British Lichen Society
Bulletin

no. 115: Winter 2014

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Winter 2014

Welcome to the Winter 2014 Bulletin. A substantial part of this issue is taken up by tributes to Peter James. The first of these is an obituary written by his colleagues at the Natural History Museum, and this is followed by a series of papers and reminiscences documenting aspects of his life. His contribution to lichenology in the UK and abroad amply merits such treatment.

The genus *Usnea* features prominently in the Winter 2014 Bulletin, with a major publication on chemistry of the British species by Paul Harrold, along with a less formal account of the *Usnea* workshop in September 2013 ably led by Becky Yahr. Churchyard yew trees provide habitat for a surprisingly rich cohort of lichens including several of conservation concern, as documented by Barbara Benfield. To cheer us all up in our British winter (and yes, I know the seasons in New Zealand are reversed!) a short paper on lichens on palm leaves in Florida is included.

A somewhat alarming paper by Sally Eaton describes the range of factors causing death of lichen thalli. Fortunately we are cheered by the next contribution; an article in the last Bulletin on *Roccella* in Norfolk has been capped by an account of *Vupicida pinastri* in Kent. It still seems we have a lot to learn about lichen distribution in the UK. And a short article postulates a rather surprising reason for the presence of *Diploicia canescens* on the brickwork of the author's house.

A highlight of the summer was the BLS excursion to western Iceland, with the harsh volcanic landscape plastered with lichens of all shapes and sizes. A number of these species are known to occur in Britain also, though typically on mountain tops in Scotland. Viewing these same species at near sea level in Iceland meant that hours of puffing up those mountains could be avoided….

There have been many developments in the world of lichenology elsewhere in 2014. We've become used to studies of lichens using molecular methods resulting in an increase of species numbers compared with those using traditional techniques. However, research conducted by Robert Lücking and colleagues on the tropical basidiolichen *Dictyonema glabratum* has taken this to extremes: they detected no fewer than 126 species within that traditional circumscribed aggregate, and predicted that there may in fact be around 400. *See http://www.pnas.org/content/111/30/11091.short* for more information.

And from sublime research to (perhaps) sublime wine, a few minutes idle searching on the web has uncovered a northern Californian winery named the Lichen Estate (*http://www.lichenestate.com/*). The Editor would be happy to contribute a review to the next *Bulletin*, if samples can be supplied….

Front cover: Cushions of *Biatoropsis usnearum* parasitizing a thallus of *Usnea subfloridana*, photographed in the Cairngorms during the BLS *Usnea* workshop in September 2013 – see inside for more details.

Peter James: appreciations of his life and work

Peter Wilfrid James FLS (28 April 1930 – 13 February 2014): an appreciation

Peter, a specialist in lichenised and other fungi, 'a diffident master in the art of lichen identification' (Fortey 2008), maintained a strong professional interest, both during his career at the NHM and in 'retirement'. He was a very generous, kind and thoughtful man, as well as being an eminent lichenologist who transformed the discipline in which he worked. Though a rather shy person, he enjoyed company, not only with fellow lichenologists and students, but was also strongly committed and enjoyed teaching botany and lichenology to amateur scientists throughout his life. Above all, Pat and William remember him for his kind generosity, particularly spending much time in guiding them in lichenology. He helped them greatly with their early manuscripts correcting their English so manuscripts became more readable and also liked to entertain them and frequent visitors to the lichen section with a meal either in a restaurant (typically Daquise in South Kensington) or at his home at 19 Edith Road, Baron's Court. Peter was a brilliant cook, home-made courgette, carrot and other vegetable soups and deserts (e.g. syllabub made with cream and whisky) being quick personal favourites of his, extremely delicious and always highly appreciated. He also had a lot of practical advice to give on cooking. In addition to his cactus collection, Peter collected stamps, specialising in the British Colonial Commonwealth (from the Edwardian period to George V). An interesting art collection adorned his walls including several Claire Dalby botanical watercolours and an early map printed before the discovery of Greenland. Keenly interested in art, music and literature, as his library and conversation showed, he had deep knowledge of the visual arts and of classical music, especially of the music of J.S. Bach. In his record collection, there are five boxes of music by Bach, including the 42 volumes of all the Cantatas in the *Das Alte Werk* edition. Shortly after Peter's death, obituaries were published in the Independent (Marren 2014) and International Lichenological Newsletter (Galloway 2014a) and a fuller, superbly detailed account emphasising Australasian aspects (Galloway, 2014b).

Peter's research interests were extremely diverse spanning taxonomy and ecology. Peter believed passionately in the value of taxonomy and museum collections. Whilst he was Deputy Keeper of Botany, Peter made notes in 1978 on the typification of Linnean lichens. This project, dear to Peter, involved investigating the Linnean and other historical collections, including the Dillenian lichen herbarium at Oxford together with Per Magnus Jørgensen (Jørgensen et al. 1994). He also believed in the wider utility of collections, often citing Epping Forest as an example, how by comparing modern with historical lichen collections, could help interpret environmental change (James et al., 2003). Peter embraced new methods for the period, including chemotaxonomy, leading to the first practical guide (White

& James 1987). Peter was unusual amongst lichenologists in either describing or co-describing taxa belonging to widely different genera as well as making new combinations involving *ca* 253 taxa (Table 1). He strongly believed in the importance of fieldwork and the need to observe lichens in the field. He considered many species as being extremely polymorphic and disliked describing new taxa from fragmentary herbarium material without having first examined them in the field. His field experience was immense, having personally studied (in his view) 90% of the lichens of Great Britain and Ireland, including overlooked assemblages occurring in deeply shaded acid rock crevices and underhangs (James, 1970). Peter was privileged to work at that time in many largely unexplored regions in various countries and with many of the leading lichen taxonomists of that period. These included Teuvo Ahti, Irwin Brodo, Brian Coppins, Jack Elix, David Galloway, David Hawksworth, Aino Henssen, Hannes Hertel, Hildur Krog, Roland Moberg and Per Magnus Jørgensen. In Britain, he undertook numerous surveys of protected (or soon to be protected) areas for the conservation agencies, also assessing sites for English Heritage, National Trust, Ministry of Defence and other bodies. He enjoyed working with Frances Rose on projects involving lichens as indicators of the ecological continuity of woodlands. Above all, Peter had strong moral principles and took great professional interest in others. His energy and enthusiasm helped to build the lichen section, involving research partnerships with Jack Laundon, David Galloway, John Henry Looney and others. The lichen courses and workshops he led were always popular. One course was attended by home office scientists working for the metropolitan police forensic science laboratory. He also took pride in his match-making abilities. Indeed, Joy Walker, a previous lichen curator, met her future husband, Ian White, - on a fungal foray he organised. Peter co-supervised PhD students in the UK (including Roger Nourish, Tony Fletcher, David Hawksworth, William Purvis and Linda Davies) and abroad (Gintaras Kantvilas) assisting many others well into 'retirement'. Students went on to pursue successful careers, though not necessarily in lichenology. His first student, Roger Nourish, who investigated *Cladonia* chemotaxonomy, was later employed in various roles for HM Inspectorate of Health and Safety. Peter examined several PhD's especially in Europe, including Per Magnus Jørgensen and Tor Tønsberg in Norway, and in UK (Brian Coppins). Since his retirement in 1990 (Brown et al., 1990), several papers were dedicated to him (e.g. Allen, 2008, Purvis, 2010).

Peter was born at St Just in Roseland on the Fal estuary near Falmouth in Cornwall (Galloway, 2014). He came from a family that was strongly marked by teaching as a profession including his father, Wilfrid James, aunt, Evelyn James and sister, Mary James, 8 years his senior. As a much older sister, Mary actively encouraged Peter in botany when he was a child. Peter's love for field work and the natural world stemmed from his childhood whilst botanising and searching for insects (mainly moths) around his family home in Sutton Coldfield, including Sutton Park, the largest urban park in Europe (Field & James, 1965; James & Powell, 2010). He lived through a period of unprecedented change in both cities and the countryside. He experienced smogs, both in Birmingham near where he was brought up, and in

London. These no doubt helped shape his later interests in lichens and air pollution. Educated at Bishop Vesey's Grammar School, Warwickshire (1943-1949), he was awarded a State Scholarship as a University Studentship at Liverpool University under the tutelage of Dr S. Burfield in the Zoology Department. He achieved a 1st class honours degree in Botany (July 1952) with Zoology (1951). After graduating he stayed on as a post graduate student and demonstrator, and after a visit to Bala in North Wales where he was struck by the luxuriance of lichens, he embarked on a PhD. However, his supervisor died, he did not complete his PhD and his new supervisor, knowing nothing about lichens suggested he work as a vacation student at the British Museum (Natural History) to gain further knowledge of the British lichens and curation (Galloway 2014). Peter took up this offer in 1954, was offered employment at the museum on 17 February 1955 and took up a post as a Scientific Officer on 1 June. Signatories to Peter's appointment letter were the Lord Archbishop of Canterbury, the Lord High Chancellor of Great Britain and the Speaker of the Honourable House of Commons. His employment was initially of short duration as he was rapidly called up for 2 years national service. He greatly valued his National Service and would often comment on his experiences saying that 'there is a great difference between intelligence and common sense' implying that someone with a double first from Cambridge did not necessarily make a good soldier. Peter's expertise in graphology led to his first assignment, to No 7 training regiment, Royal Signals, Vimy Lines, Catterick Camp, Yorkshire. Whilst at the 12 Royal Signals Wireless Squadron, he was sent to Bavaria where he had the opportunity to look at lichens and to meet Josef Poelt for the first time. While stationed there he would often travel to Munich at the weekend to see operas. He resumed his duties at the museum on 2 September 1957.

In 1958 Peter attended field meetings held in Wales organised by the British Bryological Society and British Mycological Society to collect lichens for the museum, the same year he co-founded the British Lichen Society and took on the role of Editor of the Lichenologist, a post he held for 20 years. In 1959, Peter was granted 6 month's leave when, as botanist (but acting in fact more as mycologist with lichenological focus), he accompanied an expedition led by Eric Shipton to the Lago Argentino, at that time a relatively unknown and unmapped area of Southern Patagonia close to the Chilean border. Undoubtedly one of Peter's expedition highlights, it resulted in large collections, many of which are still to be identified. He would often recall many amusing incidents. Particularly dramatic was when he awoke one morning to a fishy smell - from a large elephant seal which had joined him in the boat shed where he was sleeping. His interest in the Southern Hemisphere began here and in 1963, supported by a Nuffield Foundation grant, he spent 6 months in New Zealand and Australia sorting and identifying lichen collections made by Dr James Murray and completing unfinished manuscripts. He also visited New Zealand sites himself, including the sub-antarctic Auckland islands, by invitation of the Royal Society, as one of 2 UK biological participants. An amazing 10,614 collections (including 3,062 from the Auckland Islands) arose from this visit and again with many of them still awaiting eager lichenologists to work through the substantial numbers of still unidentified material from unprocessed field packets. In

1969 Peter, ever keen to examine potentially interesting lichens in remote and unexplored habitats, identified and listed lichens collected on the British Joint Services Expedition to North Pearyland, North Greenland.

Throughout his working life Peter was actively involved as a tutor on field courses for the Field Studies Council (from 1958) and other bodies, running field meetings and specialist workshops on lichens which attracted lichenologists from abroad. The then warden of Juniper Hall Field Centre, John Sankey, with whom Peter at that time had a close working relationship, wrote an appreciative letter to the museum in 1963. Ursula Duncan was the strongest influence in developing Peter's interest in lichens (Galloway 2014) which led to his considerable contribution (acknowledged) to her 'Introduction to Lichens' (Duncan 1970). Her interest in the floras of Angus and the Island of Mull were largely instrumental in the initiation of the Flora of Mull Project carried out over the period 1966-1970 by the Botany Department of the museum (Jermy & Crabbe, 1978; James, 1986). His research in Mull was very important to him and he considered the undertaking a wonderful training opportunity. He led by example. The lichenological experiences he gained in Mull no doubt helped develop his interest in other Atlantic Islands. He visited numerous other remote areas in Scotland with T.D.V. Swinscow exploring many areas not investigated by lichenologists since the Victorian era and obtaining important collections.

