

TWELVE READINGS ON THE LICHEN THALLUS

II. Nameless Little Things

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Figure 1. This lichen shall be nameless. Photo by Tim Wheeler.

LICHENS HAVE NO NAMES! There, I've said it. Lord knows somebody had to. Lichens have been going around nameless for nearly half a century now. It's indecent. Surely it's time we showed them a little more respect.

If past experience is anything to go by, I expect my little rant will elicit roughly four kinds of response. In

ascending order of sophistication, these would be: (1) outrage (*This is ludicrous!*), (2) disbelief (*Surely you're mistaken.*), (3) astonishment (*How fascinating!*) and (4) concurrence (*Doesn't everybody know that?*). The first reaction clearly disqualifies itself from serious comment, while the last obviously needs none. What follows is therefore intended to be read

in a spirit of something between disbelief and astonishment.

Lichens have no names! Granted putting the matter this way could seem a little stark, perhaps even alarming, but in fact the namelessness of lichens is old news. Most lichenologists already know lichens have no names in roughly the same way we also know the sun is exploding: we know it, but we don't necessarily think about it that way. Simply put, nameless lichens are what you get when you decree (as lichenologists did in 1961) that the name of the lichen fungus shall be understood to apply only to itself; that under no *nomenclatural* circumstances shall its namefulness be permitted to seep out into the lichen thallus as a whole. A quick check under *Lichens and Nomenclature* in *Ainsworth & Bisby's* confirms what I say, though keeners will naturally want to double-check Article 13.1(d) of the *International Code of Botanical Nomenclature*.

Here's something. Consider the exceedingly curious observation that lichenologists, while seemingly impermeable to the idea that lichens should have names, have nevertheless long since taken pains to assign names to lichen communities. Examples aren't hard to come by. The Lobarion. The Xanthorion. The Parmelion. The names of these and many other lichen communities are nowadays familiar to practically everybody. Not only do they roll off the tongue like honey, they also, more to the point, help lichen ecologists talk about lichen ecology without having to wave their arms too much in the air.

But what, I ask, is a lichen if not a kind of community writ small: an imponderably complex, internally consistent, self-sustaining ecosystem composed of who-knows-anymore-how-many lichen-forming fungi, algae and bacteria. Why on earth would lichenologists think it worth their while to recognize, classify, and codify hundreds of lichen communities without at the same time finding it convenient to assign names to the solid, in-your-hand community of species that make up the lichen thallus itself? This, you'll grant, is a question.

Very likely it's the times we're living in. For a hundred years and more, laboratory science has led the way through an extreme reductionist patch, the fabulous technological offshoots of which have inclined most of us – or so I would claim – to emphasize the parts over the whole, quantity over quality, cost over value. Against such a background, why *wouldn't* lichenologists see lichens primarily in terms of their component parts? More astonishing

would be if lichenologists somehow tended *not* to think about lichens this way, insisting instead upon their identity as independent entities. But in that case, lichens would long ago have been accorded what seems to me to be the one truly inalienable right: to bear names.

So here we are, well into the 21st century, and still not a name in sight for any of 13,500 lichens worldwide. What happens when a lichenologist wishes to think seriously about whole lichens? The best she can do is to ignore the *Code*, take the name of the fungal partner in hand, and graft it to the lichen in question. Admittedly this approach does get one through the day, though it can sometimes also (so I've noticed) interfere with a good night's sleep. Two reasons here: first it promotes the misconception that lichens are "species"; and second it implies that each lichen thallus necessarily contains one and only one lichen-forming fungus. We really need to ask how much is gained and how much lost by requiring the names of lichen fungi to do double duty as the names of lichens. In effect this practice amounts to metonymy, rather like referring to George W. Bush as the White House. And while there can be little question that metonymy – really a mild form of Orwellian double-speak – is handy for maintaining moral authority, yet its utility vis-à-vis scientific nomenclature is surely debatable.

It wasn't always this way. Metonymic lichens, I mean. Prior to widespread use of the compound microscope – some time in the opening decades of the 19th century – most lichenologists had little choice than to think lichens whole. When a lichenologist back then gave a lichen a name, it was meant to apply to the entire thallus, rather like varnish. And so *Lobaria pulmonaria*, in those days, really *was* Lungwort in precisely the same way *Abies lasiocarpa*, for example, still *is* Subalpine Fir.

