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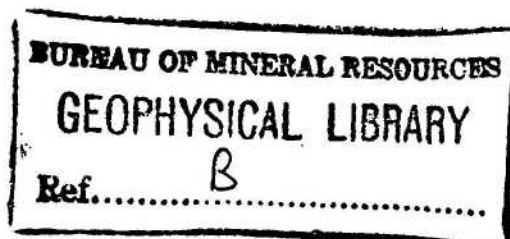
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COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF NATIONAL DEVELOPMENT.
BUREAU OF MINERAL RESOURCES
GEOLOGY AND GEOPHYSICS.

RECORDS:

1964/7



1963 PLANT FOSSIL COLLECTIONS FROM SPRINGSURE, QUEENSLAND

by

Mary E. White

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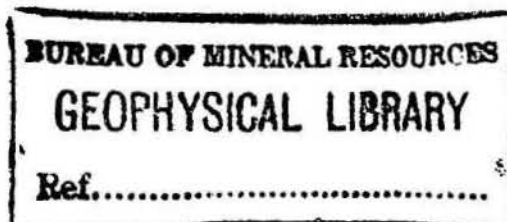
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CONTENTS

| | <u>Page</u> |
|--|-------------|
| SUMMARY | 1 |
| INTRODUCTION | 2 |
| Plant Fossil Localities: Plants identified and age determinations of fossil horizons. | 2 |
| Localities 1 to 22. | |
| Notes on Aldebaran Sandstone | 10 |
| Localities 23 to 26. | |
| Notes on Colinlea Sandstone | 11 |
| Localities 27 to 32. | |
| ILLUSTRATIONS | 5 |



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1963 Plant Fossil Collections from Springsure, Queensland.

by

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SUMMARY

Plant fossils were collected at 37 localities in the Springsure region of Queensland in 1963. It was possible to determine the age of all but six of the fossil horizons on plant evidence.

The Joe Joe Formation, regarded by Shell as Permian, was shown to be Carboniferous. The Mount Hall conglomerate and the Ducabrook Formation contain Carboniferous Lepidodendron floras.

The Orion Shale contains Permian plants, and there is some evidence that it is of Lower Permian age. The Staircase Sandstone contains Lower Permian plants, and the Aldebaran Sandstone, Sirius Formation and Stanleigh Formation have floras of general Permian type without any forms diagnostic of Upper or Lower Permian. The Colinlea Sandstone has a Lower Permian assemblage of plants.

The Bandanna Formation contains two species of Glossopteris regarded as indicative of Upper Permian age. Plants from six localities in Bandanna Formation confirm an Upper Permian age for this Formation.

The Clematis Sandstone and the Moolayember Formation both contain plant assemblages which could be of Triassic or Jurassic age.

INTRODUCTION

Plant fossils were collected from 37 localities in the Springsure area of Queensland in 1963 by R.G. Mollan and party. At many of the localities the plants are well preserved and the specimens are of considerable interest.

The localities have been arranged in stratigraphical order in the descriptions which follow. In some cases, field determination of formations has proved incorrect.

Plant Fossil Localities, plants identified, and age
determinations of fossil horizons

1. Locality SP 79: 2 $\frac{1}{2}$ miles N.N.E. of Telemon Homestead.
 Springsure North, Run 1, Photo 5117, Pt. SP 79.

(Unit - "Middle Devonian Dunstable Fm.")

Specimens F 22337

Many indeterminate impressions of small stems are present. One lepidodendroid (decorticated) example shows features possibly of Protolepidodendron.

Age : ?Devonian.

2. Locality SP 89/1: 4 miles West of Euneeke Homestead.
 Springsure North, Run 2, Photo 5018, Pt.SP 89/1.

(Unit - "Mount Hall Conglomerate")

Specimens F 22339

Stems of Lepidodendron veltheimianum Stbg. show many decortication forms as well as surface impressions.