Peter's ability to recognise and understand lichens led to considerable demand, particularly from the conservation agencies, but also in relation to industry. He was always seizing further opportunities to raise the profile of lichenology. He was a founder member of the International Association for Lichenology in 1967 and its first president (1969-1973). He was promoted to Principal Scientific Officer on 1 June 1968 and, that summer, joint leader of a British Lichen Society field meeting to explore lichens in the Braemar-Aviemore area. In 1971 he became President of the British Lichen Society. Peter's professional interest in air quality began at this time when he visited the Aluminium smelter on Holy Island, Anglesey in both 1970 and 1971 with Brian Coppins. That year, he acted as an expert witness in response to a planning application from Millbrook Power Station, Plymouth. His work 'to foster, encourage and enlarge the study of lichens' was recognised as being an outstanding contribution to Botany (in a traditional wide sense, including Mycology), and his work in relation to lichens and air pollution of considerable practical importance. In 1973 he contributed to 'Air Pollution and Lichens' edited by Brian Ferry and others. In the following year, together with Aino Henssen, he presented their now famous paper showing that the association with specific photobionts could influence the morphology of the lichen thallus to a degree that the resulting lichens had long been classified as separate taxa (James and Henssen, 1976). The 1970's were active years and in 1974 D.A. Ratcliffe, the Nature Conservancy Council Chief Scientist, wrote to the museum requesting Peter's services in connection with oil related developments in NW Scotland. This led to a contract for a comprehensive lichen survey in NW Sutherland (Durness - Erribol). The same year, Peter's involvement with training courses and the oil industry took on an exciting new dimension when Bill Syratt, BP's ecologist responsible for biological monitoring and ecological

training of staff, decided to attend a course Peter was running at Preston Montford. The purpose was to establish if the course was suitable as a training course to expand BP's activities into fresh water and air pollution monitoring. In the event, it was judged so good that a joint course was run in 1976 for staff both outside BP and BP staff. To all intents and purposes, it was originally advertised as two separate courses, but during the first evening all attendees were brought together. The union worked like a dream with both industrial and the non-industrial participants being able to see the other side's point of view. The course became one of the legends at Preston Montford. This association also led to long-term biological monitoring using lichens in conjunction with the environmental group of British Petroleum at Sullom Voe, Shetland.

Peter was quick to seize opportunities to network, including in countries where formerly there had been relatively little contact with UK based scientists. In 1975 he organised the first symposium on lichens as biological monitors of pollution, which according to Peter, was the first of its kind in Europe and participated in the XII International Botanical Congress held in Leningrad, Russia. As officer in charge of the Cryptogamic section at the NHM he was also extremely successful in developing the talents of his staff. During October 1976, Peter, together with marine phycologists, David John and Jim Price, flew on an American air lift command flight to Ascension via Antigua. During an interview for the newspaper, the 'Islander' (issue 278, 12 Nov 1976), the interviewer was struck by Peter as being a 'very warm and sensitive human being'. He quietly told the interviewer that he had found some 200 different kinds but was rather bemused by the lack of lichens by the coast. This aspect continued to intrigue him as he investigated lichens on other islands (including the Azores, Madeira and Porto Santo). In 1977, Peter's interest in the ecology of British lichens led to the publication of a landmark paper on Lichen Communities (James et al. 1977). As Deputy Keeper of Botany, Peter was promoted to Senior Principle Scientific Officer in 1977, a post which he held until his retirement at the end of March 1990. During the last 12 years of his time in the museum as Deputy Keeper, Peter brought wide experience to the development of policies at a time of great change in British Science. His friendly and open attitude to those around him endeared him to both senior and junior staff (Cannon, 2000).

Peter continued to be active in field work e.g. collecting lichens in cool temperate rainforests in Chile (1986, with Brian Coppins, David Galloway and Gerardo S. Guzman), fog zone lichens in Baja California (Dec 88 – Jan 89), an IAL meeting organised by Tom Nash. In 1986 he was awarded a grant by the Nature Conservancy Council to co-ordinate a long-term survey involving quadrat monitoring of selected sites in Western and Southern Britain for acid rain effects. He contributed in 1986 to a successful grant application to NERC co-ordinated by David Hawksworth through Reading University to appoint a research assistant (William) to compile a Flora, the first attempt for 70 years. Peter's contribution was immense, particularly through his ability to sum up characteristic features and anticipate where others may experience difficulties in identifying species. In 1987 he was invited to Italy and awarded Honorary Fellowship of the Italian Lichenological Society: 'L'Assembla della Societa Lichenologica Italiana Riunita in Triesta li 7 Settembre

1987 in Seduta Inaugurale ha nominato Socio Onorario il Prof. Peter James – Il Presidente Prof. Luigi Nimis. In September 1988, Peter, by invitation of the Italian Lichenological Society, was invited to Rome to contribute to a conference on lichens and ancient monuments. He greatly appreciated his professional visits to Italy which no doubt also helped to fuel the renaissance in lichen monitoring there (the framed certificate recording his honorary fellowship hung on the wall of his room in the care home where he lived for the last 9 months).

Peter took great interest in public engagement activities long before they became fashionable. He had the idea for an 'Air Pollution Poster' and planned to get Claire Dalby to illustrate it with her beautiful watercolours (this is still available from the BLS thanks to John Douglas's enthusiasm). In summer 1981, William was working at the Museum on a Summer Vacation Studentship when Peter received proofs of the 'Lichens and Air Pollution Poster'. William recalls Peter comparing the colours with the original Claire Dalby watercolours. Ever with an eye to detail, the colours of the proof were judged to be slightly inaccurate. A further proof was necessary. It was later that year published by the British Museum (Natural History) and BP Educational Services with an information booklet he wrote. As a student, William was immediately struck by Peter's wisdom and personal integrity. He inspired great confidence and this early association was just the beginning of a long term involvement in many projects, In the 1980's Peter began long term survey quadrat monitoring of 40 sites on Skomer Island, to monitor long-term effects of climate change (broadly environmental change), work involving both Pat and William. 'Lichens and metals', a subject dear to Peter's heart, ever since his pioneering publications (James, 1973; James et al., 1977) and his positive collaborations with British Petroleum led to a BM(NH) Centenary studentship fully funded by British Petroleum being awarded to William from 1982-1985. A £1,000,000 sponsorship for the Museum's Ecology gallery, generously funded by British Petroleum, followed a few years later.

Peter retired in 1990 (Brown et al., 1990). On the occasion of his retirement in 1990, Sir Neil Chalmers, then Director of the Natural History Museum, wrote to Peter expressing the thanks of the Trustees and museum. In 1955 lichenology was a 'cinderella' world-wide, the situation now (in 1990) being very different through Peter's 'leading role in this remarkable renaissance'. The new genus '*Japewia*' (Mr *Ja*mes, *Pe*ter *Wi*lfrid) was described in 1990 in his honour (Tønsberg, 1990). In 2005, the new genus, *Jamesiella*, was introduced 'for his outstanding contributions to lichenology' (Lücking *et al*. 2005) and *Peterjamesia* a year later on the occasion of Peter's 75th birthday, especially in view of his fondness for the *Sclerophyton circumscriptum* species complex (Hawksworth, 2006).

In retirement, Peter continued to be active in research, field meetings, identification workshops and local fungal forays. He continued participating on Civil Service selection boards. Peter saw the need for an organisation that would bring together all those with an interest in preserving the flora (including lichenised and non-lichenised fungi) of Britain and the wider world. This would not only involve those with keen scientific concerns, but also those who simply valued the environment and wanted it preserved for the future (Cannon, 2000). He was thus a

founding member in 1990 of the organisation 'Plant Life' and subsequently a Trustee and its Vice President.

Following an earlier unsuccessful bid to NERC to look at the effects of Nitrogen on lichen assemblages this subject re-emerged in an initial pilot study with Imperial College London (IC) to investigate the effects of oxidized and reduced atmospheric N on lichen assemblages for DEFRA in 2002 (Fig. xx). Several further productive contracts ensued in collaboration with Centre of Ecology and Hydrology (CEH) culminating for the first time in a UK wide study. Additional collaboration with Nigel Bell, Linda Davies (IC) and members of the Air Pollution Research in London Network lasted long into his retirement and continued to the development of the National Air Survey for OPAL involving the public in submitting lichen surveys on-line.

In 2010, Peter celebrated his 80th birthday with colleagues and friends near his home in Sutton Coldfield (Anon 2010).

Peter played a major role in the 20th Century developing the Natural History Museum lichen collections into a major international resource. His impact in the BM collection is particularly prominent in the British and Irish Collections where ca 15 % of all incorporated specimens were collected by Peter alone. From his many travels across the world, the most important specimens are from temperate areas of the Southern Hemisphere (see Galloway 2014 for details), the Azores, Ascension and Antigua, and despite an incredible rate of processing, many thousands of specimens still await identification to species level. They are an incredible resource for the international lichenological community. He would be delighted for a new generation of lichenologists to continue working with his collections at the NHM and for his legacy to inspire and advance knowledge of the natural world.

Peter, an outstanding lichenologist with an international reputation, was a remarkable person and his friendship will be greatly missed by many people.

Compiled by Pat and William who both enjoyed a long association with him at the Museum and Holger, the current curator of the lichen collections at the Natural History Museum.

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References:

Allen, A. (2008) Lichen specialities of Lundy: an overview. *Journal of the Lundy Field Society* **1**: 33-40.

Anon (2010a) Peter James - an 80th birthday tribute. *Lichenologist* **42:** 353-354.

Anon (2010b) Peter James 80th Birthday picture. *Bulletin of the British Lichen Society* **107:** 115.

Brown, D.H., Coppins, B.J. and Galloway, D.J. (1990) A birthday tribute: Peter James. *Lichenologist*: **22:** 203-204.

Cannon, J. (2000) Plant People. Peter James. *Plantlife* Spring 2000. 17.

Duncan, U.K. (1970) *Introduction to British Lichens*. T. Buncle & Co. Ltd., Arbroath.

Field, J.C.W. and James, P.W. (1965) *Sutton Park, A History and Guide, Sutton Coldfield*: The Friends of the Park Association / The Sutton Coldfield News.

Fortey, R. (2008) Dry Store Room No. 1. *The Secret Life of the Natural History Museum*. Harper Press.

Galloway, G.J. (2014a) Obituary Peter Wilfrid James 28 April 1930 – 13 February 2014. *International Lichenological Newsletter* **47:** 31-33.

Galloway, D.J. (2014b) Peter Wilfrid James (1930–2014), the Godfather of modern Australasian lichenology. *Australasian Lichenology* **75:** 44–62.

Hawksworth, D.L. (2006) Short Communication. Misunderstanding the status of Ciferri & Tomaselli's generic names necessitates *Peterjamesia* gen. nov. for *Sclerophyton circumscriptum* and an additional species. *The Lichenologist* **38:** 187-190.

James, P.W. (1970) The lichen flora of shaded acid rock crevices and overhangs in Britain. The *Lichenologist* **4**: 309-322.

James, P.W. (1973) Chapter 8. The effect of air pollutants other than hydrogen fluoride and sulphur dioxide on lichens. In: Ferry, B.W., Baddeley, M.S., Hawksworth, D.L., eds. *Air Pollution and Lichens*. London: Athlone Press; pp. 143-75.

James, P.W. (1986) Obituary. Ursula Katherine Duncan. 17 September 1910 - 27 January 1985. *Lichenologist* **18**: 383-385.

James, P.W., Hawksworth, D.L. and Rose, F. (1977) Lichen communities in the British Isles: a preliminary conspectus. In: Seaward, M.R.D., ed. *Lichen Ecology*. London: Academic Press. Pp 295-413.

James, P.W. and Davies, L. (2003) Conservation and Management. Resurvey of the corticolous lichen flora of Epping Forest. *Essex Naturalist* (New Series). **20:** 67-82.

James, P.W. and Henssen, A (1976) The morphological and taxonomic significance of cephalodia. *Lichenology, Progress and Problems.* Academic Press, London. Pp. 27-77.

James, P. [W.] and Powell, M. (2010): The lichens of Sutton Park, Warwickshire. *Bulletin of the British Lichen Society* **107:** 2–17.

Jørgensen, P.M., James, P.W. and Jarvis, C.E. (1994) Linnaean lichen names and their typification. *Botanical Journal of the Linnean Society*. **115**: 261-405

Jermy, A.C. and Crabbe, J.A. (1978) *The Island of Mull. A Survey of its Flora and Environment*. British Museum (Natural History).

Lücking, R., Sérusiaux, E. and Vězda, A. (2005) Phylogeny and systematics of the lichen family Gomphillaceae (Ostropales) inferred from cladistic analysis of phenotype data. *Lichenologist* **37**: 123–70.

Marren, P. (2014) Obituary in the Independent. 30 March 2014. (*http://www.independent.co.uk/news/obituaries/peter-james-lichenologist*).

Purvis, O.W. Chapter 3. 2010. Lichens and Industrial Pollution. *In*: Batty, L.C., Hallberg, K., eds. *Ecology of Industrial Pollution*. Cambridge: Cambridge University Press; p. 41-69.

Tønsberg, T. (1990) *Japewia subaurifera*, a new lichen genus and species from north-west Europe and western north America. *Lichenologist* **22**: 205-212.

White, F.J. and James, P.W. (1987) A new guide to microchemical techniques for the identification of lichen substances. *Bulletin of the British Lichen Society* **57**: 1-41.

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Table 1. Genera, total number of new species, new infraspecific taxa and new recombinations in which Peter was involved.

Genera	Species	Infraspecific taxa	Recombinations
Blarneya D. Hawksw., Coppins & P. James; ***Herteliana*** P. James; ***Melanophloea*** P. James & Vězda; ***Metus*** D.J. Galloway & P. James; ***Sarrameana*** Vězda & P. James; ***Siphulella*** Kantvilas, Elix & P. James; ***Tylothallia*** P. James & H. Kilias; ***Wadeana*** Coppins & P. James	**122**	**16**	**107**

Figures

1. Peter James working in the lichen herbarium, in 1989. Adapted from Brown et al. (1990)
2. Rolf Santesson (left), Peter James and Josef Poelt (right), first IAL field meeting in the Alps, 1973. Adapted from Galloway (2014b).
3. Peter James, Oleg Blum and Taimi Piin (from left to right) attending XII Botanical Congress in Leningrad (1975)
4. Probably taken during July 1976 whilst carrying out a reconnaissance of lichen monitoring sites with Bill Syratt showing Peter at the Ward of Runafirth

Monitoring Site above Mavis Grind, overlooking Sullom Voe in Shetland. Photo: Bill Syratt.

