demonstrated by other workers using techniques similar to those described here. Sutherland, Lock & Farris (1981) located *Sirococcus strobilinus* Preuss inside seed of four *Picea* spp. after surface sterilization with hydrogen peroxide; and ethanol-soaked seeds of *P. elliottii* Engelm. var. *elliottii* were found to contain *Diplodia gossypina* Cooke (synonym of *L. theobromae* – Punithalingam, 1976) and *Fusarium moniliforme* Sheldon var. *subglutinans* Wollenw. & Reink. (Miller & Bramlett, 1978; Anderson, Belcher & Miller, 1980). A more detailed method was used on *Picea engelmannii* Parry ex Engelm. seed by Wicklow-Howard & Skujins (1980), who dissected out portions of endosperm and embryo after surface sterilization with 0·1 % silver nitrate, and obtained *Geniculodendron pyriforme* Salt, after incubation on V8 juice agar.

The results of this study show that *L. theobromae* is a seed-borne pathogen, although the seed is not its exclusive means either of existence or of transmission. It is theoretically possible to render this seed totally free from *L. theobromae* by increasing disinfectant concentrations and/or sterilization periods. However, as the treatments used during these experiments were subsequently found to have a detrimental effect on seed germination percentages (Rees, 1983), it is more than probable that harsher regimens would exacerbate the situation.

This work was carried out under the Ministry of Agriculture, Fisheries and Food licence numbers HH 11303/82 and HH 11303/84 issued under the Destructive Pests and Diseases of Plants Order 1965, and PHF 68/21 and PHF 68/44 issued under the Import and Export of Trees, Wood and Bark (Health) (Great Britain) Order 1980 and the Tree Pests (Great Britain) Order 1980, and financed by the Overseas Development Administration, Project R3410.

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FIRST RECORD OF A RUST ON *ACACIA MEARNSII* IN SOUTHERN AFRICA

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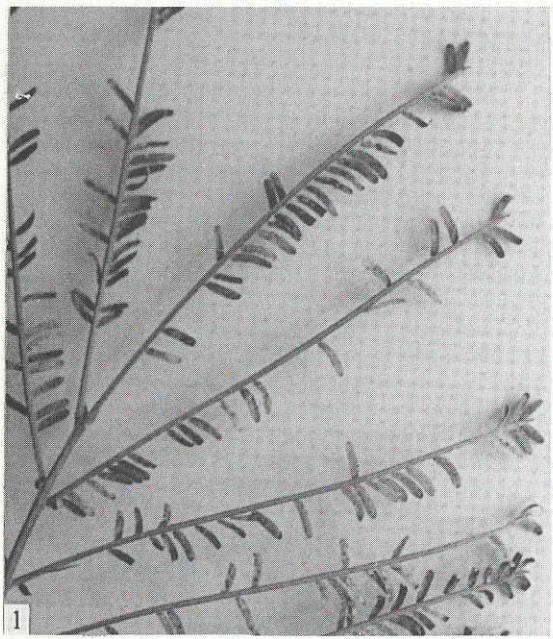
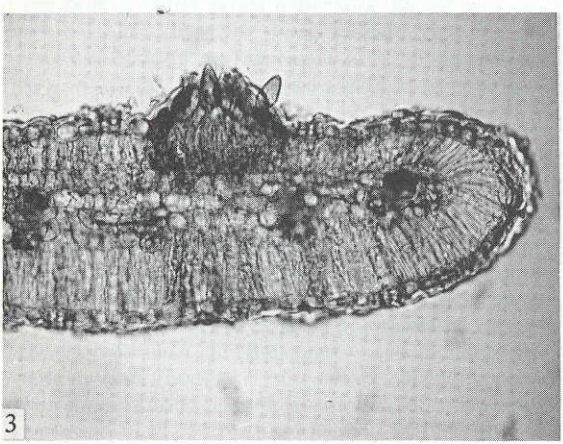
A rust fungus is recorded on *Acacia mearnsii* for the first time in South Africa. It is a uredinial rust, and comparison with rusts on this host in Australia suggests that it is probably the uredinial state of *Uromycladium alpinum*. The rust and its host range are briefly described.

