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Short Communication

The status and application of the generic name *Aspidelia*

The generic name *Aspidelia* was introduced by James Stirton (1900) for two parmelioid lichens with gall-like tubercles bearing pycnidia, one from New Zealand and the other from the Himalaya. The New Zealand material comprised two specimens collected by Thomas W. N. Beckett (1838–1906) in 1895 and sent to Stirton that year. Correspondence between Beckett and Stirton preserved in Christchurch (CHR), and transcribed by Galloway & Elix (1983), revealed that Stirton was immediately impressed by the galls and considered a new genus had to be recognized, proposing the designation '*Beckettia*'. Beckett was quick to point out that a moss he had discovered in New Zealand was about to be given that name by Karl ("Carol") Müller, and that generic name was published three years later (Müller 1898: 77). Stirton (1900) consequently proposed the generic name *Aspidelia* instead, but based one of the species epithets on Beckett's surname, *A. beckettii*.

When introducing his new generic name, Stirton provided separate descriptions of *A. beckettii* and the species from the Himalaya, *A. wattii*. Culberson (1966) argued that Stirton's generic name was not validly published as no separate generic description was provided, which also made the species names invalid (Art. 35.1), and that conclusion has been accepted by subsequent workers on parmelioid lichens (e.g. Galloway & Elix 1983; Hale 1987). Unfortunately, Culberson was incorrect, even under the *Code* then in operation, as while there was no separate description, Stirton (1900) did provide a diagnosis of the new genus after the description of *A. beckettii*: "As I have not seen spermogonia clustered in raised tubercles of a diverse colour from the rest of the thallus, and having spores contained in thecae with thick pellucid walls, I have been constrained to separate this lichen from the *Parmelia*". In any case, three subsequent works accepted the genus, and provided separate descriptions or diagnoses of the genus itself (Zahlbruckner 1908: 216 and 1926: 238; Räsänen 1943: 33); these publications appear to have been overlooked by Culberson (1966) but would have validated the name even if Stirton's original account had been invalid. Interestingly, however, Santesson appears to have accepted *Aspidelia* as validly published with *A. beckettii* as type (Farr *et al.* 1979). The name was also accepted by Dodge (1959), who reported similar excrescences with pycnidia in some African parmelioid lichens. Consequently, had the generic name not been validated by Stirton, it would nevertheless have had to be accepted and attributed to "Stirt. ex Zahlbr.".

Of the two species names introduced by Stirton (1900), *A. beckettii* must be accepted as the type species as "Strn. Gen. nov." appears after that name, with the diagnosis of the new genus immediately after, and before the description of *A. wattii* which had just "Strn." after that name.

Stirton (1900) gave the specimen details simply as "Corticola, New Zealand" without any more precise locality information. There are two specimens glued together on the same small sheet in the material from Stirton's herbarium in BM (Fig. 1). The left one is small and comprises two fragments, and has the locality information "No. 1. N.Z. Oxford Bush, U. Canterbury, T.W.N. Beckett 1895"; the right one is a much larger

thallus labelled simply as "No. 2. N. Z. (no further locality)". Two specimens are mentioned in the correspondence between Stirton and Beckett (Galloway & Elix 1983): "no. 29" with no locality details, and "no. 22" from Oxford Bush; No. 29 seems to have been the smaller collection as Stirton refers to a "scrap of the same growing on No. 22". As Beckett appears not to have disputed that the two specimens were collected in the same place, and no more precise locality is given in Stirton's published account, the two specimens have to be treated as syntypes from which a lectotype should be selected to fix the application of the species name. Galloway & Elix (1983) did not mention either number, but only the locality for the "holotype", so it is necessary to designate a lectotype and we select the larger of the two specimens here (No. 2; i.e. Beckett's No. 22, see above).

Aspidelia Stirt.

Trans. Proc. N. Z. Inst. **32:** 81 (1900) ('1899').

Type species: *Aspidelia beckettii* Stirt.

Aspidelia beckettii Stirt.

Trans. Proc. N. Z. Inst. **32:** 81 (1900) ('1899'); type: New Zealand, (*Otago*: Canterbury, Oxford Bush?), 1895, *T. W. N. Beckett* 2 (= No. 22) [BM!—lectotype designated here, MBT 200903; CHR—isolectotype (not seen, illustrated by Galloway & Elix 1983: 416, fig. 23)].