5. Peter instructing Kate Pryor, a former lichen curator, in twig lichen identification. Tycanol, Pembrokeshire. Photo: Pat Wolseley 1994.
6. Peter identifying lichens and demonstrating a recently developed lichen monitoring method in Regent's Park to Feliciano Cirimele and Linda Davies (Imperial College London) during a DEFRA project, the first such collaborative project between the museum and Imperial College undertaken within the A.P.R.I.L. (Air Pollution in London) network. He was interested to note that this cherry (*Prunus* sp.) was then still colonised by *Lecanora conizaeoides* (the pollution lichen). 22 January 2002. Photo: William Purvis
7. Peter assisting Plantlife members to identify fungi at the Oct 2004 at what was then an annual Plantlife foray with Peter at Wildwood (Kent): *http://www.wildwoodtrust.org/index.html*. Photo: Tim Wilkins.

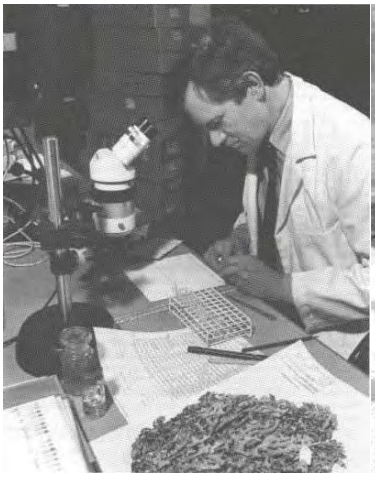


Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

Fig. 7

Reminiscence from Edit Farkas:

I stayed in the Natural History Museum, London between 18 January 1992 and 19 January 1993, but at that time Peter was not an every day visitor in the Lichen Division. I mostly remember his modest personality and still, soft voice from that time. This photograph was taken during the BLS 1993 excursion to Slovakia.

Peter James: an appreciation by Gintaras Kantvilas, his former student and friend in Tasmania.

I was deeply saddened to learn of the death of Peter James, my long-time mentor, teacher and friend. Particularly so as I had anticipated seeing him later this year, and the distance separating us meant that such meetings were uncommon.

There will be many perspectives of Peter's life and contributions to lichenology and lichenologists. My account is of a more personal nature – a snapshot of his far reaching influence on a lad living at the other end of the world.

Peter's connection with Tasmania dates from when he met the Tasmanian industrial chemist and mountaineer, Geoff Bratt, during the Shipton Expedition to Patagonia in 1958–59. Peter inspired an interest in lichens in Bratt, and the two

corresponded for about 20 years, Bratt sending lichens to Peter for comment. A second connection was that one of the founding members of the British Lichen Society, Jocelyn Townrow, was resident in Tasmania and teaching at the Faculty of Agricultural Science.

By the time I developed a curiosity for lichens in 1979, Bratt was dead, his lichens were uncurated in the Herbarium, but I had his old copy of Ursula Duncan's book. I picked up Peter's name from the acknowledgements list in one of Bratt's papers and duly wrote to him. I expect many a lichen career started this way:

"Dear Mr James, I am keen to learn about Tasmanian lichens. Would you be able to help if I sent you duplicates of my collections?"

An affirmative answer came back promptly and there it began. My first parcel yielded a hand-written aerogramme from which I learned my first Umbilicarias, Siphulas and Pseudocyphellarias. Gradually the specimens got trickier, the questions more strident, and the answers more detailed. Through these letters, I learned about sectioning apothecia, observing asci and exciples, tlc and much more.

In August 1981, after about 18 months of correspondence during which time I was enrolled as a higher degree student at the University of Tasmania, Peter came to Tasmania en route to the International Botanical Congress in Sydney. He arrived in Hobart after midnight as a result of severe industrial unrest in the airline industry. In Hobart, people have to walk across the tarmac to the terminal (even today), and I remember studying each passenger in the wintery gloom, for I had no idea what Peter looked like. Needless to say, he was easily spotted – there was enough of the English gentleman about him that set him apart from the locals. There commenced a busy week of collecting by day, sorting specimens by night, talking, teaching, learning. Peter had a tremendous eye, but he was pretty hopeless in the bush. If there was a log on the ground, Peter could be relied on to fall off it or trip over it. You had to watch him near precipices. On one occasion, he ignored my warnings and was hammering fiercely at a rock outcrop, standing in front of a wombat's burrow. Of course the wombat duly returned – a 10 gallon keg's worth of muscle, travelling at speed – and with an "Oh my gosh", Peter, hammer, chisel and specimens all parted company. He skinned his shins for the umpteenth time but he was proud of his ordeal.

From this trip to Hobart, I think Peter surmised two things: firstly, that I had some promise, and secondly, that despite this, I didn't have a clue as to what to do with the knowledge he was giving me. After some discussion, he took on the role of long-distance supervisor of my PhD, which was successfully completed in 1985. I often try to explain to younger folk what this was like. There were no faxes or emails, and phone calls were prohibitively expensive. All the supervision, questions, teaching, debates, comments on draft chapters etc, were undertaken by letter. It is also remarkable that by now Peter was Deputy Keeper of Botany at the NHM, and much of the correspondence from his side was undertaken after hours at home. I think it is fair to say that his life's road was paved with good intentions, but so often the promised letter would come late, or not at all. But we managed. He visited Tasmania again in 1984, for more collecting, and to reassure himself that I was on

the right track. We had more adventures, and this time he revealed he was a rather ruthless card player.

I am very proud to be regarded as "one of Peter's students". He helped so many people, but I believe his formal students were rather few in number. I am also very happy to know that he was proud of me. After my PhD, I forged my own path in lichenology, although Peter's principles – of really knowing a species in the field, of getting the feel of its affinities and relationships, not by fancy techniques but by careful observation of the whole organism and its ecology, of careful collection – all remain deeply instilled in me. Even as I trod my own road, Peter remained a close friend. There was a period of personal upheaval in my life, and Peter took on the mantle of confidant and mentor. For a period of about 12 years, I visited Britain almost annually, and even though we no longer worked on any projects together, he was always interested in what I was working on, and especially whether it was on any particular lichen he had seen himself. We had our routine when I was in London – a long phone call, a catch up meal, either at his beloved Polish Restaurant, Daquise, in South Kensington, or at his place in Edith Road. He was an accomplished cook, but one dish he always insisted on inflicting upon me was his cold curried banana soup, arguably the greatest misuse of bananas known to man. But he was proud of it, and each time I feigned enjoyment, clearly too well, for it was inevitably served up again on my next visit. Each catch up also entailed a night out- the Magic Flute, several Oscar Wilde plays, An Inspector Calls and other classics, were all enjoyed with Peter. After one performance we walked back from the West End to South Ken – a couple of friends enjoying a balmy London evening, chatting about life and lichens.

Our last contact, some years ago now, was about *Menegazzia*, a genus he had made his own during his active lichen years. It was a pleasure to take over the Tasmanian species, which he had aspired to study but was never realistically going to manage. We talked about the project on the phone on one occasion and he was delighted that most of his species concepts were holding up and that more species had turned up. It was a particular pleasure to name two species, *Menegazzia jamesii* and *M. petraea*, in his honour and to dedicate the paper to him. He wrote a letter of appreciation after it was published – a cherished item given that he could be a rather unreliable letter writer.

I owe a great deal to Peter James. To become a lichenologist in Tasmania without help from abroad in the 1980s would have been impossible. Peter invested much of himself in me, and even today, as I go about my work, I am conscious that I owe it to Peter to write this knowledge up, to leave behind a legacy of named specimens and publications. Without Peter, I would certainly not be in the job I have had for the last 26 years. In truth it is a vocation and a way of life, not a job. One should perhaps take cause and effect only so far, but one also can argue that lichens opened up the world to me, allowed me to travel, make some wonderful friends, and through this I even met my life's companion whom I was delighted to introduce to Peter some years ago. He was rather chuffed when I suggested that even that was all down to him, all those years ago when he answered my first letter.

I am sorry that I cannot be here to farewell him, but rest assured that far away, on the underside of the globe, where all those southern hemisphere lichens that he loved so much abound, he will always be warmly remembered.

Gintaras Kantvilas
gintaras.kantvilas@tmag.tas.gov.au

Peter Wilfrid James (1930-2014): the Dunedin (New Zealand) connection, 1962-1963

On 30 September 1959, an Otago University Senior Lecturer in Organic Chemistry, James Murray (1923-1961) (Fig. 1), wrote to Peter James to introduce himself:

"Dear Mr James,

My friend Mr Willam Martin has just shown me a letter from you in which you ask about the possibility of exchange of lichen specimens [Martin had just recently published a paper on New Zealand *Cladonia* (Martin 1958) which no doubt alerted Peter to renewed lichenological activity in New Zealand]. Mr Martin may have mentioned that I have collections covering all groups, and I should certainly be interested in such an exchange. Unfortunately (in a way) I am leaving New Zealand on November 3 and will be away till 1961, but it occurs to me that you may be interested in some particular genus or other group. In that case, and if you can let me know as soon as possible, I may be able to bring some specimens over with me. My interest is largely selfish, of course, since there is no reference material here at all, except a few Norwegian and North

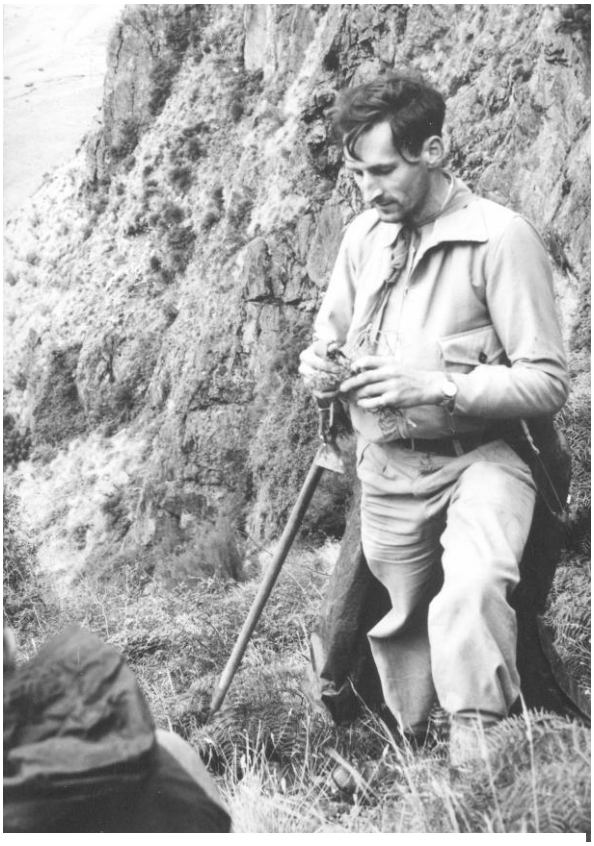


Fig. 1. Dr James Murray in the field, Lake Ohau, South Island, New Zealand, May 1958

American specimens. Consequently identifying even the commonest European species may be a very difficult matter if not impossible.

