UR1977_33

Palynology of a Triassic carbonaceous sequence at South Cape Bay.

S.M. Forsyth

Abstract

Poorly preserved palynomorphs have been obtained from two samples collected from the coal measure sequence at South Cape Bay, southern Tasmania. This coal measure sequence can be biostratigraphically correlated with the Brady Formation, the lithic sandstone sequence at Spring Hill and the Ipswich Coal Measures. The palynomorphs are inferred to be of Karnian age.

1977/33. Palynology of a Triassic carbonaceous sequence at South Cape Bay.

S.M. Forsyth

Two siltstone samples were collected from the carbonaceous sequence that crops out at South Cape Bay [DM861708] beyond the western extremity of the dolerite which underlies South East Cape. The exposure may be reached by following the South Coast track from Cockle Creek and then a track branching left, to the coast.

METHOD

The samples were crushed and sieved. The +30 -52# fraction was boiled in hydrofluoric acid for over one hour and then treated with hot dilute hydrochloric to remove insoluble fluorides. The residue was oxidised using Schultz solution for periods of from 5 to 30 minutes and finally treated with dilute alkali. Palynomorphs are poorly preserved, being both carbonised and corroded and are not abundant in either preparation. Heavy liquid flotation did not enhance the palynomorph concentration so several slides were prepared for study. As both samples contain similar palynomorphs and were obtained from nqt dissimilar stratigraphic levels they have been grouped together for stratigraphic analysis.

PALYNOLOGY

Because the palynomorphs are poorly preserved and only a few of each type are available for study, some identifications are in doubt, namely *Aratrisporites plicatus* De Jersey and Hamilton, *Uvaesporites verrucosus* De Jersey and *Semiretisporis antiquus* (De Jersey) De Jersey.

Forms more positively identified are:

Biretisporites sp.
Stereisporites perforatus Leschik = *Rogalskaisporites cicatricosus* (Rogalska) Danzé-Corsin and Laveine
Dictyophyllidites sp.
Granulatisporites sp.
Apiculatisporis globosus Leschik
Converrucosisporites cameroni (De Jersey) Playford and Dettman
Neoraistrickia sp.
Annulispora folliculosa (Rogalska) De Jersey
?Foveosporites
Semiretisporis denmeadi (De Jersey) De Jersey
Aratrisporites parvispinosus Leschik *emend* Playford
Aratrisporites coryliseminis Klaus
Polypodiisporites ipsviciensis (De Jersey) Playford and Dettman
Alisporites australis De Jersey
Cycadopites nitidus (Balme) De Jersey
Grebespora sp.
Circulisporites parvus De Jersey *emend* Norris

Other forms present include a granulate and verrucate cavate(?) form; a form consisting of conjoined single circular unsculptured grains 16 µm in diameter surrounded by a crenulate equatorial thickening 2 µm wide; and *?Peltacystia* sp., which is a circular form about 20 µm in diameter possessing an equatorial thickening 2 µm wide, a circumpolar thickening about 10 µm in diameter and 1 µm wide which is sometimes imperfectly formed, and numerous fine radial striations.