(Figs 1 & 2)

The "raised tubercles" with pycnidia of the lichen were the diagnostic character for the genus, and Stirton described the conidia as cylindrical with the apices "obsolete incrassatulis" and measuring 6–8 × *c.* 0·5 μm. The reference to the apices suggests these were conidia of the type referred to as "bifusiform" in modern accounts of parmelioid lichens. Galloway & Elix (1983) treated Stirton's name as a synonym of *Parmelia tenuirima* Hook. f. & Taylor 1844, confirming the interpretation of Hale (1987). We found similar tuberculate galls with identical pycnidia and conidia in three more recent collections of *Notoparmelia tenuirima*, one from Australia and two from New Zealand. Macroscopic and microscopic studies of galls in the lectotype and the more recent collections (Fig. 2C, D, F, G & K) showed that they were identical, and in one case they developed on the disc of an apothecium (Fig. 2E). The pycnidia formed towards the margin of the lobes in MAF Lich-17027 (Fig. 2H) were identical to those found on the galls. We therefore see no reason not to accept Stirton's name as a synonym of *N. tenuirima*.

Additional specimens of Notoparmelia tenuirima *(with galls) examined*. **Australia:** *Queensland*: dividing range east of Atherton, 15 viii 1970, *E. Dahl* (O-L-193358).—**New Zealand:** *Southland*: Hump Ridge, alt. 500 m, on *Nothofagus* bark, 2007, *A. Knight* SPO 23 (MAF Lich-17027=OTA 60607); Lewis Pass Scenic Reserve, Sylkia Flats Picinic Area, just east of Lewis Pass Hwy 7, open silver beech forest, alt. 400 m, 1984, *M. E. Hale* 65755 (MAF Lich-7663).

We speculated whether the galls could be caused by a lichenicolous fungus, but could find no evidence of any sporing structures apart from the pycnidia, and nor were there any hyphae distinct from those of the fungal partner of the lichen evident in the sections from the more recent collections. The galls on the lectotype did, however, have a number of other fungal elements associated with its surface (Fig. 3). Amongst these were: hyaline to pale brown chains of swollen cells (Fig. 3A) of uncertain affinity that could represent a growth stage of some lichenicolous fungus, truncated brown septate spores recalling conidia of a *Pestalotiopsis* that had lost its apical cells and appendages (Fig. 3B), a dark brown fusiform spore with a single vertical germ-slit such as are found in *Coniochaetaceae* (e.g. *Coniochatea*) and *Xylariaceae* (e.g. *Rosellinia*) (Fig. 3C), and an ovoid dark brown single-celled spore with suggestions of former gelatinous appendages that could be from some member of the *Sordariales* (e.g. *Podospora*, *Schizothecium*) (Fig. 3D). There were also some dark brown, regularly septate hyphae *c.* 5 μm wide on the surface, which were not constricted at the septa and ladder-like. It seems most probable that the spores were deposited on the specimen during storage or transport over the last 120 years, as no

FIG. 1. *Aspidelia beckettii* (BM—lectotype on right).

similar structures were found in the other galled collections of *Notoparmelia tenuirima* studied. The causal agent of the galls consequently remains obscure, though we cannot discount some unidentified lichenicolous fungus in view of the chains of swollen cells discovered.

Accepting that Stirton's name is typified by the lichen-forming element has implications for the recently published name *Notoparmelia* A. Crespo *et al.* 2014 (Ferencova *et al.* 2014), which was introduced for 16 species of Australasian parmelioid lichens, including *Parmelia tenuirima*. *Notoparmelia* was not, however, a superfluous name and so illegitimate when published (Art. 52.1) as Stirton's specific name was not included in the synonymy when that species epithet was combined into *Notoparmelia* (Art. 52.2). It is therefore inescapable that *Aspidelia* provides an earlier legitimate generic name for the genus. This unfortunate oversight means that either 16 new combinations must be made into *Aspidelia*, or Stirton's name should be proposed for rejection so that *Notoparmelia* can be retained.