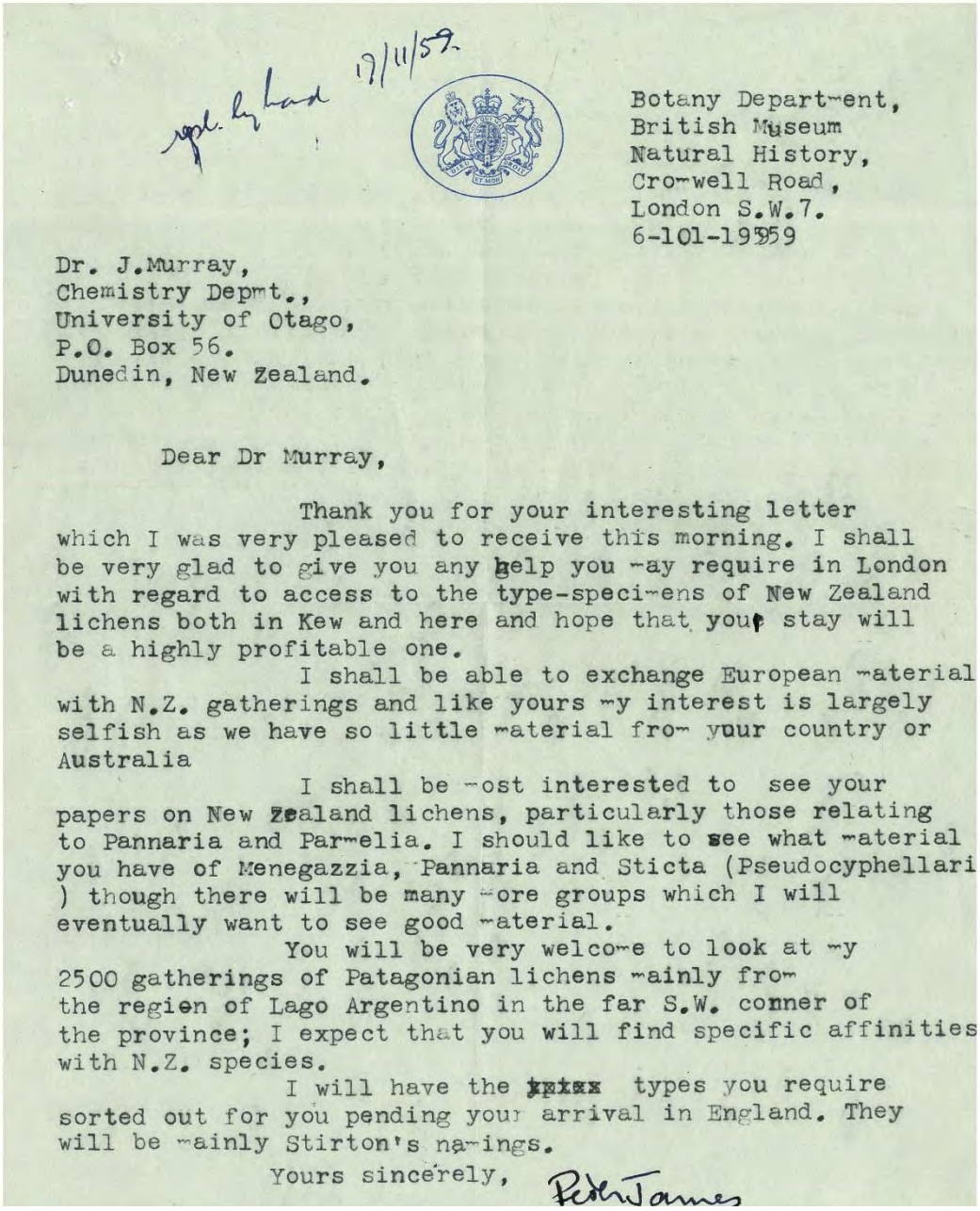
I have papers in the press on Antarctic and Subantarctic lichens and on revisions of the New Zealand *Coniocarpineae* [Murray 1960a], *Peltigeraceae* [Murray 1960c] and *Teloschistaceae* [Murray 1960b], and am working on the *Stictaceae*, *Collematacaeae* and *Parmeliaceae* at present, so I have reasonably well identified material in these families (except *Collema* which defeats me without type material). In general I know the foliose, squamulose and fruticose New Zealand genera, *Lecidea* and a few small crustose genera but not the *Pyrenulaceae* or *Graphidaceae* (*sens. lat.*). The *Cladoniae* of course are well covered by Mr Martin who gets any interesting specimens I find.

I am interested to hear of your South American collections and I would be very glad to see some of this. I have had collections made for me in Chile by members of the Royal Society Darwin Preliminary Expedition last (southern) summer in certain genera.

If you do not need material immediately, there is no need to reply to this letter, as I shall be in London from the end of December and will certainly see you there. I am hoping to find time to examine all the types of New Zealand species available in the U.K. during 1960.
Yours sincerely… Dr J. Murray" (Murray 1959)

James Murray (known widely, and affectionately as Jas, though some colleagues also called him Jim) was awarded a Nuffield Travelling Fellowship in 1959, which allowed him to work for a sabbatical year in the Imperial College laboratory of Sir Derek Barton FRS, FRSE (Nobel Laureate in Chemistry in 1969). His letter to Peter James was quite an impressive calling card, which would have left Peter in no doubt as to the qualities that James Murray would bring to bear on Southern Hemisphere lichenology, and which would make him such a welcome, long-term visitor to the Lichen Section at the BM. James Murray had an inquisitive interest in the literature of Southern Hemisphere lichenology; he had six or seven years of active field experience in southern New Zealand building up an extensive lichen collection (some 5000 numbers), the major genera of which Peter had recently also seen and collected in Patagonia; and besides this he had a wide and detailed knowledge of plants and their chemical constituents, a field that was just gaining relevance in lichenology. Indeed, Murray's his first paper on lichen chemistry (Murray 1950) was later to have important consequences for the taxonomy of *Pseudocyphellaria* and related genera (see Galloway 1988; Galloway & Elix 2013). Peter's response was immediate (James 1959) and he fired off an enthusiastic response (replete with his Museum typewriter's faulty "m" font!) the same morning that Murray's letter arrived, explaining his own interests (Fig. 2).

James Murray and his family lived for the year in a Nuffield Foundation flat, No 6 Prince Albert Road near Lords Cricket Ground. With the Chemistry Department at Imperial College being very close to the Natural History Museum in South Kensington, Peter and James Murray soon met and became good friends. When James Murray realized just how numerous and important the BM's (and Kew's)



17/11/59.

Botany Department,
British Museum
Natural History,
Cromwell Road,
London S.W.7.
6-101-1959

Dr. J.Murray,
Chemistry Depmt.,
University of Otago,
P.O. Box 56.
Dunedin, New Zealand.

Dear Dr Murray,

Thank you for your interesting letter which I was very pleased to receive this morning. I shall be very glad to give you any help you may require in London with regard to access to the type-specimens of New Zealand lichens both in Kew and here and hope that your stay will be a highly profitable one.

I shall be able to exchange European material with N.Z. gatherings and like yours my interest is largely selfish as we have so little material from your country or Australia

I shall be most interested to see your papers on New Zealand lichens, particularly those relating to Pannaria and Parmelia. I should like to see what material you have of Menegazzia, Pannaria and Sticta (Pseudocyphellari) though there will be many more groups which I will eventually want to see good material.

You will be very welcome to look at my 2500 gatherings of Patagonian lichens mainly from the region of Lago Argentino in the far S.W. corner of the province; I expect that you will find specific affinities with N.Z. species.

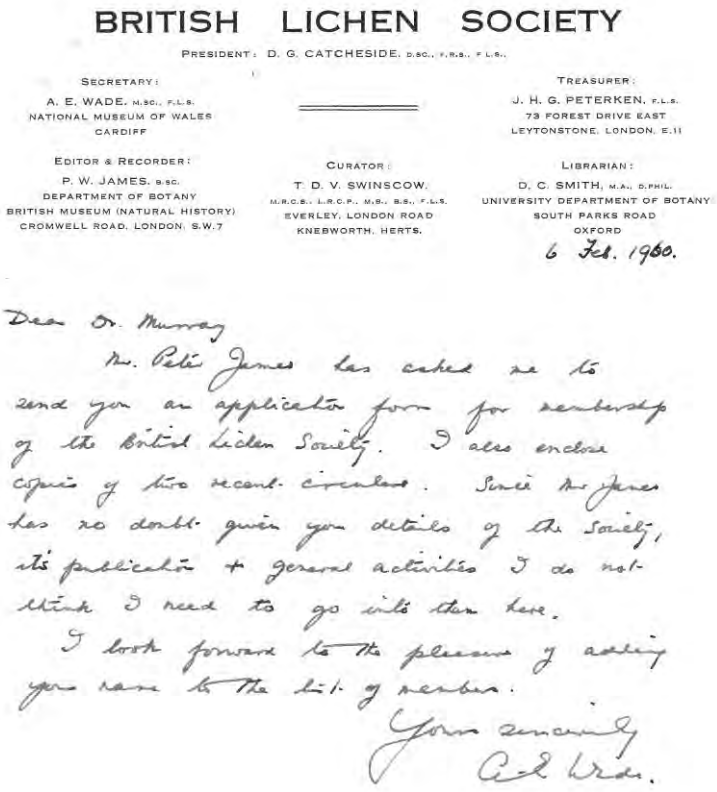
I will have the ~~xxxxx~~ types you require sorted out for you pending your arrival in England. They will be mainly Stirton's namings.

Yours sincerely,

Peter James

Fig. 2. Letter from Peter James to James Murray, 1959

lichen collections were (and especially its New Zealand holdings from the 19th century), he began spending more and more time in the Lichen Section working with Peter on various New Zealand and Southern Hemisphere genera such as *Menegazzia, Psoroma, Pseudocyphellaria* and *Sticta*, genera that were well-represented in herbaria but poorly understood and still poorly collected in New Zealand. Peter encouraged Murray to join the newly established BLS and a letter from Arthur Wade the BLS Secretary offered a warm invitation (Fig. 3). Field trips with the BLS followed, and soon the Lichen Section was awash with specimens as James Murray and Peter James began in earnest their joint world-study of *Sticta* (including *Pseudocyphellaria*, which at that time they still referred to *Sticta*), utilizing as a basis the Museum's and Kew's numerous collections. It was an exciting time and the two lichenologists also eagerly exchanged ideas on *Menegazzia, Nephroma*, the *Pannariaceae* and the *Parmeliaceae*, where temperate Southern Hemisphere taxa far outnumbered those found in the Northern Hemisphere. During the year, James Murray made time to visit Henri Des Abbayes and Michael Mitchell in Rennes, and he also met Magnusson, Degelius, Santesson and Einar and Greta Du Rietz in Sweden (Galloway 2004). It was very much a "hothouse" year for Murray and he quickly filled notebooks with rapidly scrawled notes in pencil as he visited herbaria and trawled through their lichen collections. And his knowledge and enthusiasms rubbed off on Peter James too. In London and Sweden particularly, James Murray found riches almost beyond imagining in



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6 Feb. 1960.

Dear Dr. Murray

Mr. Peter James has asked me to send you an application form for membership of the British Lichen Society. I also enclose copies of two recent circulars. Since Mr James has no doubt given you details of the Society, its publication & general activities I do not think I need to go into them here.

I look forward to the pleasure of adding your name to the list of members.

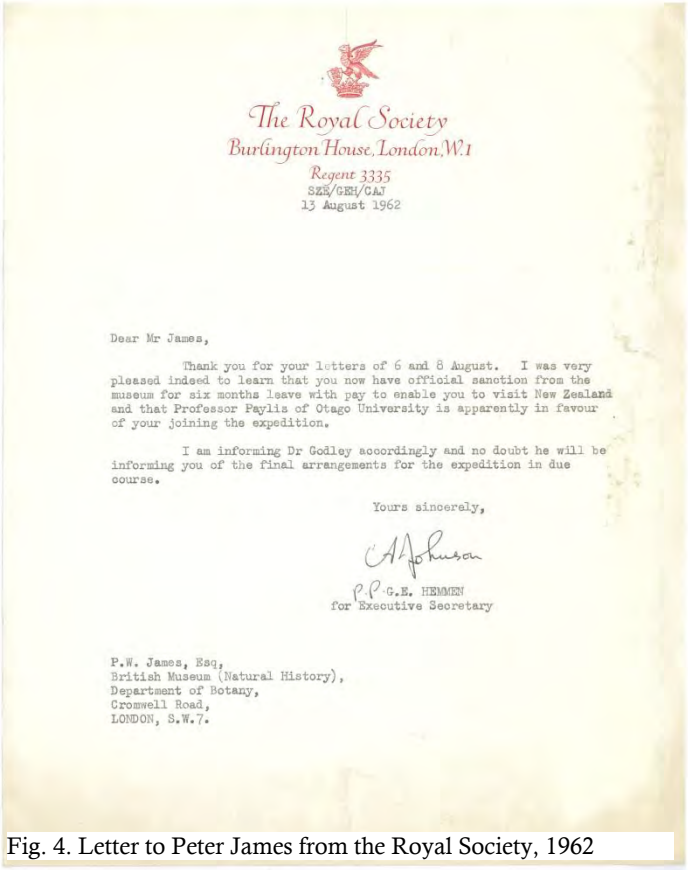
Yours sincerely
A E Wade.

Fig. 3. Letter from Arthur Wade, Secretary of the BLS, to James Murray, 1960

specimens and literature unexampled in their completeness, and years of solid work stretched invitingly ahead from a future analysis of this whirlwind year of basic research.

On his return to Dunedin in February 1961, there were many things to claim Murray's time. A letter to Peter James written on 12 April 1961 details some of these: "…This is not a letter with anything particular to say, except to let you know that I am still alive and have not been completely submerged by work since I returned. I came back to a completely rearranged set of classes – the University has changed over to an Honours B.Sc. instead of B.Sc. plus M.Sc., but we have to run both types of courses simultaneously for some years till we dispose of (one way or another) those already embarked on the older degree structure. The timetables have also been completely rearranged and I don't know where I'm supposed to be half the time without consulting the book. As I suspected, I have new lecture courses to give as well, so I have plenty to do. I was certainly nearly submerged by lichens when I came back, and the chaos was quite something to behold. They had decided to use my room for something towards the end of the year, and had cleared it out into a space below one of the lecture rooms – it took me a full week even to resort the collections into groups. According to my book I have roughly examined, sorted packetted [sic] and labelled more than 1400 lichen specimens since I returned so you will see that I have done nothing with any of the things I was working on in London. I only have time to write to you now because I have reached the end of this schemozzle and am starting on something more serious. I have not even looked at the large Antarctic collections yet; I think they may amount to some 2000 specimens – how about sending me an assistant? ...My stuff hasn't arrived yet, but there was a note yesterday to say that it had been sent. Please give my regards to Laundon and Clive [Jermy]. The lichen section of the BM will really be coming alive with two attacking the collections. The weather has been terrible since we came back, just like the English summer. I'm trying to get the house painted so I know all about it…" (Murray 1961).