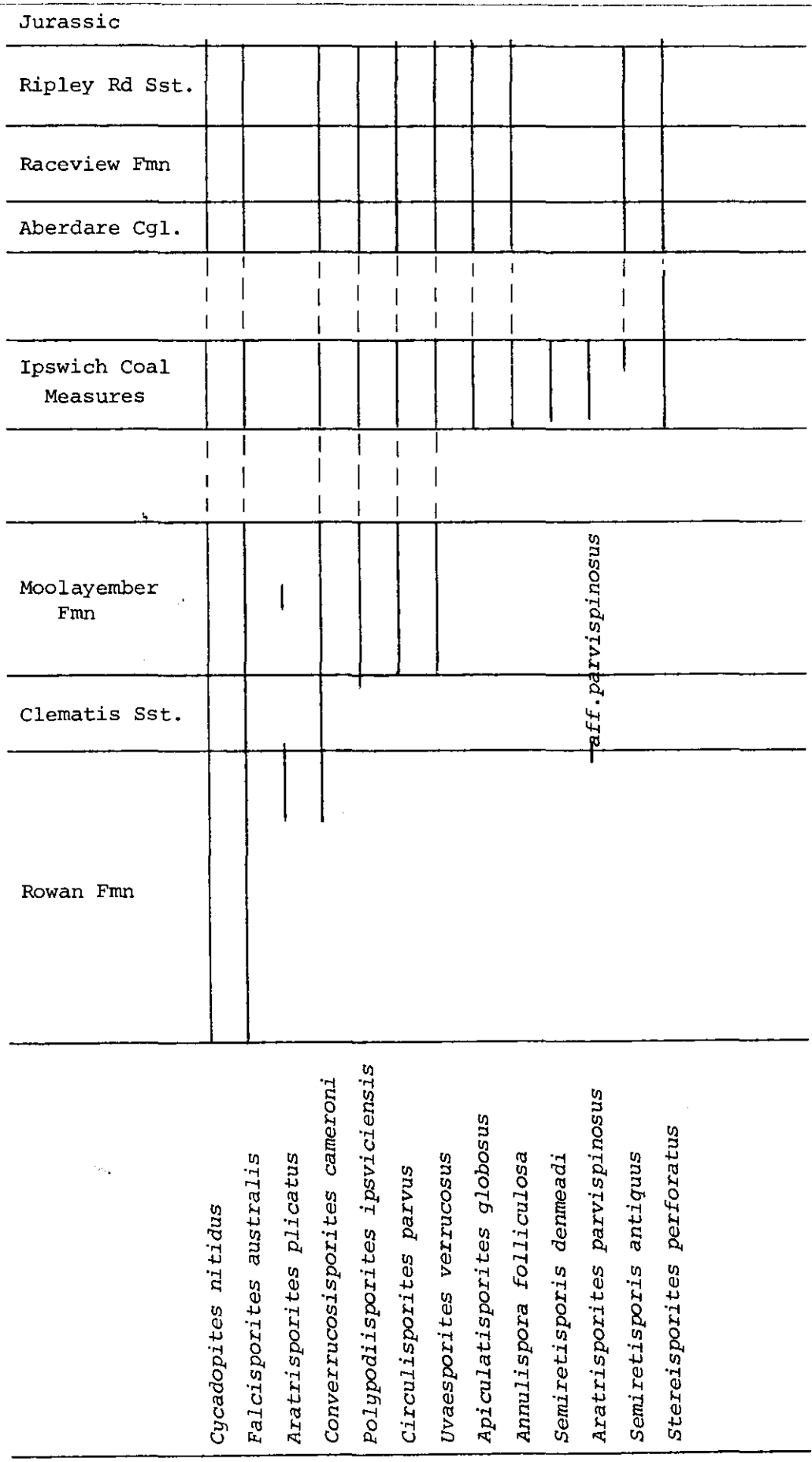

Figure 1. *Range of recorded species in Queensland.* (after De Jersey and Hamilton, 1967, De Jersey, 1968, 1970*a*, 1970*b*, 1971, McKellar, 1974).

DISCUSSION AND BIOSTRATIGRAPHICAL RELATIONS

The range of the recorded species in Queensland is shown in Figure 1. Apart from a record of a species with affinity to *Aratrisporites parvispinosus* just spanning the Rewan-Clematis boundary, *Apiculatisporis globosus, Annulispora folliculosa, Semiretisporis denmeadi, Aratrisporites parvispinosus, Semiretisporis antiquus* and *Stereisporites perforatus,* all first appear in the Ipswich Coal Measures. *S. denmeadi* and *A. parvispinosus* do not range above the Ipswich Coal Measures and none of the palynomorphs that first make their appearance in the younger Bundamba group are present in the Tasmanian assemblage. This part of the sequence at South Cape Bay is thus biostratigraphically correlated with the Ipswich Coal Measures which have been assigned a Karnian age (De Jersey, 1971). In the Sydney Basin a microflora contains *A. parvispinosus* however the species has been interpreted rather broadly (Helby, 1973).

The assemblages contained in five samples from the Poatina sequence and one sample from the Norwich colliery were described by Playford (1965). *S. perforatus, A. coryliseminis, A. globosus, A. folliculosa, Cycadopites nitidus* and *Circulisporites parvus* are all confined to the Brady Formation or its equivalent. *S. denmeadi* extends down into the top of the Tiers Formation. *P. ipsviciensis* was only recorded from the Ross Sandstone, however elsewhere in Australia it ranges up to the Jurassic. Biostratigraphic correlation of the South Cape Bay sequence with the Brady Formation is suggested. *?Foveosporites* sp., *Uvaesporites verrucosus* and *?Peltacystia* sp. were not recorded by Playford at Poatina but are present in the Brady Formation.