Age: Carboniferous. Probably Lower Carboniferous.
 Unit therefore Mount Hall Conglomerate.

3. Locality SP 80: 4 miles N.N.E. of Telemon Homestead.
 Springsure North, Run 1, Photo 5117, Pt.Sp 80.

(Unit - "?Telemon Formation").

Specimens F 22338

These specimens contain many lepidodendroid stems, mostly decorticated, showing features of Lepidodendron. Lenticular leaf trace scars are arranged in ascending spirals. Many of the impressions are of very young stems. There is a surface impression of a young stem, and a near-surface impression of a slightly older stem which show: that leaf base scars had rounded tops, pointed bases and a median groove similar to that seen in Lepidodendron scutatum Lx. In the absence of a surface impression of a mature stem it is not possible to determine the species. The stems are of the same general type as L. veltheimianum Stbg.

Age: Carboniferous, probably Lower Carboniferous.
 The unit is therefore not Telemon Formation

4. Locality SP 56: Mistake Creek, about 10 miles N.W. of
Telemon Homestead.
Springsure North, Run 1, Photo 5115, Pt.SP 56.

(Unit - " ?Telemon Formation")

Specimens F22402

Decorticated, lepidodendroid stem impressions with widely spaced, lenticular leaf trace scars in an ascending spiral arrangement, are referred to Lepidodendron sp. No species determination can be made in the absence of surface impressions. Such decortication forms occur in Upper Devonian as well as in Lower Carboniferous species, but not in Leptophloeum australe which occurs in such profusion in Telemon Formation.

Age: Carboniferous, or Upper Devonian?
Unit probably not Telemon Formation.

5. Locality SP 606: In Joe Joe Creek, immediately north of
Joe Joe Homestead, in N.W. corner of
Springsure sheet.

Springsure North, Run 1, Photo 5109, Pt.SP 606

(Unit - "Joe Joe Formation. Shell's tentative
Permian age not confirmed.")

Specimens F 22321 (Illustrated Figure 1)
F 22322 (Figures 2 and 3)
F 22323
F 22330

The specimens from this locality contain well preserved fern fronds of characteristic Carboniferous appearance, showing a range of forms from examples with separate pinnules of "Rhacopteris meridionalis Feist." type (Figure 1), through intermediate forms (Figure 2) to large, foliose pinnae not divided into distinct pinnules, of Cardiopteris polymorpha Goepp. type (Figure 3). It is clear from a study of all the specimens that all the pinna types seen in the collection are referable to one species. If the only specimen collected had been F 22321, illustrated in Figure 1, this specimen would have been determined as Rhacopteris meridionalis Feist. Specimens in the collection of the Australian Museum, Sydney, referred to the species differ in no significant way from the frond in F 22321. The presence of a range of intermediate types such as are illustrated in Figure 2, referable either to Rhacopteris or Cardiopteris, and of examples undeniably of "Cardiopteris polymorpha Goepp." (F 22322) confirms that one species is involved.

Diversity of pinnule form is a well known phenomenon in Carboniferous ferns of this sort. Seward ("Fossil Plants II") in discussing the problems of nomenclature arising from this diversity states that the name Ultopteris was suggested for ferns bearing Rhacopteris and Cardiopteris pinnae on the same plant.

There is no valid separation in form from the genus Neuropteridium and it has been decided by general consent to use the name Cardiopteris for Carboniferous examples and Neuropteridium for Mesozoic examples.

The name Cardiopteris polymorpha Goepp. is satisfactory for the specimens under discussion as it is descriptive of the diversity of form.

It seems likely, from the evidence in this collection, that Rhacopteris meridionalis Feist. may not be a valid species at all. In fact, some other species of Rhacopteris described from fragmentary specimens are possibly only diverse forms of Cardiopteris polymorpha Goepp.

In Eastern Australia the Carboniferous rocks are distinguished as Lepidodendron and Rhacopteris types. These overlap stratigraphically, the former being dominant in Lower Carboniferous and the latter beginning in the upper part of Lower Carboniferous and attaining full development in the Upper Kuttung beds and their equivalents.