There were plans for a paper to be sent to the *Lichenologist* on the development of podetia in *Cladia* from material I had taken to Jas from bogs in Southland [these I later recorded in my first lichen paper (Galloway 1966)]; advancement of the large key and monograph on *Sticta*; and the work on Campbell Island and Antarctic lichens, all of which Jas had in the pipeline. Alas, his untimely death in June 1961 (Galloway 2011) put an end to these glorious plans. James Murray's widow, Audrey, gifted his herbarium, notes and papers to Otago University and arrangements were made by the University, the Nuffield Foundation and the Royal Society of New Zealand to bring Peter James out to Dunedin for 6 months at the end of 1962 to curate the extensive Murray lichen collection (now in OTA) and also to participate in a Royal Society field project to the Auckland Islands in January-February 1963 (Godley 1985) (Fig. 4). The letter from Otago University's Professor of Botany, Geoff Baylis on 1 August 1961 formalising the invitation to Peter sets the scene:



The Royal Society
Burlington House, London, W.1
Regent 3335
SZE/GEH/CAJ
13 August 1962

Dear Mr James,

Thank you for your letters of 6 and 8 August. I was very pleased indeed to learn that you now have official sanction from the museum for six months leave with pay to enable you to visit New Zealand and that Professor Paylis of Otago University is apparently in favour of your joining the expedition.

I am informing Dr Godley accordingly and no doubt he will be informing you of the final arrangements for the expedition in due course.

Yours sincerely,

C A Johnson

P.P. G.E. HEMMEN
for Executive Secretary

P.W. James, Esq,
British Museum (Natural History),
Department of Botany,
Cromwell Road,
LONDON, S.W.7.

Fig. 4. Letter to Peter James from the Royal Society, 1962

"…Dear Dr James. I understand that you have learnt from Dr Scott [Dr George A.M. Scott (1933-1998), then Lecturer in Botany at Otago, later Reader in Botany at Monash University and then Master of Queen's College, Melbourne University] of James Murray's tragic death and are anxious, as we are, that as much as possible should be done to make secure what he had so far accomplished. His wife and I both believe it was his intention to deposit his herbarium and reprints with this Department and we have taken charge of them and his papers meanwhile, though we shall not be able to house them properly until the University accepts the gift and makes proper provision for it.

Some of the papers for publication have seemed sufficiently far advanced to be sent off to the editors for whom they were intended, but the files on *Sticta Psoroma* and *Mennegazzia* [sic.] are not in this state, and there are about eight other partially prepared papers. The herbarium contains about 10,000 packets. To sort this material and get it into some uniform stowage is not, I think, beyond us but only a specialist would be able to make proper use of the partially finished manuscripts and collections related to them.

I wonder if there is any prospect of your accepting an invitation to come and work here for a period – perhaps particularly with a view to completing the *Sticta* monograph which was, I understand, intended to be a collaborative effort, but also to make sure that the task of winding up Jas's botanical affairs is as expertly accomplished as possible. Dr. Corbett of the Nuffield Foundation, has little doubt that some travel grant and allowance would be forthcoming from them. The University also has some resources which it might employ. They would certainly wish to assist such a project,

If there is no prospect of your coming, or if it would assist your decision in this matter, I would post over to you the drafts in question – and any material and other details that you might need.

Audrey Murray and her family have aroused great sympathy and admiration for the way they have accepted their loss. Fortunately, there has been much for them to do.

I hope I do not confront you with a difficult decision. I realize that you will have many demands on your time.

Yours sincerely,
G.T.S. Baylis
Professor of Botany…" (Baylis 1961).

Fig. 5. Peter James, *Evening Star*, 19 October 1962

This request was agreed to and Peter James was given leave of absence from the Museum and arrived in Dunedin in October 1962 for a 6-month stay on full pay. He was given a room at Knox College, then the home of the University's Faculty of Theology, and a seat at High Table with the Master, Dr Hubert Ryburn (1897-1988) who was also the University's Chancellor. The *Evening Star* newspaper of Friday 19 October 1962, noted Peter's arrival in Dunedin (Fig. 5) with the headline "**U.K. Professor to Carry on City Man's Work**", amplified by the following notice: "… An association in London between two Nuffield Fellows, a Dunedin lecturer in chemistry and an English botanist, with a common interest – lichens- has resulted in a visit to Dunedin of Mr P.W. James, to complete the work of the late Dr James Murray, killed in a motor accident last year. Mr James who is senior scientific officer at the Natural History Museum (British Museum), London, has come to spend six months working in the Botany Department at Otago University, on a Nuffield Travelling Fellowship.

He met Dr Murray when he was a Nuffield Fellow studying chemistry and lichens in London. After Dr Murray's death, his wife presented his large and valuable collection of lichens to the University of Otago. "I am hoping to finish Dr Murray's incompleted papers on his collection" Mr James said. It was not so strange that Dr Murray, whose work was in chemistry, had been interested in lichens, because lichens belonged to one of the few groups of plants in which the chemical part was of considerable importance, Mr James said.

The loss of Dr Murray was a serious blow to lichenology in the Southern Hemisphere because no other expert in this field is centred in the Southern Hemisphere. "He was going to be one of the most outstanding people in his field."…As well as working in Dr Murray's collections, Mr James would be comparing the flora of New Zealand with what he had seen in an expedition to the Andes with Mr Eric Shipton in 1958-59. There was a close relationship between the flora of New Zealand and that of South America and of Tasmania he said…"

In November, after final exams had finished and thanks to a kind offer from Geoff Baylis, I was given the opportunity to work over the summer vacation as Peter's assistant (8 weeks employment at £12 a week), which began for me a steep

learning curve in lichenology and also the start of a long and productive friendship with Peter.

Peter was given the large Stage I laboratory in the basement of Otago Museum (eventually he all but completely occupied the Senior Botany laboratory as well), and here we unloaded the Murray lichen collection from the cartons in which they were stored in the Chemistry Department. All horizontal surfaces were soon covered in a sea of brown manila University of Otago envelopes and paper packets. These were dated and numbered and often too with Jas's brief notes plus his indication of family and genus, but apart from the *Peltigeraceae, Nephromataceae, Teloschistaceae* and *Sphaerophorus sens. lat.*, many collections were not named to species, although most had family and genus affiliations noted by Murray. It was a big task.

Peter wisely decided that specimens should be stored in folded, printed paper packets (Fig. 6) which the University printers obligingly made. This brought the Otago lichen collections into line with standards followed in most Northern Hemisphere lichen herbaria. Almost at once he began adding his own Dunedin collections to the confusion of packets (later added to by material from Fiordland, Central Otago and the Auckland Islands), drying specimens on one of the benchtops before packeting and labelling them in the evenings. Most days Peter would sit at a dissecting binocular, write the specimen's name in pencil and I would then label the packets in ink in a not particularly good herbarium hand (Mr Martin's packets in contrast were praised by Prof. Baylis for the neatness of his "fine herbarium hand") and place the completed packets on herbarium sheets that were then stored in manila folders. This in turn necessitated the making of a range of extra herbarium cabinets to accommodate the rapidly growing lichen herbarium, the foundation of the modern lichen collection at OTA.

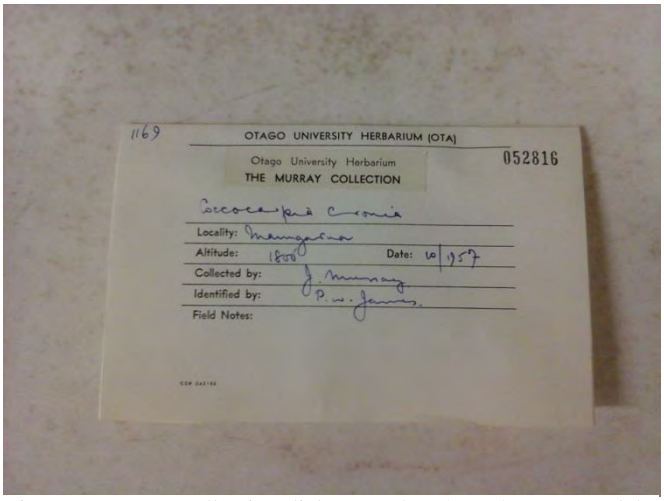


Fig. 6. Murray Collection lichen packet (OTA) annotated by Peter James

Peter was unfailingly pleasant and helpful to work alongside. He seemed phenomenally knowledgeable and not only about lichens. As we worked he would ask me questions about various things, such as "what had I recently read?" I rather pompously replied to this that I read the journal *Nature* each week (to which I had taken a year's subscription! – and which I found *very* hard going) and books about Biochemistry. "How boring for you" was his reply, "have you read Jane Austen?" When I confessed that I hadn't, he then told me rather tartly that I was missing out on some of the greatest of English writing. He suggested that I needed to correct my

deficiencies in reading and recommended that for a start, I should look at Angus Wilson's short stories and then try the novels. This I did (Peter's favourite was "*The Middle Age of Mrs Eliot*" published to critical acclaim in 1958), and they were a series of revelations to me. *Nature* was gratefully put to one side, and some long-overdue intelligent reading began. At least we were on common ground with music, as I played both the piano and the 'cello and Peter had a wide knowledge and appreciation of music for both instruments. In his kind, helpful and unobtrusive way he gently widened my horizons, showing that it was possible to be a rigorous scientist yet have a wide appreciation of art, music and literature. I began to learn about lichens and lichenology and much else besides in those fascinating and highly informative weeks with Peter, and a little of his lightly worn sophistication began to rub off on me.

Towards the end of November when most of Knox College's students had departed university after examinations, High Table was discontinued and Peter took his meals with returning 6th year Medical students who were back in College to sit finals. Table talk was dominated by abstruse and noisy medical discussion, which I think Peter found rather trying. He once quite successfully silenced a particularly boring would-be doctor with the elegant putdown "and do *you* know that *Aspidistras* are fertilised by snails?" as a rejoinder to a particularly unsavoury medical observation.

In between times during our lichen work, various exasperated Botany staff members would come in to see what we were doing as a temporary respite from marking end of year examination papers. I remember Brenda Slade suddenly appearing from her room and asking us "think of a number". When I replied "seven" she said "well, that's more than I would have given him!"

At this time too, the visiting external examiner in Botany was Prof. John S. Turner (1908-1991), a plant physiologist from Melbourne University and from 23-29 November, he and Peter James were taken on a field trip to Central Otago (the Old Man Range), Haast Pass (Mt Brewster) and Fiordland by Geoff Baylis and Alan Mark. Geoff was a Member of the Fiordland National Park Board, and Alan was keen to show the party a series of re-vegetating landslides on the shores of Lake Thompson near the middle fiord of Lake Te Anau on the track westwards to George Sound. These landslides had been worked on the previous May by a group of science student's under Alan Mark's direction and he was keen to have Peter's views on the lichen components in the various successions developing on the landslide surfaces. Peter told me that he was going away for a few days "into the Fiordland woods" as he termed it, and left me to the backlog of curating. It was baptism by fire for him: Fiordland sandflies; everyone bailing a leaking dinghy like mad across Lake Hankinson while Geoff Baylis rowed; and, worst of all, the terror of a high solitary walkwire across a stream. This Peter could not stomach at all and instead he chose to wade across far below, dangerously up to his armpits in rushing, icy water. The rewards from that memorable trip were his collection of a wonderful series of photosymbiodemes of *Sticta filix* and its associated *Dendriscocaulon* from the spray zone of a waterfall near the Thomson Hut (James & Henssen 1976: 35-37; Purvis 2000: 13). Peter also made extensive notes on lichens associated with the various

successional stages of the Lake Thomson landslides which later appeared as a contribution to the paper that Alan Mark organized (Mark et al. 1963). After this trip Peter never again referred to "woods" in a New Zealand context, using instead "bush" or "forest" in usual New Zealand parlance.

Since he was due to head south to the Auckland Islands from Lyttelton on Boxing Day 1962, Brenda Slade (1922-1993) (later Brenda Shore) suggested a pre-Christmas field trip (17-20 December) to Arthur's Pass. On our way north to Christchurch, Peter astounded shoppers in a supermarket in Ashburton by purchasing 18 rolls of toilet paper for wrapping rock specimens. Getting to the Pass involved on the way, several hours in a slow, lichen-enquiring ascent of Foggy Peak from Porter's Pass, where I first saw swards of *Psoroma buchanani* (we were soon to see Buchanan's original collection of this), and Peter remarked on the very fine form of *Neuropogon ciliata*, that later became *Usnea subcapillaris* (Galloway 1968; Walker 1985). In the afternoon we stopped at the Castle Hill limestone where Peter pointed out what we now call *Baglietoa baldensis* with its "hot-cross-bun" fissured perithecia, and the salmon-pink *Psora decipiens* on the soil below the tors. Our accommodation at the Pass was pretty basic, a two-bedroomed cabin with a long drop out the back in the beech trees, where a thick black column of angry mosquitoes would rise up whenever you opened the lid. We emptied a can of flyspray into the offending morasse to make it habitable! But two days lichenologising in the environs of the Pass were more than ample compensation for such inconveniences. Again, Peter's haul of lichens was comprehensive, and with a consonant widening of my knowledge as a result of being in the field with him as an added personal bonus.

