STUDIES IN THE GLOSPOPTERIS FLORA OF INDIA—
17. ON THE GENUS RUBIDGEA TATE

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ABSTRACT

The little known Glossopteridean genus Rubidgea Tate is described from the Karharbari beds, Giridih Coalfield. Two new species, R. obovata and R. lanceolatus have been instituted. The generic diagnosis has been emended on the basis of the Giridih specimens.

INTRODUCTION

The generic name Rubidgea was first instituted by Tate (1867) for the two South African specimens collected from the Karroo beds with the following diagnosis:

"Frond oblong, obovate, rounded and obtuse at apex; secondary veins very slender, very much crowded, dichotomous, oblique. There is no indication of anastomosis of veins."

This diagnosis was based upon the collection and diagram made by Dr. Rubidge from Bloemkop, near Sunday's river, Groaf Reinet and Mr. M'Kay from East London, at the mouth of Buffalo River, South Africa.

Feistmantel (1889: 47) in his remarks on Tate's specimen agrees with the original diagnosis and expresses that the leaf is oval or spathulate and has evidently no midrib, but numerous nerves arise from median region simulating a false midrib and arch out steeply towards the margin; they dichotomise but do not form any meshes.

Ever since these leaves were first described in 1867 there has been no further addition to our knowledge of this genus. In view of this and lack of a photograph of the original specimen, Arber (1905: 54) regarded its identity as uncertain. Seward (1907) included it under Glossopteris indica on the basis of the specimens sent by M'Kay labelled Rubidgea from the South African Museum and considered Tate's drawing inaccurate. Eversince these leaves were first described in 1867 there has been no further addition to our knowledge of this genus. In view of this and lack of a photograph of the original specimen, Arber (1905: 54) regarded its identity as uncertain. Seward (1907) included it under Glossopteris indica on the basis of the specimens sent by M'Kay labelled Rubidgea from the South African Museum and considered Tate's drawing inaccurate.

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That Rubidgea constitutes a new type of leaf among Glossopteridales is now definitely confirmed by the findings of some specimens from the Karharbari beds of the Giridih Coalfield, which essentially agrees with the diagnosis of Tate (l.c.) and the observations of Feistmantel (l.c.). The generic diagnosis of Rubidgea by Tate (l.c.) circumscribes a particular form of a leaf, hence the diagnosis is redefined here on the basis of present Karharbari specimens.

DESCRIPTION

Rubidgea Tate, Emend.

Emended Diagnosis—Leaf obovate, ovate, spathulate, oblanceolate in shape, apex acute or obtuse, base tapering; devoid of midrib, numerous veins arising from the median longitudinal position of the frond, occasionally simulating a false midrib. Secondary veins more or less arched, dichotomous, devoid of anastomoses.

Genotype—Rubidgea mackayi Tate, 1867, p. 14; Pl. 5, Fig. 8.

Locality—Blomkop, near the Sunday's River, Groaf Einet, South Africa.

Horizon—Karroo beds (Permian).

Comparison and Discussion—The occurrence of Rubidgea was hitherto confined to the Lower Permian Gondwana beds of South Africa. The present new finds of Rubidgea from Srirampur Colliery in the Karharbari beds demonstrates the presence of this genus in nearly contemporaneous strata of the Lower Gondwanas of India as well. The most distinguishing characters of Rubidgea leaves are (i) the absence of midrib, (ii) absence of meshes, (iii) presence of arched secondary veins.

The genus Glossopteris (Brong.) Sternberg differs by the presence of a midrib and meshes. Gangamopteris McCoy (1847) agrees in the absence of midrib, but is distinguished by presence of meshes. Rhabdothaenia Pant (1958) agrees in the absence of meshes but it has a distinct midrib and
the veins emerge nearly at right angles from
the midrib. *Palaeovittaria* Feistmantel is
closely comparable to *Rubidgea*, but in the
former a midrib is evident in the basal
part of the frond which becomes evanescent
in the apical part. *Noeggerathioptis* Feist-
mantel (1879) and *Euryphyllum* Feistmantel
(i.e.) are characterized by more or less
parallel running straight dichotomising veins
from base to apex. It may be added that
the leaves of *Petschiria* Zalessky (1933) from
the Angara flora exhibit characters allied to
*Rubidgea*. However, in the lack of our
present knowledge about the relationship
between the two floras it will be appropriate
for the present to keep *Rubidgea* separate
from the Angara form.

**Rubidgea obovata** sp. nov.

Pl. 1, Figs. 1-3; Text-fig. 1

*Diagnosis* — Leaf obovate, with broadly
obtuse apex and tapering base. Midrib
absent, median region occupied by few
parallel running veins. Secondary veins
arise from the median veins, flexuous,
broadly arching, dichotomising, meshes
absent.