Rhacopteris and Cardiopteris are recorded from many horizons in Australia including a Lower Carboniferous horizon at Stroud, N.S.W.; Glacial stage of Kuttung Series, N.S.W.; Upper Kuttung, N.S.W.; Upper Carboniferous passage beds into Lower Bowen at St. Helens in the Mackay-Proserpine region of Queensland; Silver Valley Series in Queensland; etc.

It is thus impossible to differentiate between Upper and Lower Carboniferous on the presence of Rhacopteris.

Age : Carboniferous.

(Shell's tentative Permian age is incorrect. There is no instance of Rhacopteris from Permian beds.)

6. Locality SP 608: 5 miles west of Joe Joe Homestead. Springsure North, Run 1, Photo 5107, Pt. SP 608.

(Unit - "Joe Joe Formation").

Specimens F 22325

Indeterminate plant remains

Age: Indeterminate.

7. Locality SP 609: 5 miles west of Joe Joe Homestead. Springsure North, Run 1, Photo 5107, Pt. SP 609.

(Unit - "Joe Joe Formation")

Specimens F 22326

Equisetalean stems.

Age: Indeterminate.

CARDIOPTERIS POLYMORPHA Goepp.

Figure 1: Specimen F 22321. Natural size. (Neg.F/3786)
Pinnules of Rhacopteris meridionalis Feist. type.

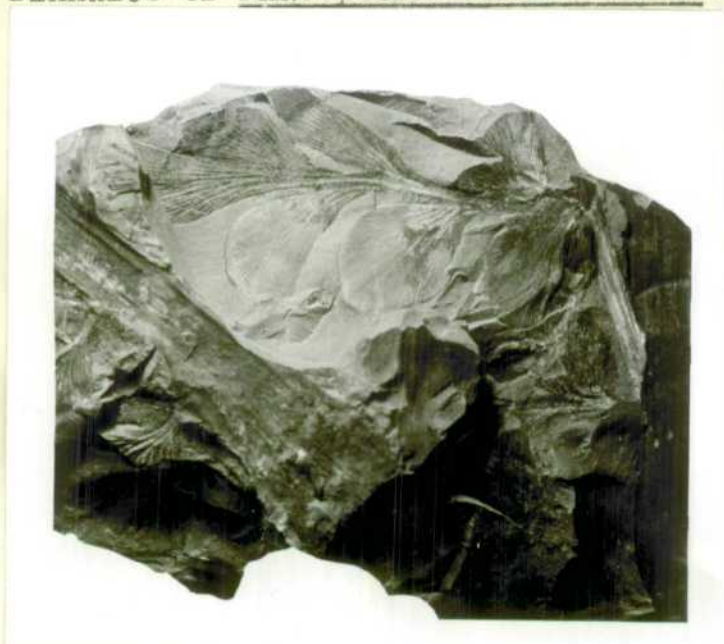


Figure 2: Specimen F 22322. Natural size. (Neg.F/3785)
Intermediate type pinnules.



Figure 3: Specimen F 22322. Natural size. (Neg.F3784)
Cardiopteris polymorpha Goepp. type frond.



8. Locality SP 311: 7½ miles west of Echo Hills Homestead.
Springsure North, Run 2, Photo 5024, Pt. SP 311.

(Unit-"Joe Joe Formation").

Specimens F 22327

Fragments of pinnules and rachis of Cardiopteris polymorpha Goep. and Equisetalean stems occur in these specimens.

Age: Carboniferous.

9. Locality SP 301: 6½ miles south of Echo Hills Homestead.
Springsure North, Run 2, Photo 5024, Pt. SP 301.

(Unit - "Below the Colinlea Sandstone which is regarded as Permian. Probably upper part of the Joe Joe Formation.")

