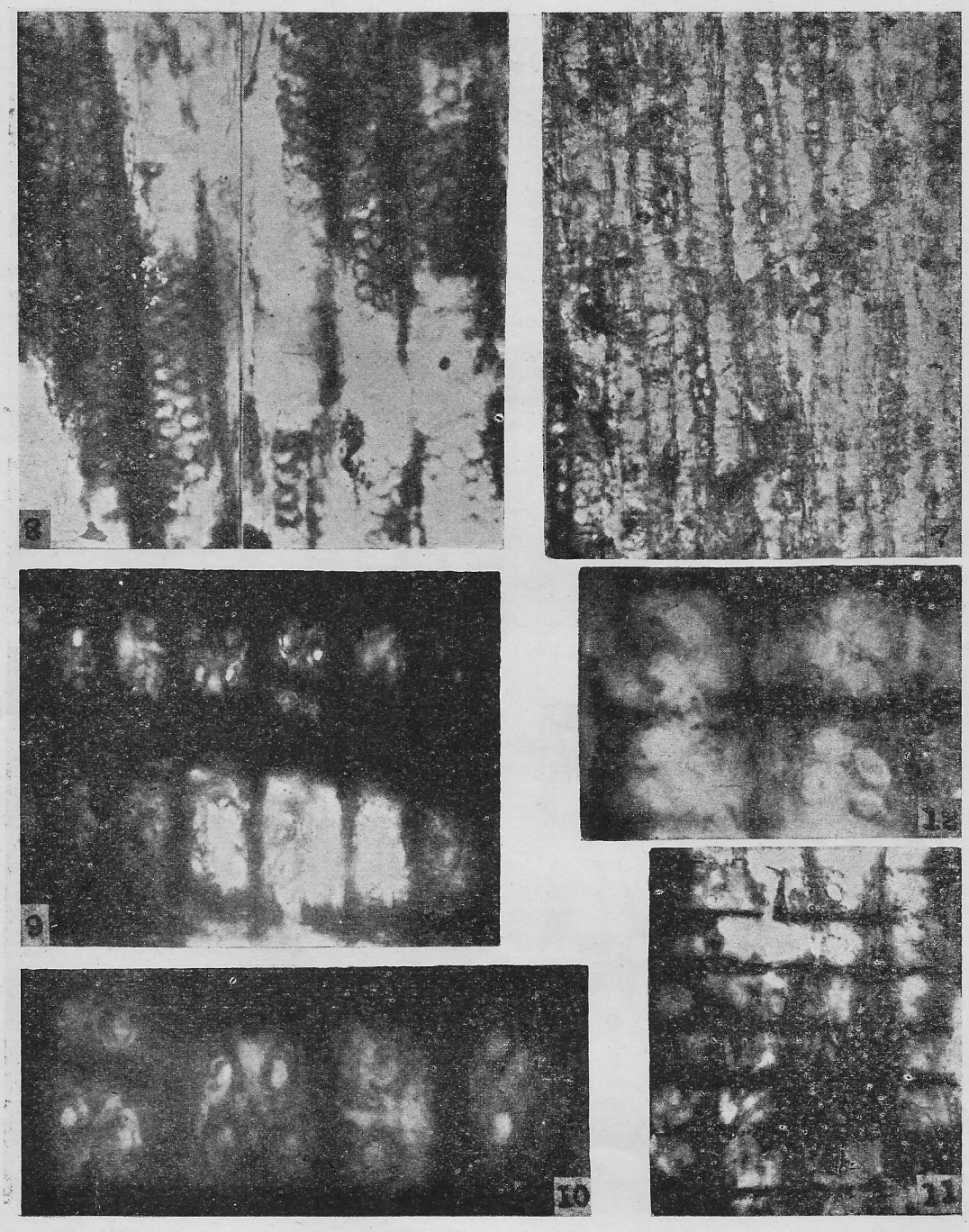
4—Radial longitudinal section showing uni and biseriate radial pitting on the tracheids and cross field pits × 250.

5—Radial longitudinal section showing triseriate condition of pits in the tracheids × 750.

6—Round thickening deposits on the tracheid walls × 150.



SINGHAI : *Dadoxylon shuklai* sp. nov. from Madhya Pradesh.



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