*Holotype* — 31383/424, Birbal Sahni Insti-
tute of Palaeobotany Collection.

*Isotype* — 32729/499 & 32793/604, Birbal
Sahni Institute of Palaeobotany Collection.

*Locality* — Central pit, Sirrampur Colliery,
Giridih Coalfield, Bihar.

*Horizon* — Karharbari Stage (Lr. Per-
mian).

*Description* — Only three specimens are
in the collection. Two of them are nearly
complete, except for their basal part. The
one measure 3.5 × 1.7 cm. (Pl. 1, Fig. 1)
and the other 2.7 × 1.7 cm. (Pl. 1, Fig. 4).
The third specimen (Pl. 1, Figs. 1, 3) is
5.6 × 3.6 cm. Irrespective of the size
difference in the specimens, the venation
character, density of veins and the apex is
similar in all of them. The leaves are obovate
in shape, with a broadly obtuse apex. In
all the leaves the basal part is incomplete, but
one of the more complete specimens (holotype)
suggests that the leaves has a tapering base.
The margin is entire. The median portion
is occupied by a few parallel running veins.
Secondary veins are fairly close (about 18-20
per cm.), broadly arched, flexuous, and
dichotomise frequently. They never form
any meshes (Pl. 1, Figs. 2, 4; TEXT-FIG. 1).

*Comparison and Discussion* — The species
differs from *Rubidgea mackayi* Tate (1867)
in its broadly obtuse apex and flexuous
secondary veins. Besides, in *R. mackayi*
the median region has several subparallel
veins, whereas in *R. obovata* there are only
few veins.

Tate (i.e.) marked the presence of few
eleptical bodis on the leaf of *R. mackayi*
arranged in regular order coincident to
margin which he regarded as the fructi-
fications. Plumstead (1958: 71) considered
them to be fungal spots. However, nothing
can be categorically said at present without
a reexamination of the original specimen.

**Rubidgea lanceolatus** sp. nov.

Pl. 1, Fig. 5

*Diagnosis* — Leaf oblanceolate, with acute
apex and narrow tapering base; midrib
absent, median region occupied by few
subparallel veins; secondary veins arise
from the median veins at acute angle,
slightly arched towards margin, dichotomis-
ing frequently, meshes absent.

*Holotype* — 20405, Birbal Sahni Institute
of Palaeobotany Collection.

*Locality* — Central pit, Sirrampur Colliery,
Giridih Coalfield, Bihar.

*Horizon* — Karharbari Stage (Lr. Per-
mian).
Description — The solitary specimen measures 10.5 cm. in length and 2.8 cm. in breadth at the middle region. It has an acute apex, a narrow tapering base and an entire margin. Few median subparallel veins arise from the base and occupy the median portion of the leaf. Secondary veins emerge at acute angle from the median veins and run straight for most of their course but are slightly arched towards the margin. The veins increase in number due to dichotomy and average about 20-22 per cm.

Comparison and Discussion — R. lanceolatus is distinguished from the R. obovata in its shape, acute apex, straight veins and the density of veins. R. mackayi differs from the present species by the obovate shape of the leaf and roundly obtuse apex.

The leaf which bears Lanceolatus palaeovittarius Plumstead (1958, PL. 16, Fig. 1; PL. 17, Fig. 1), judged from its photograph, appears to be a R. lanceolatus because no midrib is evident in the illustrations, and the median region of leaf seems to be occupied by the subparallel veins. If it was so then Plumstead’s specimen would stand very close to the R. lanceolatus. But, nothing can be said definitely till the original specimen is examined.

Carruthers (1869) described Noeggerathia obovata, an imperfectly preserved specimen from Rio Grando de Sul, Brazil. It was later considered to be a Gangamopteris by Arber (1905) and White (1898). On examination of the diagram of N. obovata, the specimen appears to show the characters of R. lanceolatus, i.e., the secondary arched veins emerge from median veins and do not form any meshes. The taxonomic position of N. obovata would remain undecided till the specimen of Carruthers is reexamined in the light of recent researches.

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REFERENCES


EXPLANATION OF PLATE 1

1. Rubidgea obovata sp. nov., Holotype; specimen No. 31383/424; Central pit, Sripampur Colliery. x 1.
2. The holotype magnified to show the arrangement of the veins. x 4.
3. Rubidgea obovata sp. nov., the biggest specimen in the collection. Only the apical half is preserved. Specimen No. 32792/499; Central pit, Sripampur Colliery. x 1.
4. Rubidgea obovata sp. nov., Another small specimen showing the characteristic venation of Rubidgea. Specimen No. 32793/604; Central pit, Sripampur Colliery. x 2.
5. Rubidgea lanceolatus sp. nov., Holotype; Specimen No. 20405; Central pit, Sripampur Colliery. x 1.