Specimens F 22328 and F 22329

In Specimen F 22328 a small frond of Cardiopteris polymorpha Goep. is present on one side, and a large frond with Rhacopteris meridionalis type pinnules on the reverse. In specimen F 22329, all the pinnules are of the latter type. In the light of evidence of the identity of the two forms at Locality 606, all fronds are referred to Cardiopteris polymorpha.

Age: Carboniferous

10. Locality SP 352/2: 1¼ miles N.W. of Tresswell Homestead.
Springsure North, Run 2, Photo 5020, Pt.SP 352/2.

(Unit-"Ducabrook Formation")

Specimens F 22331

Equisetalean stems

Age: Indeterminate.

11. Locality SP 354/1A: 1½ miles N.W. of Tresswell Homestead.
Springsure North, Run 2, Photo 5020, Pt. SP 354/1.

(Unit - "Ducabrook Formation ")

Specimens F 22334

Equisetalean stems

Age : Indeterminate.

12. Locality SP 374/1B: 2 miles S.E. of Nandowrie Needle.
Springsure North, Run 3, Photo 5016, Pt.SP 374/1

(Unit - "From probable upper parts of Joe Joe
Formation")

Specimens F 22403.

A decorticated stem impression is the only plant
fossil present. It appears to be lepidodendroid.

Age: ? Devonian or Carboniferous.

13. Locality SP 41: 3 miles W.S.W. of Mount Hall.
Springsure North, Run 2, Photo 5022, Pt.SP 41.

(Unit - "Top of Mount Hall Conglomerate, in the
Telemon anticline. Formation regarded
as Lower Carboniferous as it forms the base
of the apparently conformable sequence, the
top of which, (Ducabrook Formation) is
regarded as Lower Carboniferous.")

Specimens F 22332.

Stem impressions of all sizes are present. Most are
indeterminate with irregular vertical striations. One shows
decorticated lepidodendroid form of elongated leaf trace
scars widely spaced. It appears to be referable to Lepidodend-
ron but is too deeply decorticated to be allocated to a
species.

Age : Probably Carboniferous

14. Locality SP 363/4B: 2 miles West of Connemarra Homestead.
Springsure North, Run 1, Photo 5117, Pt.SP 363/4.

(Unit - "Top of Ducabrook Formation.")

Specimens F 22391

Lepidodendron veltheimianum Stbg. is identified in
these specimens from surface impressions of young stems. There
are many decortication forms present as well. Some ribbon-
like impressions with a median sulcus may represent large
leaves of Lepidodendron, or may be stem impressions of the
sort frequently found with Rhacopteris in Carboniferous
horizons.

Age: Carboniferous

15. Locality SP 364/1: 1½ miles South of Glenlee Homestead.
Springsure North, Run 1, Photo 5115, Pt. SP 364/1.

(Unit - "Ducabrook Formation.")

Specimens F 22392.

A cast of a lepidodendroid stem is referred to Lepidodendron sp. An impression of a decorticated stem is indeterminate.

Age: Carboniferous

16. Locality SP 363/4A. 2 miles West of Connemarra Homestead.
Springsure North, Run 1, Photo 5117, Pt. SP 363/4.

(Unit - "From a thin unit probably unconformably overlain by Colinlea Sandstone, apparently unconformably on the Ducabrook Formation. Lithologically like Joe Joe Formation.")

Specimens F 22393

Preservation of the fossils is poor. Leaves tentatively referred to Glossopteris indica Sch. and Glossopteris ampla Dana are present.

Age: Permian

This unit is not Joe Joe Formation to which it is lithologically similar. It is not Carboniferous Ducabrook Formation. It is presumably Lower Permian, and is probably part of the Colinlea Sandstone.

17. Locality SP 4: 3 miles S.W. of Mount Sirius in a North Branch of Orion Creek.

Springsure North, Run 2, Photo 5012, Pt. SP 4.

(Unit - "Orion Formation").

Specimens F 22335.

A large leaf of Glossopteris indica Sch. is associated with a fragment of leaf of Gangamopteris sp., whose presence suggests a Lower Permian age.