It would also be unfortunate for *Aspidelia* to be resurrected and come into current use

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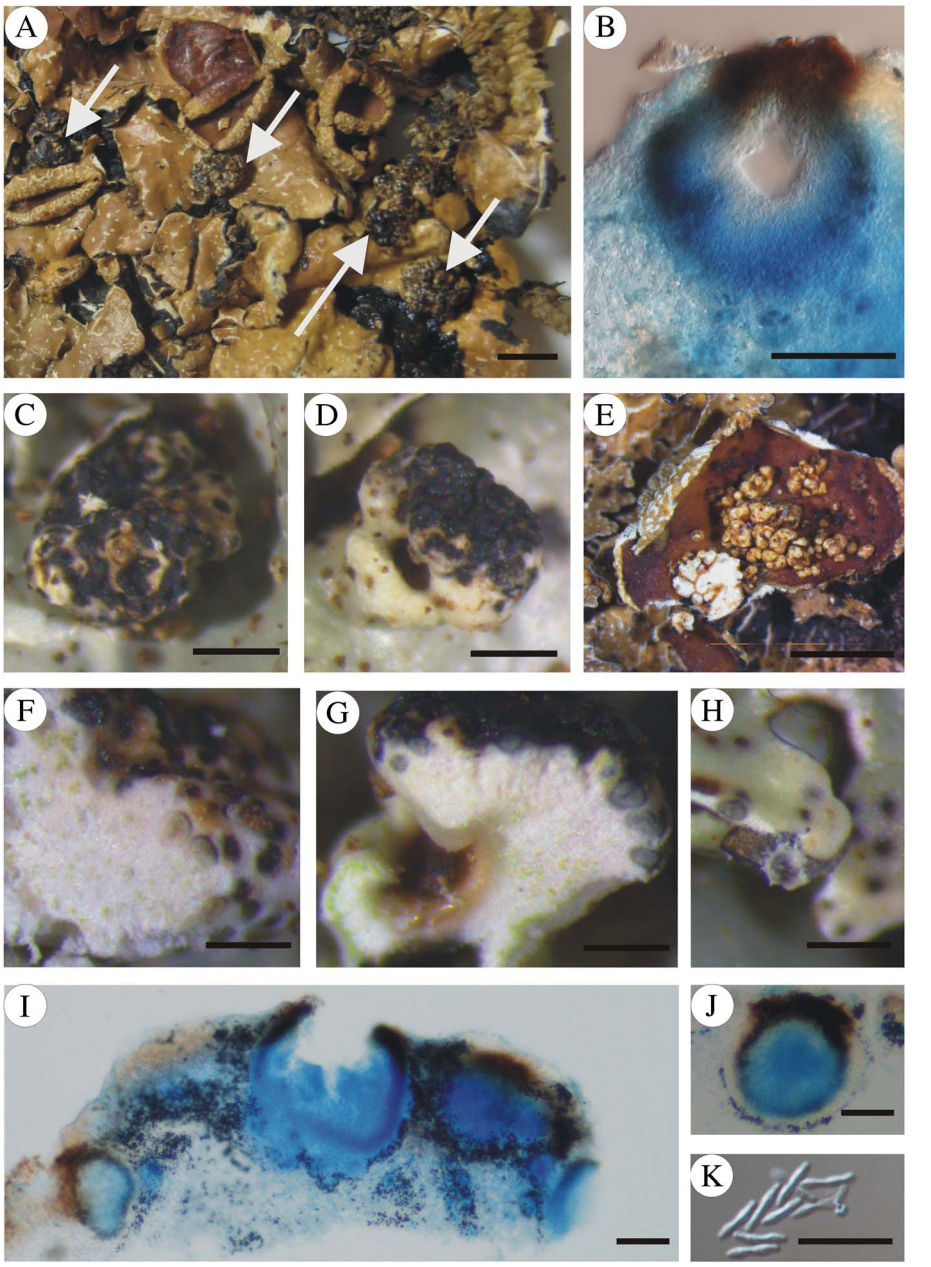

FIG. 2. *Notoparmelia tenuirima* (A & B, BM—lectotype of *Aspidelia beckettii*; C, D, F–K, MAF Lich-17027; E, O-L-193358). A, thallus portion showing position of galls (arrows); B, vertical section of a gall; C, gall on central part of the thallus; D, gall on margin of an apothecium; E, galls on disc of an apothecium; F, vertical section through a gall on the thallus surface; G, vertical section of a gall on the margin of an apothecium; H, pycnidia on thallus margins, not associated with galls, one cut through; I, vertical section of pycnidia in gall on central part of the thallus; J, vertical section of pycnidium on thallus margin, not associated with galls; K, conidia from a gall on the thallus. All microscope preparations in lactophenol cotton blue. Scales: A = 2·5 cm; B, I & J = 50 μm; C & D = 500 μm; E = 2 mm; F–H = 250 μm; K = 10 μm.