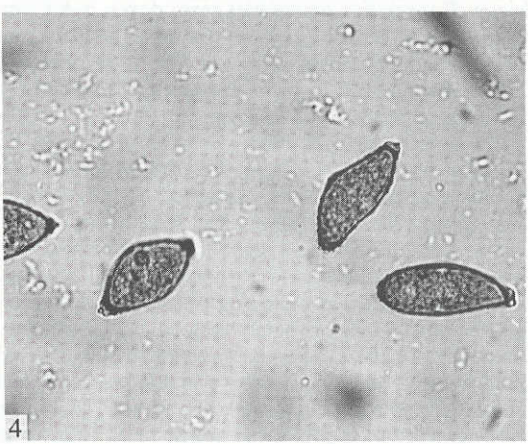
Acacia mearnsii De Willd. is a commercially important plantation tree grown in South Africa for timber, bark extract and pulp, but is also an invasive weed in many parts of the country (Boucher, 1978). No rust fungi have been recorded on *A. mearnsii* in South Africa (Doidge, 1950; Gorter, 1977). Uredinia of a rust were first observed on leaflets of *A. mearnsii* at Stellenbosch in April

1984. The disease has since been found at Ixopo (Natal), Nelshoogte (Eastern Transvaal), George, Bainskloof (Cape Province) and in Swaziland and can cause severe leaf drop of lower leaves (Fig. 1). This paper describes the fungus, considers its identity and comments on the potential importance of the pathogen.

Uredinia are scattered on both surfaces of leaflets and on leaf rachides, branches and stems. On leaflets (Figs 2, 3) they are usually surrounded by a circular yellow zone 0·5–1 mm wide or sometimes by a pale brown spot 0·5–1 mm wide, usually with one central sorus per spot, occasionally two or three. Individual uredinia are 100–150 μm diam, 40–60 μm high, subepidermal, and seen initially as small raised blisters which rupture to expose the reddish-brown powdery spore mass. Paraphyses are absent. Urediniospores (Figs 4, 5) are golden







Figs 1–4. Symptoms, uredinia and urediniospores of the southern African rust on *Acacia mearnsii*.
Fig. 1. Chlorosis and leaflet drop caused by the rust on the lower leaves.
Fig. 2. Uredinia of rust on leaflets.
Fig. 3. Transverse section of uredinium of rust on leaflet.
Fig. 4. Urediniospores.

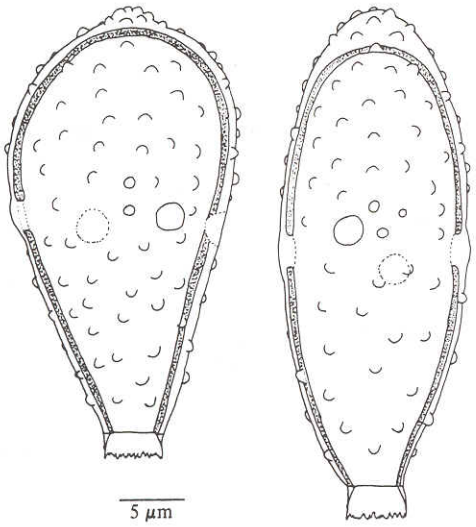


Fig. 5. Urediniospores of the southern African rust on *Acacia mearnsii*.

brown, variable in shape, obovoid, ellipsoid, broadly fusiform to broadly clavate, 24–40 × 14–20 μm. The spore wall is 2 μm thick at the sides, usually thickened to 3–4 μm at the apex, double and composed of an inner yellowish-brown layer and an outer pale golden brown layer, covered with scattered rounded warts 1–1·5 μm high, 1–1·5 μm diam and 2–2·5 μm apart, more closely clustered on the apical wall thickening and slightly less prominent and less numerous on the lower half of the spore. Four to five equatorial germ pores, 2–2·5 μm diam, each covered by a shallow hyaline cap 0·5–1 μm high and up to 3 μm diam, are present. The basal hilum is 4–5 μm wide, often with a short remnant of stalk 2–3 μm long.

In one collection from Bainskloof, made in January 1987 (DAR 59009: PREM 48897), some spores resembling those described as mesospores for *Uromycladium alpinum* by McAlpine (1906) were seen. They were brown, smooth, without obvious germ pores and with no wall thickening, and measured up to 24 × 18 μm. The term 'mesospore' now refers primarily to 1-celled teliospores amongst 2-celled ones (Hawksworth, Sutton & Ainsworth, 1983) and is not a suitable one for these structures, whose function is unknown. They are best referred to at present as sterile cells, following the terminology of Laundon (1970). Several immature urediniospores of similar size were also seen in this collection, but were readily distinguished by their warted wall, slight apical thickening and 4–5 equatorial germ pores.

At least three different rusts occur on *Acacia mearnsii* in Australia. The most common is the gall rust, *Uromycladium notabile* McAlp., which occurs on this host in New South Wales (specimens in Herb. DAR), South Australia (Warcup & Talbot, 1981), Tasmania (specimens in Herb. DAR) and Victoria (Chambers, 1982). In addition, Morris (unpubl.) collected *Uromyces digitatus* Winter and *Uromycladium alpinum* McAlp. on *A. mearnsii* in New South Wales. Both represented a new host record for these rusts, and the collections have been lodged in the New South Wales Department of Agriculture Herbarium at Rydalmere (DAR 52798; DAR 51632).