Peter returned from Auckland Island trip a month later, totally exhilarated and with an impressive collection of lichens from Enderby Island and from the main island in the vicinity of the base camp, including specimens of *Steinera* (Fig. 7) that were to provide the stimulus for a later treatment of this fascinating genus (Henssen & James 1982). Since Knox College was closed over the long summer vacation, Peter stayed for the rest of his time in Dunedin with Geoff Baylis in his large Victorian house (*Threave*) at 367 High Street, where he impressed his host (himself a very accomplished and imaginative cook) with his abilities in the kitchen. Peter was also pressed into service to deliver a talk on modern English music to the Otago Branch of the Federation of University Women, of which Brenda Slade was then President. Peter worked enormously long hours to make sure that the Murray collection was left in as fine a state as was humanly possible (not everything of course was able to be identified to species), and that his own New Zealand and Auckland Island collections were also adequately packed for their long journey back to London. Together with George Scott he worked on James Murray's keys to New Zealand lichens to get them into publishable shape (Murray 1962, 1963a, 1963b). He already had with him in London (earlier posted to him by Geoff Baylis) a large file of Murray's manuscripts and hoped eventually to prepare some of these for publication. Trips to Central Otago (Old Man Range, Mt Brewster, Hunter Valley) and Maungatua were squeezed in between long days of curating and labelling, and by the end of March, Peter's work in Dunedin was accomplished. It was a memorable and highly productive 6-month visit. At the beginning of March, I began work as a research student in

Fig. 7. *Steinera sorediata*, Mt Cargill, Dunedin, the type locality for this species described by Peter James and Aino Henssen.

Biochemistry, my thesis topic being an analysis of the simple and complex lipids of a series of New Zealand lichens, the descriptions of which Peter kindly wrote out for me. He even charmed the Professor of Biochemistry, N.L. Edson (1904-1970) [H.A. Krebs's first PhD student at Cambridge (1933-1936)], with the importance of a chemical investigation of lichens. Prior to this, Edson was far from convinced that I had a suitable subject. Peter afterwards wittily remarked of Edson, who was rather short, "…he reminds me of the Dormouse in *Through the Looking Glass*…"

A letter that William Martin wrote to Peter James on 4 April 1963 gives a good flavour of that sprightly septuagenarian's lichen interests, activities and hopes (Martin was 77 at the time of writing and only "took up" lichens seriously at age 68) and also of Peter's impact on the local lichen scene:

"…Dear Mr James,

It was with much regret I learned of your departure from Dunedin the day before I rang the botany Dept. to invite you to my home and see my collection of Cladonias, etc. I have been moving about so much – a week in Christchurch where I had to give the Banks Lecture to the Roy. Hort. Soc. N.Z. and conduct some Masonic functions [Martin was then Grand Master of the Grand Lodge of New Zealand] - then a week at home while you were absent from Dunedin, then a week in Central Otago, I called at the lab. one day with a box of lichens from which you were

to select anything of interest to you. I do not yet know if you had time to scan them. I understand from the young chap [D.J. Galloway!] who was assisting you that one of the Stictae was new. From Dr Mark I learned of your own copious collections, so I hope that science will greatly benefit from your few months in N.Z. I am sorry Du Rietz did not work up his very copious collections of N.Z. lichens. I hope this winter (D.V. & W.P.) to work over my material and check the tentative names. I should be able to get them into their correct genera anyway, though lack of equipment for spore measurements etc. is my biggest handicap.

Fig. 8. IAL Field Meeting at Boyle Lodge, New Zealand, September 1981. Peter James second from left in front row.

" I would be most interested to receive copies of any papers you may publish on the N.Z. collections. Murray's Key to N.Z. genera is appearing currently in "Tuatara" [Murray 1962, 1963a, 1963b]. He has added some genera since I got from him a copy of his initial draft. He was a fine chemist and was proving an equally good botanist. We spent a lot of time together and despite our different ages seemed to click particularly well. I hope the monograph on the Stictae in particular will not be unduly delayed. The North Island lichen flora has never received adequate collection or study, but Jack Thomson spent a lot of time collecting in South Island & in Stewart Island. My own collections now number many thousands and will finally go to the D.S.I.R at Lincoln. What we need most out here are authentic keys to the species level of every genus represented. The location and transcription of the original descriptions is slow and tedious and access to type material is so impossible for most of us, that progress must of necessity be very slow for N.Z. students.

I regret exceedingly having failed to contact you again, but anything I can do to procure local material you may desire I shall be only too happy to attempt. Best wishes for a successful outcome to your visit to N.Z.

Yours sincerely, Wm. Martin" (Martin 1962).

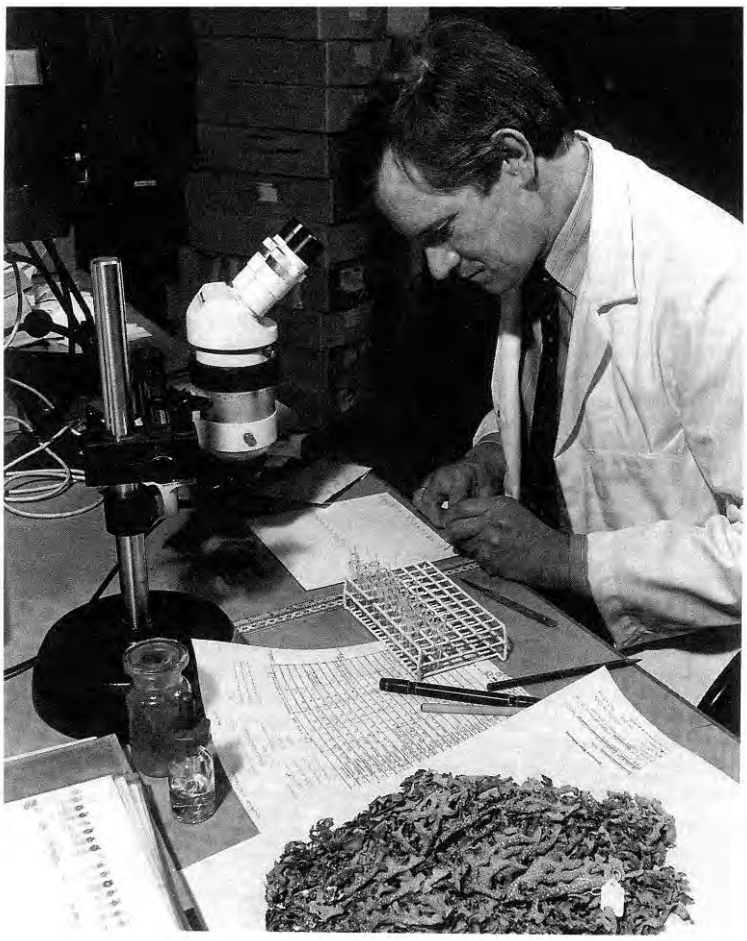


Fig. 9. Peter James in the Lichen Section (BM) late 1980s

Peter's legacy from those six, hard-working months in Dunedin is considerable. It ranges from his careful curating and naming of the Murray lichen collection at OTA, to his active encouragement of New Zealand lichenology from that time forward. Directly and indirectly this led eventually to the publication of *Flora of New Zealand Lichens* (Galloway 1985, 1990), in which he played a pivotal and extremely helpful role; to his work with Joy White on Southern Hemisphere *Nephroma* (White & James 1988); and to his own work on *Menegazzia* (James 1985; James & Galloway 1992) all stemming from the initial enthusiastic surveys with James Murray in London in 1960, consolidated by his visit to Dunedin and the Auckland Islands. Peter returned to New Zealand in 1981 for the IAL field meeting at Cass and the Boyle Lodge (Fig.

8), but on that memorable trip he did not have time to visit Dunedin, where he had done so much to foster the development of modern New Zealand lichenology. By 1981, lichenology in New Zealand, thanks to his influence, was an established and thriving pursuit.

When Peter retired from the BM in 1990, the Colin Keates portrait of him (Fig. 9), that provides the frontispiece for his *Lichenologist* Festschrift (Brown et al. 1990), shows Peter marking up a TLC plate with a handsome lichen specimen on a sheet beside him on his work bench at the BM. The lichen is *Pseudocyphellaria coriacea*, and the specimen was given to him in Dunedin in March 1963, from a collection made on the Doubtful Sound Track. Ever after it held a special New Zealand memory for Peter and he kept it for lichen demonstrations, constantly exhibiting it over the years to a wide range of visitors and notables to the Lichen Section. For him, I think, it helped keep Dunedin (and New Zealand) memories green. I remember with great affection and gratitude, our times together in Dunedin 52 years ago, and the encouragement, advice and help that he gave me then and subsequently (Galloway 2014). It was a richly diverse legacy.

References

Baylis, G.T.S. (1961) Letter to P.W. James, 1 August 1961 [P.W. James correspondence file in possession of the author]

Brown, D.H., Coppins, B.J. & Galloway, D.J. (1990) A birthday tribute: Peter James. *Lichenologist* **22** (3): 203-204.

Galloway, D.J. (1966) Podetium development in the lichen genus *Cladia. Transactions of the Royal Society of New Zealand* (*Botany*) **3**: 161-167.

Galloway, D.J. (1968) A new variety of *Usnea* (*Neuropogon*) *ciliata* DR., in southern New *Zealand. New Zealand Journal of Botany* **6**: 470-472.

Galloway, D.J. (1985) *Flora of New Zealand Lichens*. P.D. Hasselberg, Government Printer, Wellington.

Galloway, D.J. (1988) Studies in *Pseudocyphellaria* (lichens) I. The New Zealand species. *Bulletin of the British Museum* (*Natural History*) *Botany* **17**: 1-267.

Galloway, D.J. (1990) Peter James on occasion of his retirement. *International Lichenological Newsletter* **23** (2): 35-38.

Galloway, D.J. (2004) The Swedish connection in New Zealand lichenology, 1769-2004. *Symbolae Botanicae Upsalienses* **34** (1): 63-85.

Galloway, D.J. (2011) "…none at present from the Southern Hemisphere": joining the BLS in 1959. *British Lichen Society Bulletin* **109**: 48-55.

Galloway, D.J. (2014) Peter Wilfrid James (1930-2014): the Godfather of modern Australasian lichenology. *Australasian Lichenology* (submitted).

Galloway, D.J. & Elix, J.A. (2013) Reinstatement of *Crocodia* Link (Lobariaceae: Ascomycota) for five species formerly included in *Pseudocyphellaria* Vain. *Australasian Lichenology* **72**: 32-42.

Godley, E.J. (1985) A visit to the Auckland Islands in the summer of 1962-63. *Tuatara* **28**: 1-13.

Henssen, A. & James, P.W. (1982) The lichen genus *Steinera. Bulletin of the British Museum* (*Natural History*) *Botany* **10**: 217-229.
James, P.W. (1959) Letter to James Murray, 6 October 1959 [James Murray Correspondence, OTA]
James, P.W. (1985) *Menegazzia*. In: D.J. Galloway, *Flora of New Zealand Lichens*. P.D. Hasselberg, Government Printer, Wellington. Pp. 274-291.
James, P.W. & Galloway, D.J. (1992) *Menegazzia*. *Flora of Australia* **54**: 213-246.
James, P.W. & Henssen, A. (1976) The morphological and taxonomic significance of cephalodia. *In*: Brown, D.H., Hawksworth, D.L. & Bailey, R.H. (Eds) *Lichenology*: *progress and problems*. Academic Press, London & New York. Pp. 27-77.
Mark, A.F., Scott, G.A.M., Sanderson, F.R. & James, P.W. (1964): Forest succession on landslides above Lake Thomson, Fiordland. *New Zealand Journal of Botany* **2**: 60-89.
Martin, W. (1958) The *Cladoniae* of New Zealand. *Transactions of the Royal Society of New Zealand* **85**: 603-632.
Martin, W. (1962) Letter to P.W. James, 4 April 1963 [P.W. James correspondence file in possession of the author]
Murray, J. (1959) Letter to P.W. James, 30 September 1959 [P.W. James correspondence file in possession of the author].
Murray, J. (1960a) Studies of New Zealand lichens. I - The Coniocarpineae. *Transactions of the Royal Society of New Zealand* **88** (2): 177-195.
Murray, J. (1960b) Studies of New Zealand lichens. II - The Teloschistaceae. *Transactions of the Royal Society of New Zealand* **88** (2): 197-210.
Murray, J. (1960c) Studies on New Zealand lichens. Part III - The family Peltigeraceae. *Transactions of the Royal Society of New Zealand* **88 (**3): 381-399.
Murray, J. (1961) Letter to P.W. James, 12 April 1961 [P.W. James correspondence file in possession of the author]
Murray, J. (1962) Keys to New Zealand lichens Part 1. *Tuatara* **10**: 120-128.
Murray, J. (1963a) Keys to New Zealand lichens Part 2. *Tuatara* **11**: 46-56.
Murray, J. (1963b) Keys to New Zealand lichens Part 3. *Tuatara* **11**: 98-109.
Purvis [O.]W. (2000) *Lichens*. The Natural History Museum, London.
Walker, F.J. (1985) The lichen genus *Usnea* subgenus *Neuropogon. Bulletin of the British Museum* (*Natural History*) *Botany* **13** (1): 1-130.
White, F.J. & James, P.W. (1988) Studies on the genus *Nephroma* II. The southern temperate species. *Lichenologist* **20**: 103-166.