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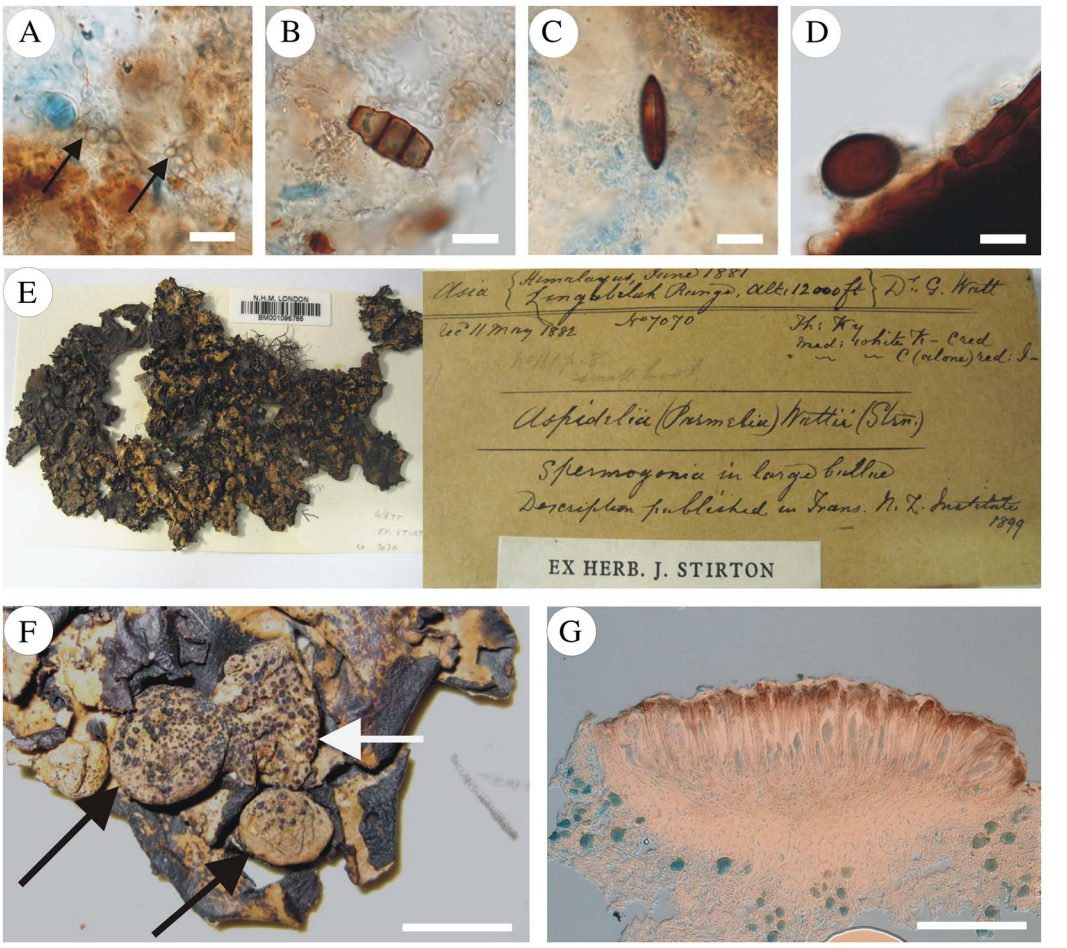