Age: Permian. Probably Lower Permian.

18. Locality SP 4A: 3 miles S.W. of Mount Sirius, in a North Branch of Orion Creek.

Springsure North, Run 2, Photo 5012, Pt. 100 yds. W. of SP 4.

(Unit - "Orion Formation")

Specimens F 22336.

Glossopteris sp.

Glossopteris scale leaf.

Age: Permian.

19. Locality SP 3: 2½ miles S.W. of Mount Sirius, in a North Branch of Orion Creek.

Springsure North, Run 2, Photo 5012, Run , Pt.SP 3.

(Unit - "Orion Formation, the lowest formation exposed in the northern culmination of the Springsure anticline.")

Specimens F 22365.

A well preserved Glossopteris flora is present in these specimens. The venation is clearly shown. The following are identified :-

Glossopteris communis Feist.

Glossopteris indica Sch.

Glossopteris angustifolia Brong.

Glossopteris stricta Bunb.

Glossopteris browniana Brong.

Glossopteris tortuosa Zeiller.

Glossopteris scale leaves.

Noeggerathiopsis hislopi Bunb.

Age : Permian. Probably Lower Permian.

Note on the age of the Orion Formation:

Evidence from the plant fossils at localities Sp 4, SP 4A and SP 3 for a Lower Permian age is somewhat meagre. A fragment of Gangamopteris venation at SP 4 suggests Lower Permian, but at SP 4A and SP 3, plants of general Permian distribution occur. The Noeggerathiopsis hislopi Bunb. at SP 3 is not of the coarse type restricted to Lower Permian.

20. Locality SP 387/7: 3½ miles N.W. of Croydon Hills Homestead.

Springsure North, Run 3, Photo 5008, Pt.SP 387/7.

(Unit - "Near the top of the Lower Permian Staircase Sandstone".)

Specimens F 22394

Gangamopteris cyclopteroides Feist.

Glossopteris ampla Dana.

Age : Lower Permian

Gangamopteris cyclopteroides does not persist into Upper Permian.

21. Locality SP 392/3: 2 miles west of Mount Kelman Homestead.
Springsure North, Run 3, Photo 5008, Pt. SP 392/3.

(Unit - "Basal part of Lower Permian Aldebaran Sandstone").

Specimens F 22395

Sulcate stems are present. They are indeterminate but are of the same type as those which occur with Rhacopteris in Carboniferous floras.

Age : Indeterminate

22. Locality SP 112/1: Aldebaran Creek, South branch, about
3 miles East of Mount Catherine.

Springsure North, Run 4, Photo 5068, Pt. SP 112/1.

(Unit - "Base of Aldebaran Sandstone, Lower Permian").

Specimens F 22404

Large numbers of impressions of Vertebraria indica Royle, some with numerous lateral appendages, are present.

Vertebraria indica occurs throughout Permian, and there is nothing to indicate whether the specimens are Upper or Lower Permian.

Age : Permian.

Note on Aldebaran Sandstone: A Permian age is indicated by the plant fossils. There is no plant evidence for Lower Permian as the plant species present ranges throughout Permian.

23. Locality SP 392/4: 3 miles N.W. of Mount Kelman Homestead.
Springsure North, Run 3, Photo 5008, Pt.SP 392/4.

(Unit - "Lower Permian Sirius Formation").

Specimens F 22396

Fragments of Glossopteris venation

Age: Permian.

No indication whether Upper or Lower Permian.

24. Locality SP 406/3: 2 miles South of Stanleigh Homestead.
Springsure North, Run 3, Photo 5008, Pt. SP-406/3.

(Unit - "Top of Lower Permian Stanleigh Formation").

Specimens F 22397

Equisetalean stems

Fragments of Glossopteris venation.

