

## Ustilago vuyckii found in Australia

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The smut fungus *Ustilago vuyckii* Oudem. & Beijer. has been found for the first time in the southern hemisphere, on *Luzula novae-cambriae* Gandoger in Victoria, Australia. The total range of *U. vuyckii* is mapped.

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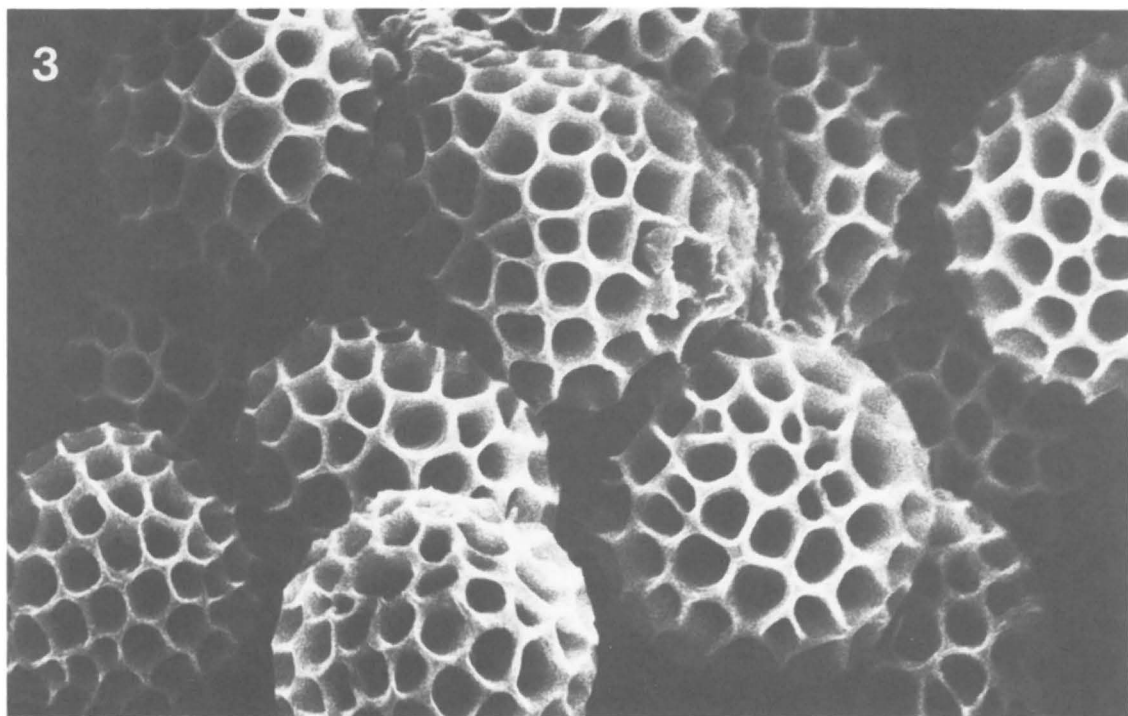
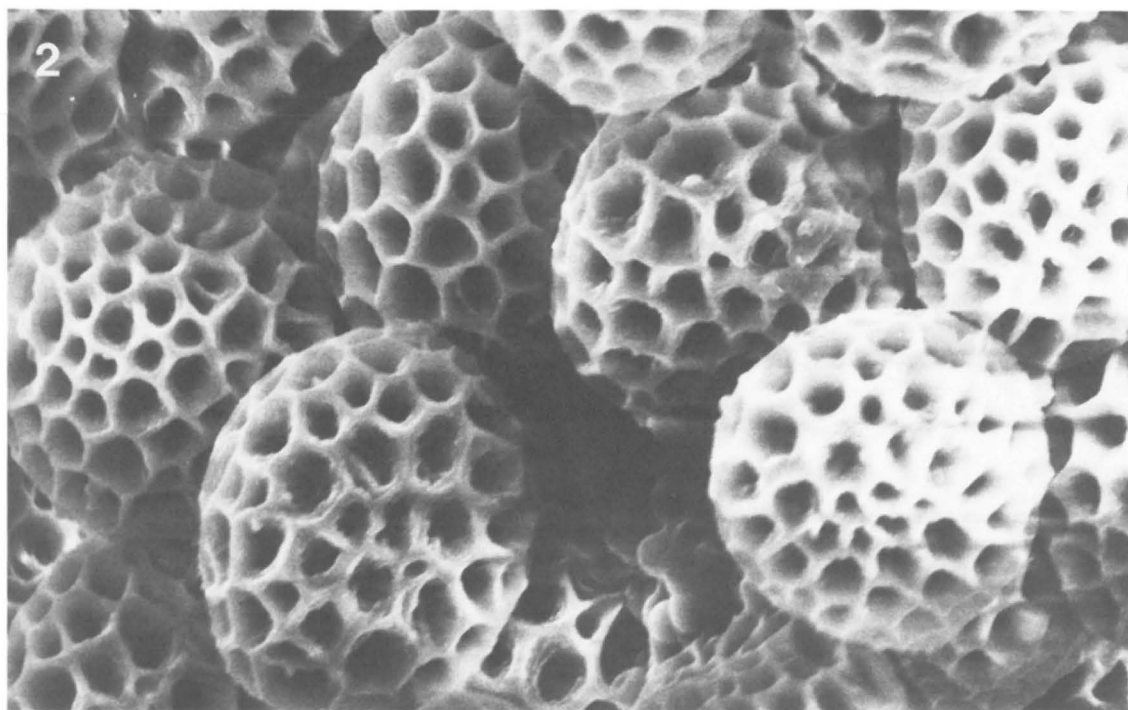
*Ustilago vuyckii* Oudem. & Beijer. in Oudem. is described from the Netherlands and causes a systemic infection on several *Luzula* species in the northern hemisphere (Fig. 1; cf. also Hämet-Ahti 1972, 1979 and the literature cited therein). Most authors have used the spelling 'vuijckii'. However, the correct spelling is 'vuyckii' as shown by Walker (1971: 106).