At Spring Hill in the Midlands a sequence of quartz sandstone and black and green mudstone occurs below the lithic sandstone sequence at the top of the Triassic succession. *?Foveosporites* sp. and *?Peltacystia* sp. occur within the quartz sandstone and mudstone sequence and *A. parvispinosus, S. denmeadi* and *U. verrucosus* also occur either within or at the top of this sequence. *A. globosus, A. folliculosa S. perforatus* and *C. parvus,* however, first appear near the base of the overlying lithic sandstone sequence and suggest a biostratigraphic correlation of the lithic sandstone sequence with the coal measures at South Cape Bay.

CONCLUSION

The sampled part of the coal measure sequence at South Cape Bay can be biostratigraphically correlated with the Brady Formation at Poatina, the lithic sandstone sequence at Spring Hill, and also with the Ipswich Coal Measures, which are regarded as being of Karnian age.

REFERENCES

DE JERSEY, N.J. 1968. Triassic spores and pollen grains from the Clematis Sandstone. *Publs geol.Surv.Qd* 338.

DE JERSEY, N.J. 1970*a*. Early Triassic miospores from the Rewan Formation. *Publs geol.Surv.Qd* 345.

DE JERSEY, N.J. 1970*b*. Triassic miospores from the Blackstone Formation, Aberdare Conglomerate and Raceview Formation. *Publs geol.Surv.Qd* 348.

DE JERSEY, N.J. 1971. Triassic miospores from the Tivoli Formation and Kholo Sub-Group. *Publs geol.Surv. Qd* 353.

DE JERSEY, N.J.; HAMILTON, M. 1967. Triassic spores and pollen grains from the Moolayember Formation. *Publs geol.Surv.Qd* 336.

HELBY, R. 1973. Review of late Permian and Triassic palynology of New South Wales. *Spec.Publ.geol.Soc.Aust.* 4:141-155.

McKELLAR, J.L. 1974. Jurassic miospores from the upper Evergreen Formation, Hutton Sandstone and basal Injune Creek Group, north-eastern Surat Basin. *Publs geol.Surv.Qd* 361.

PLAYFORD, G. 1965. Plant microfossils from Triassic sediments near Poatina, Tasmania. *J.geol.Soc.Aust.* 12:173-210.

[15 August 1977]

		Neg.	*Slide*	*Spec. Coord. Ref.*
1-2	*Biretispora* sp.	7/15	Sec. 12	117.7/19.3
		7/31	Sec. 14	108.7/9.6
3	*Stereisporites perforatus*	7/34	Sec. 14	165.8/6.7
4-5	*Dictyophyllidites* sp.	7/29	Sec. 15	104.3/3.3
		7/26	Sec. 15	117.0/12.5
6-7	*Granulatisporites* sp.	7/30	Sec. 14	108.2/10.8
		3/6	Sec. 14	99.4/4.3
8	*Granulatisporites?*	7/33	Sec. 14	109.9/7.7
9-10	*Uvaesporites verrucosus*	7/16	Sec. 13	98.4/10.0
		7/25	Sec. 15	106.8/12.8
11?	*Apiculatisporis*	7/17	Sec. 13	114.4/12.3
12	*Neoraistrickia* sp.	7/18	Sec. 13	115.1/19.5
13	indet.	7/19	Sec. 13	115.9/13.7
14	*Apiculatisporis*	7/20	Sec. 14	102.0/18.7
15-16	*Converrucosporites cameroni*	7/11	Sec. 4	101.9/9.4
		3/4	Sec. 4	111.0/7.2
17-20	*?Foveosporites*	7/21	Sec. 15	110.8/22.3
		7/32	Sec. 14	109.9/7.8
		7/23	Sec. 15	105.1/14.0
		7/24	Sec. 15	105.1/14.0
21	*Annulispora folliculosa*	7/14	Sec. 12	100.9/17.8
22	*Semiretisporis denmeadi*	7/28	Sec. 15	109/6.2
23	*Cycadopites nitidus*	7/20	Sec. 14	102.0/18.7
24	*?Peltacystia* sp.	1/26	Sec. 5	101.9/3.2
25	*Circulisporites parvus*	2/31	Sec. 11	116.9/16.5

Magnifications: Figures 1-23 x 830, Figures 24-25 x 1330.