Age: Permian

No plant evidence for Lower Permian

25. Locality SP 374/1A: 2 miles S.E. of Nandowrie Needle.
Springsure North, Run 3, Photo 5016, Pt. SP 374/1

3 (Unit - "From shale underneath the Colinlea
Sandstone".)

Specimens F 22405

Vertebraria indica Royle

Gangamopteris cyclopteroides Feist.

? Glossopteris ampla Dana.

Glossopteris indica Sch.

Age : Lower Permian.

26. Locality SP 120 : About 1 mile East of Vandyke Homestead.
Springsure North, Run 2, Photo 5016, Pt.SP 120.

(Unit - "Colinlea Sandstone.")

Specimens F 22406

These specimens are poorly preserved. The following
are identified :-

Vertebraria indica Royle.

Glossopteris indica Sch.

? Gangamopteris sp.

? Palaeovittaria sp.

Sphenopteris sp. pinnules

Age: Permian ?Lower Permian.

Note on Colinlea Sandstone : Plant evidence supports a Lower
Permian age for the Colinlea Sandstone.

27. Locality SP 607: 5 miles West of Joe Joe Homestead.
Springsure North, Run 1, Photo 5107, Pt. SP 607.

(Unit - "From the Colinlea Sandstone")

Specimens F 22324

Plants identified :-

Glossopteris indica Sch.

Glossopteris angustifolia Brong.

Glossopteris scale leaf.

Age : Permian. No indication whether Upper or
Lower Permian.

28. Locality SP 639: $3\frac{1}{2}$ miles N.W. of Mantuan Downs Homestead.
Springsure North, Run 3, Photo 5022, Pt. SP 639.

(Unit - "Bandanna Formation")

Specimens F 22333.

The following are identified:

Glossopteris communis Feist.

Glossopteris ampla Dana.

Glossopteris taeniopteroides Feist.

Glossopteris conspicua Feist.

Equisetalean stems.

Age: Upper Permian (on presence of G. conspicua and
G. taeniopteroides)

29. Locality SP 93: $\frac{1}{2}$ mile South of Avoca Homestead, in
Freitag Creek.

Springsure North, Run 4, Photo 5066, Pt. SP 93.

(Unit - "Bandanna Formation").

Specimens F 22340.

Glossopteris communis Feist.

Equisetalean stems

Phyllothea etheridgei Arber leaf whorls.

Sphenopteris polymorpha Feist.

Part of small cone - probably Equisetalean.

Age : Permian. Probably Upper Permian on the
presence of

Phyllothea etheridgei

30. Locality SP 102: 4 miles S.S.W. of Goathland Homestead,
in Cona Creek.

Springsure, Run 1, Photo 5102, Pt. SP 102.

(Unit - "Bandanna Formation")

Specimens F 22341

These very coaly specimens contain the following
plants :-

Glossopteris conspicua Feist.

Glossopteris ampla Dana

Vertebraria indica Royle.

Equisetalean stems.

Age : Upper Permian.

31. Locality SP 377/1: 1½ miles South of Kareela Homestead.
Springsure North, Run 4, Photo 5064, Pt. SP 377/1.

(Unit - "Bandanna Formation")

Specimens F 22398

The plant remains in these specimens are fragmentary.
The following are identified :-

Glossopteris communis Feist.

Glossopteris conspicua Feist.

Glossopteris tortuosa Zeiller.

Vertebraria indica Royle.

Equisetalean stems.

Age : Upper Permian.

32. Locality SP 396/2: 3¾ miles E.N.E. of Freitang Homestead.
Springsure North, Run 3, Photo 5010, Pt. SP 396/2.

(Unit - "Upper Permian Bandanna Formation").

Specimens F 22399.

Fragments of leaves of the following are present :-

Glossopteris conspicua Feist.

Glossopteris ampla Dana

Glossopteris indica Sch.

Glossopteris parallela Feist.

Age : Upper Permian.