*U. vuyckii* also occurs in Australia, where it was detected on a *Luzula* specimen, viz. *L. novae-cambriae* Gandoger, collected in Victoria. This specimen consists of six individuals of *Luzula*; two of them are infected by the smut and their capsules are filled with

its characteristic yellow spore mass. The size of the spores varies from 12 to 19  $\mu\text{m}$  (mounted in lactophenol). The values agree with those obtained in the northern hemisphere (Walker 1971, Hämet-Ahti 1972, 1979). The spores are subglobose to subelliptic, yellow to light brown and deeply reticulate (Fig. 2), appearing spiny at the circumference under the light microscope. In the SE micrographs the surface reticulation of the Australian specimen seems to be slightly coarser than in the North American material (Fig. 3). However, the Australian spores are obviously younger than the fully mature American ones, and the



Fig. 1. The total distribution of *Ustilago vuyckii* and its occurrence on the species of the subgenera *Anthelaea* (square), *Pterodes* (asterisk) and *Luzula* (triangle) of the genus *Luzula*.



Figs. 2—3. SE micrographs of the spores of *Ustilago vuyckii*. — 2. On *Luzula novae-cambriae* (Australia, Victoria, Beaughole & Chesterfield 40781; MEL). — 3. On *L. parviflora* (Canada, Yukon, Hämet-Ahti 417a; H). — Magnification:  $\times 2000$ .

spores from the two regions are quite indistinguishable.

The infected individuals of *L. novae-cambriae* have shorter capsules than the uninfected ones; also, their anthers have remained closed. Both these features are conspicuous symptoms of the presence of *U. vuyckii* (cf. Hämet-Ahti 1972). Whether the anthers contained conidia could not be checked, but it is highly probable (cf. Oudemans 1895, Liro 1924, Hämet-Ahti 1972). The influence of the smut on this specimen seems to be confined to the flowers; both the inflorescence and the vegetative parts appear quite normal.

Until now *U. vuyckii* has been found on about 10 species or races of *Luzula* (e.g. Liro 1924, 1938, Gutner 1941, Zundel 1953, Lindeberg 1959, Jörstad 1963, Scholz 1968, Ul'yanishchev 1968, Hämet-Ahti 1972, 1979, Ignatavichyote 1975). These belong to three subgenera, viz. *Luzula* (*Gymnodes*), *Pterodes* and *Anthelaea*. However, it is curious that all the known North American finds are on the species of *Anthelaea*, while in Eurasia the fungus primarily grows on the species of *Luzula* and *Pterodes*, the only exception being one find on *L. (Anthelaea) alpinopilosa* in Poland. To some extent this situation may be due to the fact that this smut is easily overlooked by mycologists, but I have checked fairly extensive material of the subgenus *Anthelaea*, for instance, from eastern North America and northern Eurasia without finding *U. vuyckii*. *L. novae-cambriae* belongs to the subgenus *Luzula*, a variable and taxonomically complicated group in Australasia (cf. Edgar 1975).

In the northern hemisphere most of the *U. vuyckii* specimens were collected in the boreal or oroboreal areas. A few come from the oroarctic habitats in western North America and some from the temperate areas in Central Europe. In Australia the only known locality is on the top of Mt. Howitt (alt. ca. 1740 m). The S.E. Australian mountain areas between 1400 and 1800 m have been included in a 'subalpine' vegetation zone (cf. Costin 1981), which apparently — at least in its upper part — corresponds bioclimatically to the boreal vegetation in the northern hemisphere. The Australian subalpine areas have a distinctly oceanic climate with high rainfall (Costin 1981). The greater part of the range of *U. vuyckii* in the northern

hemisphere may also be regarded as oceanic. Eastern Siberia is admittedly continental, but all the known localities of *U. vuyckii* are in the river valleys (cf. Hämet-Ahti 1972), where the local climate is presumably less continental.

Specimen examined: **Australia**. Victoria (S16): Mt. Howitt, on top, 1972 Beaglehole & Chesterfield 40781 (MEL 1516444).

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