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From naming butterflies and meadow flow'rs
to Patagonia and British shores,
the lichen hunter stalked elusive prey -
the lowly lichen – symbiotic form.

From Asian woods and islands of Azores
to mountain slopes and sheltered underhangs,
and growing oft where little else succeeds,
reflecting atmospheric quality.

Some flat and coloured, branched, or leaf-like shape,
examined closely with a X10 lens,
then scraped or chiselled, deftly cut away,
collected into labelled paper bags.

Specimens, all stored in vast collections,
catalogued, studied taxonomic'ly.
One collector's name stands above the rest,
a founder member of the BLS.

With friends and global colleagues gathered round,
discussing lichens at the old Daquise,
we shared his knowledge over fifty years –
his dedication - now our heritage.

[anonymous contribution]

Peter James (1930-2014) and forensic lichenology

When Peter retired as Deputy Keeper of Botany and Head of the Lichen Section at the Natural History Museum (BM) in 1990 (Brown et al. 1990), he had to vacate his room which was, for people with long memories, upstairs above the Crypt and tucked away under the roof behind the cryptogamic journal collection and the Crypt Tracts (a famous reprint collection). Peter had been ensconced there for many years and his room was bulging at the seams with all sorts of things. Typically of Peter, he felt disinclined to vacate his old room, even though for most of his working life at the Museum he spent many more hours down in the Lichen Section than he did cloistered in his room, unlike most of the other Heads of Section in the Crypt. He was always very much part of the day-to-day and minute-by-minute life of the Lichen Section. When push eventually came to shove Peter asked Joy White and me to assist with the removal of his effects and this we happily agreed to, though once


WEST MIDLAND FORENSIC SCIENCE LABORATORY,
NEWTON STREET, BIRMINGHAM, 4.

BY AIR MAIL

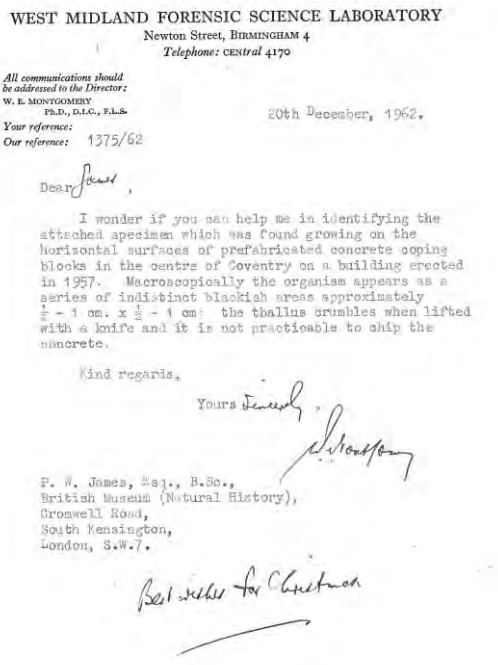
3d
NATIONAL PRODUCTIVITY YEAR

P. W. James, Esq., B.Sc.,
~~British Museum (Natural History),~~
~~Cromwell Road,~~
~~South Kensington,~~
~~London, S.W.7.~~

% Professor C. Baylis,
Department of Botany,
University of Otago,
Dunedin C 1,
New Zealand.

F. d. L.

Fig. 1 Letter to Peter James, re-addressed to Dunedin by Jack Laundon, 27 December 1963.


WEST MIDLAND FORENSIC SCIENCE LABORATORY
Newton Street, BIRMINGHAM 4
Telephone: CENTRAL 4170

All communications should be addressed to the Director:
W. E. MONTGOMERY
Ph.D., D.I.C., F.L.S.

Your reference:
Our reference: 1375/62

20th December, 1962.

Dear Jack,

I wonder if you can help me in identifying the attached specimen which was found growing on the horizontal surfaces of prefabricated concrete coping blocks in the centre of Coventry on a building erected in 1957. Macroscopically the organism appears as a series of indistinct blackish areas approximately ½ - 1 cm. x ½ - 1 cm: the thallus crumbles when lifted with a knife and it is not practicable to chip the concrete.

Kind regards,

Yours sincerely,

W. E. Montgomery

P. W. James, Esq., B.Sc.,
British Museum (Natural History),
Cromwell Road,
South Kensington,
London, S.W.7.

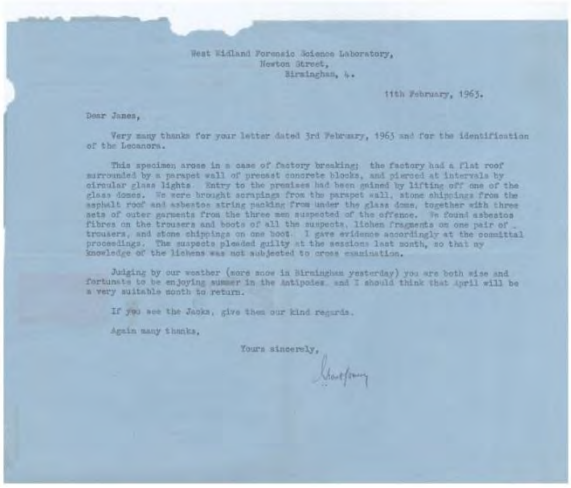
Best wishes for Christmas

Fig. 2 Letter to Peter James from Dr W.E. Montgomery, West Midlands Forensic Science Laboratory, 20 December 1962

started on the task Peter blithely left us to it and came back only occasionally to answer queries on what should be done with this or that.

His cupboards, drawers and desk were all full of "stuff", and after careful consideration it was either repatriated elsewhere, saved or discarded. We even found the iceaxe and crampons that Eric Shipton insisted upon for glacier travel on the 1958 Patagonian expedition (Shipton 1963, 1969), organised by the late Geoff Bratt from Tasmania who was then completing his PhD at Imperial College. Geoff was the main impetus behind the expedition and the person who persuaded Shipton to come as leader which ensured financial success for the venture. Peter, on leave from the Museum, provided the science base, from which many important South American discoveries were later to come.

We presented Peter with a great pile of cardboard files, for him to sort out. As he went through them, he handed me a plain manila file saying "You better have this". It was a file of correspondence, and newspaper cuttings relating to Peter's visit to New Zealand in 1962-1963, the period when, as a callow Biochemistry student, I was given a summer holiday job as his assistant. Peter had a six-month leave of absence from the Museum (funded by the Nuffield Foundation) to curate the lichen collection of James Murray (1923-1961) that was gifted to the University of Otago after Murray's death. During this time, Peter also



West Midland Forensic Science Laboratory,
Newton Street,
Birmingham, 4.

11th February, 1963.

Dear James,

Very many thanks for your letter dated 3rd February, 1963 and for the identification of the Lecanora.

This specimen arose in a case of factory breaking; the factory had a flat roof surrounded by a parapet wall of precast concrete blocks, and pierced at intervals by circular glass lights. Entry to the premises had been gained by lifting off one of the glass domes. We were brought scrapings from the parapet wall, stone chippings from the asphalt roof and asbestos string packing from under the glass dome, together with three sets of outer garments from the three men suspected of the offence. We found asbestos fibres on the trousers and boots of all the suspects, lichen fragments on one pair of trousers, and stone chippings on one boot. I gave evidence accordingly at the committal proceedings. The suspects pleaded guilty at the session last month, so that my knowledge of the lichens was not subjected to cross examination.

Judging by our weather (sore snow in Birmingham yesterday) you are both wise and fortunate to be enjoying summer in the Antipodes, and I should think that April will be a very suitable month to return.

If you see the Janks, give them our kind regards.

Again many thanks,

Yours sincerely,

Fig. 3 Letter to Peter James from Dr W.E. Montgomery, West Midlands Forensic Science Laboratory, 11 February 1963.

took part in an expedition to the Auckland Islands organised by the Royal Society of New Zealand. The papers in Peter's file all relate to this time in New Zealand.

In sorting through my own papers and photographs of Peter for material relevant to an Obituary notice of Peter for *Australasian Lichenology*, I came back to the PWJ New Zealand 1962-63 manila folder and went careful through its contents. Surprisingly, I found two letters from Dr W.E. Montgomery of the West Midland Forensic Science Laboratory in Birmingham. The first, dated 20 December, 1962 was redirected to Peter in Dunedin by Jack Laundon on 27 December (Fig. 1). By this time, Peter had departed for the Auckland Islands (leaving Lyttelton on Saturday 22 December 1962) and did not return to Dunedin until the 22 of January, 1963. Dr Montgomery's letter enclosed a collection of a crumbly crustose lichen collected from a concrete wall, and a request for an identification (Fig. 2). The lichen Peter obviously easily identified as *Lecanora dispersa*, common on concrete buildings, and "…in heavily soot-contaminated areas the thallus may incorporate soot particles to form disfiguring blackened stains on concrete buildings" (Edwards et al.2009: 484).

Dr Montgomery's second letter dated 11 February 1963 and addressed to the Botany Department, University of Otago (Fig. 3), intimated that Peter's identification of the lichen found on the wall, and the roof and on a suspect's trousers all matched with *L. dispersa* (as Peter later recounted the story – the lichen fragments being found in one of the suspect's turn-up cuffs) – this forensic evidence securing a guilty plea. Peter several times recounted this incident to me in later years, but I was unaware, until now, that the letters and the specimen itself telling the story, were still extant. They deserve a wider audience so here they are.

References

Brown, D.H., Coppins, B.J. & Galloway, D.J. (1990). A birthday tribute: Peter James. *Lichenologist* **22** (3): 203-204.

Edwards, B., Aptroot, A., Hawksworth, D.L. & James, P.W. (2009). *Lecanora*. In *The Lichens of Great Britain and Ireland*. (C.W. Smith, A. Aptroot, B.J. Coppins, A. Fletcher, O.L. Gilbert, P.W. James & P.A. Wolseley. Eds): 465-502. London: British Lichen Society.

Shipton, E. (1963). *Land of tempest. Travels in Patagonia 1958-1962*. London: Hodder & Stoughton.

Shipton, E. (1969). *That untravelled world. An autobiography*. London: Hodder & Stoughton

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Peter James : An Appreciation

Peter's grandfather was also called Peter James. He was a Cornishman, but after the death of his first wife moved to a job with the South Staffordshire Water Works and that was how the James family settled here. His grandfather married again and had four daughters (one of whom was my grandmother Sarah Jane James) and one son, Wilfrid, Peter's father. Wilfrid James became a teacher and later – after service in the First World War, in which he was severely injured – Headmaster of a boys' school in Nechells, a deprived inner-city suburb of Birmingham. Out of a sense of vocation, Wilfrid chose to spend the rest of his career there. Peter told me that his father would sometimes give a prize of a box of eggs from a farm in Four Oaks to a boy who had done well. Wilfrid was thus a practical man with a sense of social justice and I believe that Peter inherited these qualities from his father. Another influence on him was his aunt Evelyn, an extremely kind person and a dedicated teacher who taught at the School next to St. Michael's Church on the hill in Lichfield. However, the biggest single family influence on Peter was his sister Mary, who was eight years older than him and deeply interested in the natural world. She saw that her brother shared many of her interests and I believe that she did all she could to nurture her brother's education as a young scientist. When I was recently sorting her library, I saw that she sometimes owned the same books as Peter, and of course shared his hobby of philately: together they built up an extraordinary collection of Commonwealth stamps. Mary's influence on Peter was considerable, and they gave each other lifelong support. Later, Mary was to become Deputy Head of a school here in Sutton Coldfield, and she looked after the beautiful garden in Sherifoot Lane (and Peter's cacti) while he was in London.

With his father a Headmaster, his aunt a Headmistress, and his sister a Deputy Head, it was perhaps not surprising that Peter had remarkable powers of teaching scientific knowledge to the public. What *was* surprising was how far Peter's public extended – from world-class research and publication to working with amateurs on residential courses. Peter sustained that work well into his later seventies as this Thank You card shows, written by one of the participants on his Lichen Course at the Kingcombe Centre, Dorset in July 2005: 'We all want to say enormous thanks for all you have done to make this week such a success. The preparation and bringing all these superb specimens from London, the talks and the help you have given us

individually have been an inspiration.' Peter was indeed a born teacher of botany, able to join up his knowledge in many different fields. In his last years, when he no longer travelled, he would journey around the world with the help of Sir David Attenborough's DVDs. Sir David is known to millions through his television work, Peter only to a smaller, specialised public. But Peter had so much in common with Sir David: his expertise in many branches of science, his concern for all living things and his ability to communicate with authority. Just as Sir David has deep knowledge beyond science – he has written the introduction to this book on the art of John Craxton, given to Peter by a friend, for Peter was keenly interested in Craxton's work – so Peter bridged the two cultures with his love of art and music. One of the last concerts he went to was a performance of Bach's *Christmas Oratorio* in Birmingham Town Hall. He told me that after the music had ended, tears were in his eyes.