Explanation of Plate 1.

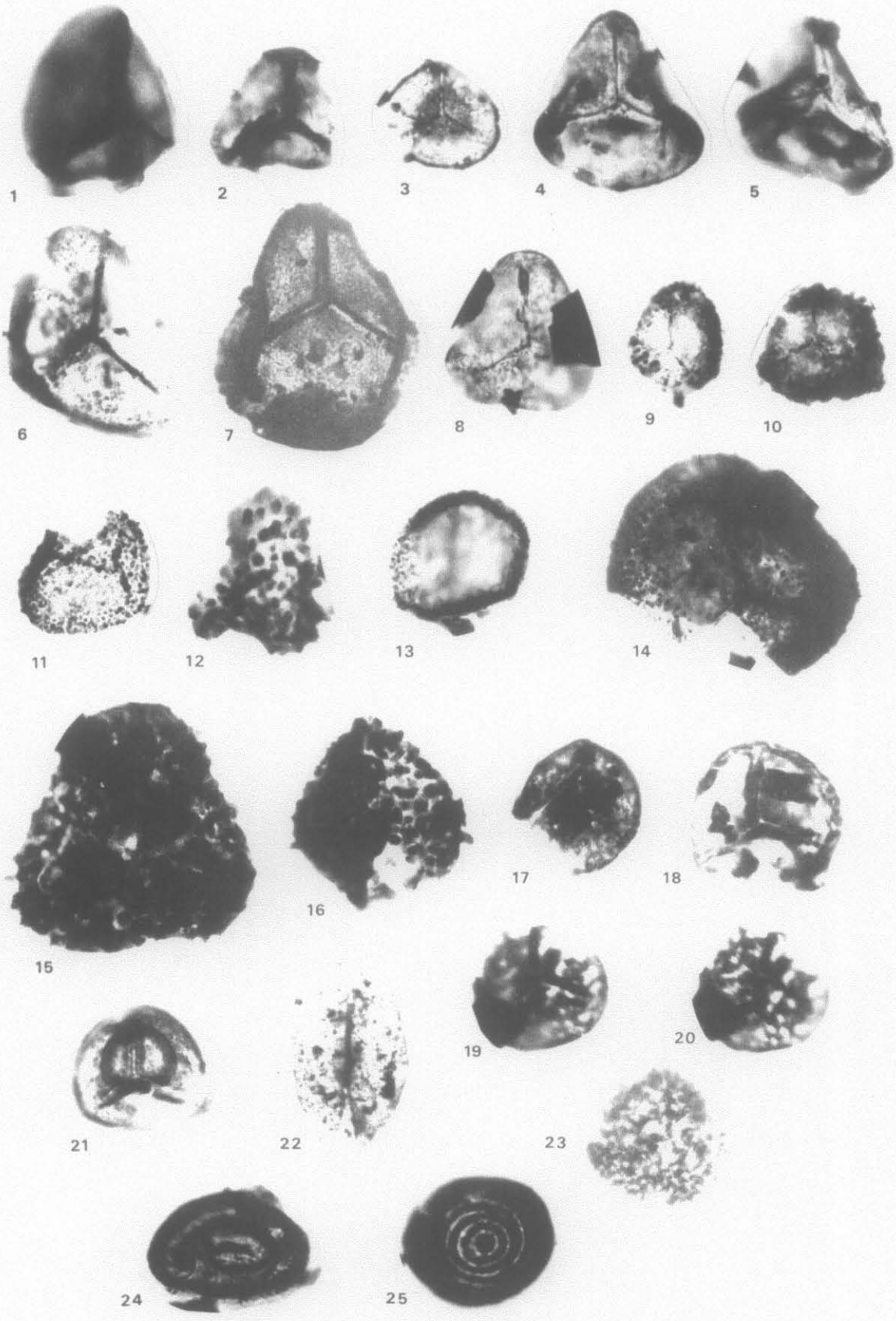

Plate 1. *Triassic palynomorphs from South Cape Bay.*