33. Locality SP 396/4: $3\frac{1}{2}$ miles E.N.E. of Freitag Homestead.
Springsure North, Run 3, Photo 5010, Pt.SP 396/4

(Unit - "Bandanna Formation above SP 396/2")

Specimens F 22400 and F 22401

Fragments of leaves of Glossopteris conspicua Feist. and Glossopteris indica Sch. are associated with Equisetalean stems. There are also three foliar organs which are believed to be fertile male scale fronds of Glossopteris type. Two of these are illustrated in Figure 4. (Specimen F 22401). They were apparently flat, thin, leaf-like structures. Each has elongated, narrow depressions following the gangamopteroid venation pattern. The depressions are believed to represent sporangia.

Age : Upper Permian

Figure 4.

Fertile Male Scale Fronds of Glossopteris Sp.

(Specimen F 22401. Magn. X 2 (Neg.G./3811))



34. Locality SP 713: Reid's dome, Mitchell Creek, a mile above the junction with Rocky Creek.

Springsure, Run 3, Photo 5149, Pt.SP 713.

(Unit - "Upper part of the Bandanna Formation")

Specimens F 22407, F 22408, F 22409.

Beautifully preserved leaves of the following species of Glossopteris are present :

Glossopteris conspicua Feist.

Glossopteris communis Feist.

Glossopteris angustifolia Brongn.

Glossopteris indica Sch.

Glossopteris damudica Feist.

Obscure fructification: A thin stalk 1.5 cm. long and .15 cm. wide has an expanded head with four lobes. Each has a raised rib along its centre. The lobes are blunt. Text Figure I shows this fossil magnified x 1.5. No reliable guess can be made as to the nature of this specimen.

Age : Upper Permian

TEXT FIGURE I

Stalked Fructification. X 1.5



Note on the age of the Bandanna Formation

Evidence from the plant fossil collections confirms an Upper Permian age for the Bandanna Formation.

35. Locality SP 160: At base of Mount Carnarvon.

Springsure, Run 4, Photo 5231, Pt. SP 160.

(Unit - "from lower part of Clematis Sandstone")

Specimens F 22410.

Equisetalean stems

Age : Indeterminate.

36. Locality SP 508: 7 miles South of Consuelo Homestead,
Rewan Syncline.

Springsure, Run 3, Photo 5145, Pt. SP 508.

(Unit - "Top part of Clematis Sandstone").

Specimens F 22411 , F 22412

In specimen F 22411, (Figure 5) two magnificent fronds of Dicroidium odontopteroides (Morr) Gothan are present. Carbonised cuticular material covers the impression surface and preparations of cuticles will be made in due course for microscopic examination.

Specimens F 22412 contain Equisetalean stems and small fragments of Dicroidium odontopteroides.

Dicroidium odontopteroides ranges from Middle Triassic to Middle Jurassic.

Age : Triassic or Jurassic.

Figure 5: Specimen F 22411, Magnification x $\frac{1}{4}$ Neg. F./3815.

Dicroidium odontopteroides (Morr) Gothan.



Note on the Clematis Sandstone: On plant evidence a Triassic or Lower Jurassic age is indicated.

37. Locality SP 664: 30 miles South of Mantuan Downs Homestead. Springsure, Run 3, Photo 5181, Pt.SP 664.

(Unit - "Moolayember Formation".)

Specimens F 22413

The following are identified :-

Pterophyllum nathorsti (Seward).

Dicroidium odontopteroides (Morr) Gothan

Pterophyllum abnorme Eth. fil.

? Sphenopteris superba Shirley

Dicroidium coriacium (Johnst.) Townrow.

Dicroidium odontopteroides occurs in Triassic and Lower Jurassic. Dicroidium coriacium occurs in the Ipswich Series in Queensland and in Triassic of Tasmania etc. Pterophyllum nathorsti and P. abnorme occur in the Waloon Series in Queensland.

Age : Triassic or Jurassic

Note on Moolayember Formation: There is no plant evidence in this collection to limit the Moolayember Formation to Triassic. It could equally well be Lower Jurassic.