FIG. 3. *Notoparmelia tenuirima* (BM—lectotype of *Aspidelia beckettii*) (A–D) and *Aspidelia wattii* (BM 001096786—lectotype) (E–G). *Notoparmelia tenuirima*, fungal hyphae and spores on surface and in surface layers of galls: A, hyaline to pale brown chains of swollen cells (arrows); B, truncated brown septate spores (recalling conidia of a *Pestalotiopsis*); C, dark brown fusiform spore with a single vertical germ-slit (recalling those of *Coniochaetaceae* or *Xylariaceae*); D, ovoid dark brown single-celled spore with suggestions of former gelatinous appendages (recalling *Sordariales*). *Aspidelia wattii*: E, specimen and its label; F, thallus portion showing galls (arrows) on *Cetrelia sanguinea*; G, vertical section through the black ascoma of *Nesolechia oxyspora* on the galls. Scales: A–D = 10 μm; F = 3 mm; G = 100 μm.

as there are two almost identically spelled generic names: *Aspidella* E.-J. Gilbert 1941 (*Agaricales*) in the fungi, and *Aspidella* Billings 1872, one of the enigmatic Pre-Cambrian Ediacaran fossils which it has been suggested may be lichens (Retallack 1994). The three names have a similar etymology, being based on the Latin diminutive of the Greek "*aspis*" (a round shield). It could be argued that these names were so similar as to be treated as homonyms under the *Code*. Although Billings' generic name is earlier than Stirton's, it is currently only formally accepted in zoology so does not render Stirton's name illegitimate; in the eventuality that those fossils were accepted as lichens, another name change for *Notoparmelia* would be difficult to avoid. This is another reason to avoid Stirton's name being taken up, and is in

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the spirit of Rec. 54A of the *Code* which encourages the avoidance of names that exist in zoological nomenclature. More importantly, rejection of Stirton's name would safeguard that of Gilbert, which had generally been treated as a synonym of *Amanita* but has recently been reinstated for 25 species formally placed in *Amanita* sect. *Lepidella* subsect. *Vittadiniae* and the necessary new combinations made (Vizzini *et al*. 2012).

In these circumstances, we consider the most appropriate course of action is to propose Stirton's generic name for rejection in order to: 1) avoid having to make new combinations from *Notoparmelia*; 2) safeguard the generic name of some lichenicolous fungus that may later prove to be the causal agent of the galls; 3) avoid the possibility of confusion with the fossil genus *Aspidella*; and 4) avoid the need for a new generic name to replace that of Gilbert in *Agaricales*. A formal proposal for rejection of the name has therefore been made (Ferencova *et al*. 2015).

We were also able to locate and re-examine the original material of the second species described in *Aspidelia* by Stirton, *A. wattii* from the Himalaya (Himalaya, Lingabelah Range, alt. 1200 ft, June 1881, *G. Watt* 7070 [ex-hb. Stirton] BM 001096786—holotype) (Fig. 3E). This specimen had been studied by Culberson (1966) and identified as *Cetraria sanguinea* Schaer. 1846, and the name was later listed as a synonym of *Cetrelia sanguinea* (Schaer.) Culb. & C. Culb. 1968 (Culberson & Culberson 1968). As Stirton mentioned only a single locality and collector, we presume that his reference to examining two examples refers to the number of galls studied. Stirton gave no details of ascospores or conidia, and neither did Culberson. The specimen has, however, conspicuous tuberculate galls (2–4 mm diam.) with the abundant ascomata of a *Nesolechia* species (Fig. 3F). This was reported on by Triebel *et al*. (1995) who made excellent microtome sections (Fig. 3G) kept with the material in BM and identified the fungus as *Phacopsis rufa* (Müll. Arg.) Triebel & Rambold 1992. That species was separated from the species now known as *Nesolechia oxyspora* on the basis of the somewhat curved ascospores, the different host genus, and the distribution. The spore shape, however, evidently comes within the range of *N. oxyspora*, which is known from 18 other genera in *Parmeliaceae* (Doré *et al*. 2006), so we prefer to treat the name *Phacopsis rufa* as a synonym of that species pending molecular studies to clarify species concepts in the complex. We decided to include photographs of the fungus and the galls it produces on *Cetrelia* here as none appear to have been previously published. As both Culberson & Culberson (1968) and Triebel *et al*. (1995) applied the name *A. wattii* to the host and not to the lichenicolous fungus, they were by implication selecting the host element as lectotype so the name can be retained as a synonym of *C. sanguinea*.

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