Then along came Swiss microscopist Simon Schwendener and changed all that. Lichens, said Schwendener, aren't organisms, rather they're collectives of individuals in two basic flavours: fungal and algal. The year was 1867. Historians of science are quick to point out that Schwendener's "dual hypothesis" soon found favour with researchers in other fields, yet was rejected out of hand by many leading lichenologists. One wonders about this. Were 19th century lichenologists perhaps a little slow? I doubt it. More likely they were simply being asked to swallow too much too fast. Lichens, recall, are the only group for which the adoption of reductionist

perspectives changes utterly the nature of what one thinks one is looking at. No doubt a conceptual gulf as wide as that separating lichens-as-organism from lichens-as-ecosystem would have proved equally challenging to most left-brain researchers in other fields as well.

Funeral by funeral, of course, this attitude of rejection gradually softened. By the opening years of the 20th century, most lichenologists no longer tended to think of lichens as whole organisms, having come to think of them instead in terms of their component parts – with special emphasis of course on the *quantitatively* dominant fungal partner. When in 1961 this reductionist take finally found its way into the *Code*, the term *lichen* began to fall, if not quite into disfavour, then at any rate into informality. In its place the term *lichenized fungus* gradually gained currency as the sanctioned focus of attention for lichenologists.

Yet 1961 is now nearly half a century ago. One is constrained to ask how lichens have managed to remain nameless for so long. Only recently, in fact, has the namelessness of lichens begun to chafe. The turning point came in the mid 1990s, with the introduction of molecular approaches into lichenology. Nowadays one notices a growing number of discrepancies between the way lichens are experienced in the field and the phylogenetic relationships of their fungal partners. At the species level, these discrepancies are for the most part easily dealt with. Putting aside certain metonymic difficulties already mentioned, one can usually avoid being tripped up even by cryptic species by simply invoking “group” names as necessary. Photomorph pairs are another matter; but more on these in a future essay.

More discordant by far than discrepancies at the species level are discrepancies at the genus level. When the fair-minded molecular taxonomist needs to re-circumscribe a lichen genus based on the phylogenetics of its fungal partner, she doubtless also often feels a countervailing need to preserve nomenclatural stability insofar as possible. My own feeling is that molecular taxonomists ought to relax

on this point. There can be no good reason to expect that rates of molecular evolution in the fungal partner *necessarily* keep pace with rates of character evolution in the thallus as a whole. The way forward is thus obvious enough: simply allow *two* nomenclatural systems – one that targets the lichen fungus and emphasizes phylogeny over morphology; and the other that applies to the lichen as a whole, and stresses morphology over phylogeny. How fungal phylogeny intersects with lichen taxonomy then becomes a non-issue, and need no longer disturb the sleep of anybody.

When I said *lichens have no names*, what I meant of course is that lichens have no *scientific* names or, better, that lichens have no names officially sanctioned by lichenologists. But certainly lichens do have names. One encounters them – or should – every time one flips through the pages of a lichen field guide. Granted that not all lichenologists approve of common names, yet even the most leather-bound believer in castles and moats will surely have to acknowledge that common names are the only names lichens really have these days. Only in common names is the human mind actually permitted unequivocally to touch the lichen thallus. Lungwort (Figure 1) really *is* a lichen in the same way that *Abies lasiocarpa* really *is* a tree.

Lichenologists have lately learned many astonishing things about the lichen thallus, not least concerning the unexpected constellation of bacteria, fungi, and other occult organisms that inhabit it, and that begin to look like component parts of a single unified operating system: a super-organism say. One almost senses a major paradigm shift coming our way, presumably a deepening simultaneous acceptance of the lichen as organism *and* lichen as ecosystem. Will I live to see such a shift? Who can say? What I do say is that when it finally comes, this deepening acceptance, it won't so much resemble the young boy deciding to give his puppy a name, as it will the barometer on the wall registering a change in the weather. The old dialectic: thesis, antithesis, and finally synthesis. Something like that.