Two other rusts are reported in the literature on *Acacia mearnsii* in Australia, but so far no evidence to substantiate these reports has been seen. *Uromycladium tepperianum* (Sacc.) McAlp., a gall rust, is reported on this host by several authors (Gibson, 1975; Warcup & Talbot, 1981), but all specimens of gall rust examined on this host in Australia have been *U. notabile*. The South Australian collection ADW 1928 listed as *U. tepperianum* by Warcup & Talbot (1981) has been examined and found to be *U. notabile*. At present, there is no evidence for the occurrence of *U. tepperianum* on this host. *Acacia mearnsii* was also immune to *U. tepperianum* in artificial inoculation tests using three rust genotypes (Morris, 1987).

Uromycladium acaciae (Cooke) P. & H. Sydow (syn. *U. bisporum* McAlp.) is also listed on *A. mearnsii* by Gibson (1975), who quotes Browne (1968) and Spaulding (1961) as reference sources. Neither of these authors gives any evidence for this report, and a search of available check lists of plant diseases for all Australian states failed to find any record of *U. acaciae* on *A. mearnsii*.

The rust on *A. mearnsii* in South Africa has been compared with all the rusts recorded on this host in Australia. Uredinia and urediniospores were most similar to those of *U. alpinum*, although the urediniospores were slightly narrower. In the absence of teliospores, the South African rust cannot be identified with certainty. However, the similarity of the uredinia and urediniospores to those of *U. alpinum* suggests that the pathogen is the uredinial state of this species. Confirmation of this must await the finding of teliospores. Specimens have been deposited in Australia (DAR 49949, DAR 50507, DAR 59009) and at the National Collection of Fungi, Pretoria, South Africa (PREM 48897).

Uromycladium alpinum has been recorded on a number of *Acacia* spp. These include *A. buxifolia* A. Cunn., *A. dallachiana* F. v. M., *A. dealbata* Link, *A. implexa* Benth., *A. linifolia* Willd. (McAlpine, 1906), *A. decora* Reichenb. (Herbert,

1937) and *A. spectabilis* A. Cunn. ex Benth. (Alcorn, 1976). In addition, collections of *U. alpinum* on *A. terminalis* Salisb. are present in the herbarium of the New South Wales Department of Agriculture (DAR 52795).

A. mearnsii has been selected in South Africa to fulfil prerequisites of the forest industry. It is possible that this rust could become an important pathogen of cultivated *A. mearnsii*, and its biology and occurrence require further investigation.

The assistance of Dr J. H. Warcup (Waite Agricultural Research Institute, South Australia) in lending specimens and of Dr J. L. Alcorn (Herb. BRIP) in giving permission to quote from the Supplement to the Queensland Host Index is gratefully acknowledged.

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PARAEUTYPA, A NEW GENUS OF THE DIATRYPACEAE

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Paraeutypa pulchra gen. et sp.nov., collected on fallen wood blocks from Chengeltheri, Tirunelveli, Southern India is described and illustrated. The fungus is classified in the Diatrypales and compared with *Eutypa*.

An interesting ascomycete was collected on unidentified fallen wood blocks in Kakkachi, near Chengeltheri, Tirunelveli Dt., Tamil Nadu. The aim of this paper is to present a description of the fungus and to discuss its taxonomy.

Paraeutypa gen.nov.

Clypeus effusus, formans massas pulvinatas, partialiter cingentes colla perithecialia in substrato. Perithecia solitaria, immersa in textu hospitis, cum pariete crasso, ostiolata. Peridium in duplici strato: stratum externum cellularum fusce brunnearum, cum pariete crasso, et stratum internum cellularum hyalinarum cum pariete tenui. Asci unitunicati, cum pariete tenui, clavati, cum caulis prominentibus, plerique affixi subhymenio, non-amyloides, 8-sporati. Ascosporae allantoides, 1-cellulatae.

Species typica: *Paraeutypa pulchra* sp.nov.

Clypeus effuse, forming cushion-like masses partly enclosing perithecial necks on the substrate. *Perithecia* solitary, immersed in the host-tissue, thick-walled, ostiolate. Peridium two-layered: an outer layer of thick-walled, dark brown cells and an inner layer of thin-walled, hyaline cells. *Asci* unitunicate, thin-walled, clavate with prominent stalks, mostly attached to the sub-hymenium, non-amyloid, 8-spored, *Ascospores* allantoid, 1-celled.