Peter was a man of the old school in the literal sense that he did not embrace new technology – the computer my brother gave him lay unused in a box in his house. And the stories he told me about his work in the late 1950s evoked a vanished world: how he was summoned one day into the Director's office and asked 'How do you fancy going to Patagonia?' Peter wondered if he had done something wrong, but no, Eric Shipton was looking for a young botanist to join his forthcoming expedition and Peter was the man chosen. Nowadays you would have to fill in a 20 page online application form, but things were different in 1958! Peter was however, a man of the old school in a deeper sense than this. The world we live and work in now is faster, more efficient than the one in which Peter worked. But it also a world of transience, of disposability – if a man or woman departs, they can be quickly replaced. All we need to know can be saved on a USB stick, and if we do not need to know it, we press 'Delete'. This was not Peter's world. His combination of great expertise gradually built up over a lifetime coupled with great kindness cannot be copied onto a memory stick. In the words of Joseph Roth, in his novel *Radetzkymarsch*: 'In the old days, it was not a matter of indifference if a man lived or died. If someone stepped out of the ranks of the living, another did not suddenly move into his place to erase his memory, but a gap remained where he was missing and those who had witnessed his passing fell silent every time they saw this gap.' In the years to come, when I walk in Sutton Park, there will be a gap where Peter walked; if I go to a concert in the Wigmore Hall and see an empty seat, there will be a gap where Peter sat, and above all, if I walk along the Cromwell Road and look up at the Natural History Museum, it will be as if the window at which he worked is missing. It will be a very long time until that gap is filled, if indeed it ever will be.

Malcolm Spencer (Relative)

Lichens on some yews in eastern Devon, 2006 and 2014

This small study was the result of a meeting organised by the District Council in 2006 and led by Tim Hills of the national Yew Tree Group to highlight the importance of the ancient yew trees in east Devon. The survey was prompted by a forester who assumed that no lichens grew on the trunks of yews because all parts of the wood and bark are toxic. It came as a surprised to him, therefore, to hear that some, even nationally scarce lichens, can thrive on the bark, decorticate timber and iron hard spikes of dead branches. None are specific to yews but some are more often found on them than on any other trees.

Yews in 52 churchyards were investigated, mainly in eastern Devon, to collect information about the lichen flora on the trunks in an attempt to construct a theory regarding any connection between the girth and age of the trees and the lichen flora and whether the toxicity of the bark may affect the selection of lichens growing there.

Most large specimen yews are situated in churchyards or rectories. Two types can be found, *Taxus baccata,* the English Yew and *Taxus baccata fastigiata*, the Irish Yew. The latter was discovered as a different form of *T. baccata* in Ireland in 1780 and no ancient specimens are known in Devon. It has a characteristic, comparatively low, bushy growth which makes the trunks to shadded for the development of most lichens and has therefore been omitted from this study.

Left: one trunk of the ancient four stemmed yew at Payhembury, East Devon showing decorticate areas made olive green by lichen growth. Although lichens also grow on the bark the majority of the seven *Opegrapha* sp are found on the iron hard timber. *Right:* The prominent lirellae of *Opegrapha prosodea* on yew at Plymtree

A list of ancient yews in Devon with sizes provided by the national Yew Tree Group was used as a base. Other churchyards were also visited and the trees measured so that a comparison of the lichen flora on large and smaller trees could be made. Using tree size to try to age a yew is fraught with problems after the tree reaches more than 4m due to the slowing of girth increments and variation in growth habit. Mitchel (Trees of Britain and N Europe 1974) pointed out the problems of dating yew due to its tendency to rot in the centre but retain a healthy perimeter or create new trunks and roots within the hollow. The centres of the ancient yews at Payhembury and Hemyock have rotted away leaving 2-4 spaced trunks indicating their once massive size. This makes core sampling and ring dating impossible or inaccurate. The trunk of English Yew rarely grows straight up from the base and often large low branches splay out making measurements difficult and dependent on the whims of the recorder. The straight growth of yew trunks at Axminster, Calverleigh and Plymtree are exceptions. Mitchel suggested as a rough guide young trees add 2-3 cm girth per annum, old trees 0.5cm and very old 0.1cm. The yews visited in Devon with known planting dates between 1636 and 1790 can be calculated to have had average increments in the range of 1.2 and 1.6 cm per annum. A large percentage of the yews in the 52 yards visited measure between 250 and 350cm which might suggest a surge of planting during the 18th century.

The splaying of large branches and fluted trunk formation leads to deep crevices with slightly better lit areas forming different available niches. The lichen flora on the trunks is very limited partly due to the dry, flaking nature of the bark and intense evergreen shade cast by the canopy. In fact, it is rare for any part of a yew trunk to be well lit, unless lower branches have been trimmed. Lopping of lower branches since 2006 was a noticeable change in some church yards. This has allowed more light to reach the lower trunks but altered the direction of runnels and removed 'armpit' habitats.

By the 1970s it was realised that some lichens only grow in places which have been left undisturbed for centuries and an Index of Ecological Continuity or NIEC list was compiled (Rose 1976 updated in 1992) to be used to evaluate woods or parklands in terms of conservation value. The habitat in churchyards may have remained relatively unaltered for decades if not centuries and of the 24 species found on the yews visited in East Devon, five are on the NIEC list. (*Chaenotheciopsis nigra*, *Cresponia premnea, Dimerella lutea, Opegrapha corticola* and *O. prosodea.*) The nationally scarce (NS) lichens found most frequently seen were *Opegrapha prosodea* and *O. zerica.* In 2014 O. prosodea had declined no *Micarea doliiformis* was found.

Only two yews under 350cm girth were host to NIEC or NS lichens. They are at Woodbury, with a known planting date of 1775, and at Calverleigh where two trees, one at 388cm and its neighbour 327cm were probably planted together.

Although almost all yews with NS lichens are over 350cm girth some of large trees have only ubiquitous species or no lichens at all. One imagines the ambience of a churchyard yew to have remained the same for centuries but this is not always the case. A clue to relatively recent changes in the surroundings of a trunk can be found at Withycombe Raleigh where a bench under the yew is completely hidden by

epicormic branches and surrounding scrubby vegetation. Hawkchurch has an example of a tree which is 510cm girth but appears to have no lichen cover. Ivy had been removed very recently so the shade on the trunk of this tree may have been too great for the survival of any species. At the time of this study very few of the trees visited were devoid of ivy and many had up to 75% cover.

The Widworthy yew is more puzzling. With a girth of 410cm it should have been a host to at least some NIEC or NS lichens. *Arthonia spadicea,* growing in the bark runnels there, was not commonly found on any of the other yews investigated. Possibly the growth of a laurel hedge has altered the surrounding microclimate of the churchyard over the last 100 years. *Arthonia spadicea* was also found on a large yew at Stoodleigh where the humidity of the trunk may have increased since grass clippings have been piled round the base or a young holly growing from the bole of the tree has reduced air circulation. The veteran yews at Stoodleigh (640cm) and Bampton (884cm girth) appear to be thriving with stone collars encasing the trunks to 1.5m. These were built to prevent stock from browsing any part of the tree. The planting dates are not recorded but a note in the church porch at Stoodleigh states that Edward 1st (13th century) decreed that yews should be planted near churches as wind breaks and that in 1717 a seat surrounded the tree trunk.

All parts of the yew except the red flesh round the seed contain alkaloids which are toxic but the young twigs and needles contain the highest concentrations. It is not known to what extent this level of toxicity drops with age or if it inhibits colonisation on the trunks by any lichen species. Only the common species *Lepraria incana, Opegrapha vulgata* and *O. varia* were found on trees with a girth less than about 300cm and no lichens were recorded on the trunks of yews under 250cm except where the lower trunks are well lit and affected by nutrient enriched splash. This seems to indicate that a lack of light, moisture and available nutrients restricts common lichens but when the trunks mature a niche develops for more unusual and rarer specialists.

Many yews have no lichens on their outer branches though some have a considerable cover which suggests that the toxicity of the young growth is no deterrent to lichen colonisation. *Physcia tenella* is the most frequent and often the only lichen on outer branches sometimes growing with thick algal crusts but occasionally accompanied by *Anisomeridium polypori*, *Arthonia radiata*, *Hyperphyscia adglutinata, Melanelia laciniatula, M. subaurifera, Parmotrema perlata, Phaeophyscia orbicularis, Punctelia subrudecta, Ramalina farinacea*, *Xanthoria polycarpa* and *X. parietina.* This assemblage can be found where the churchyard is adjacent to farmland. In more sheltered yards the once common *Hypogymnia physodes* is occasionally found on well lit twigs.

Despite only 24 lichens being found on the trunks of yews in 52 churchyards in Devon, 5 of those are on the list of ecological continuity, 4 are nationally scarce, and three have the category of international responsibility (IR). The number of trees on which the scarce lichen *Opegrapha prosodea* was found especially on decorticate areas of the trunk suggests that yew is one of its favoured habitats. Of the twenty four species recorded, twelve contain *Trentepohlia* as the algal component. The rarity of *Enterographa crassa*, which dominates many tree species in shaded woods throughout Devon is puzzling especially as it was found on exceedingly shaded small trunks of

Irish yew. *Agonimia tristicula* and *Normandina pulchella* were only on yews which had sheltered runnels and Hyperphyscia *adglutinata* and *Diploicia canescens* near the better lit base of trunks which received splash or dust from adjacent paths.

Although not in Eastern Devon a special note must be made of the huge, spreading yew in the churchyard at Stoke Gabriel beside the Dart Estuary. The main branches have been allowed to fall outwards and now touch the ground propping the whole tree like flying buttresses. Apart from the niches on the fluted trunk, the branches have rain wetted or dry, shaded and better lit surfaces. It is host to an impressive list of lichens including two S8 priority species, *Crytolechia carneolutea* and *Physcia tribacioides*. This one tree has a JNCC lichen conservation evaluation score of 600 which is greater than many woods and proves that the toxicity of yew is no detriment to a good lichen flora.

The importance of all ancient trees in a European context is becoming widely appreciated and the small but significant lichen flora of ancient yews adds another dimension to their value and that of the churchyards where they are found.

Abbreviations used.
NS = nationally scarce
IR = international responsibility. This category is for lichens which have their major world population in the UK.
NIEC = New Index of Ecological Continuity (Rose 1993)

Lichens on the trunks of some ancient yews in Eastern Devon 2006 & 2014

		Wo	Ha	Aw	Po	Ca	Of	WR	CR	St	Pl	Si	FG	Ke	Ba	He	Ma	Pa
Agonimia tristicula							- +											
Arthonia pruinata		- +																
Arthonia spadicea										+ 0								
Chaenothecopsis nigra	NS NIEC														- +			
Cresponea premnea	NIEC			+ +	- +		+						+ +					
Dimerella lutea	NIEC		+															
Diploicia canescens				- +								+ 0						
Enterographa crassa													+ +					
Hyperphyscia adglutinata				- +														
Lecania chlorotiza	NT NS P IR																- +	
Lepraria sp.							+	+				- +	+ +	- +			+ +	+ +

		Wo	Ha	Aw	Po	Ca	Of	WR	CR	St	Pl	Si	FG	Ke	Ba	He	Ma	Pa
Micarea doliiformis	NS											+ 0			+ 0			
Normandina pulchella							+ +											
Opegrapha atra				- +							- +							
Opegrapha corticola	IR NIEC		+		+ 0	+	+	+					+ +				+ +	
Opegrapha herbarum				- +			+											
Opegrapha prosodea	NS IR NIEC	+ +			+ 0				+ +	+ 0	+ +	+ 0	+ +	+ +	+ 0	+ +	+ +	+ +
Opegrapha varia									+ +		+ -							+
Opegrapha vermicellifera				- +	+ +													
Opegrapha vulgata		+ +	+		+ +				+ +	+ +	- +	+ +	+ +	+ +	- +		+ +	
		Wo	Ha	Aw	Po	Ca	Of	WR	CR	St	Pl	Si	FG	Ke	Ba	He	Ma	Pa
Opegrapha xerica	NS	- +							+ +	+ 0		+ 0	+ +		- +	+ +	+ +	
Phaeophyscia orbicularis						+												
Porina aenea				- +			- +						- +					
Schismatomma decolorans		- +		- +								+ 0	+ 0					

++ = found in 2006 & 2014. 0 = not found in 2014.

Most of the yews where species were not refound have become covered with ivy to varying degrees or have had lower limbs removed so that some underhang habitats have been lost. At Bampton (Ba) the stone collars have been renovated so that only small areas of the trunks are now accessible.

Girths of some yews in Devon with NS, IR or NIEC lichens

cm	site	abrev	grid	NS, IR & or NIEC
295	Woodbury	Wo	30/010872	3
350	Harpford	Ha	30/090904	2
370	Awlescombe	Aw	31/133019	1
370	Powderham	Po	20/973844	2
327,388	Calverleigh	Ca	21/923143	1
410	Offwell	Of	30/195996	2
488	Withycombe Raleigh	Wr	30/028834	1
490	Clayhidon	Cl	31/161157	1

cm	site	abrev	grid	NS, IR & or NIEC
605	Combe Raleigh	CR	31/160023	2
640	Stoodleigh	St	21/923189	2
655	Plymtree	Pl	31/052029	2
701	Silverton	Si	21/957029	3
724	Farway Green	FG	30/173964	3
749	Kentisbeare	Ke	31/069081	1
884	Bampton	Ba	21/958223	2
922	Hemyock	He	31/135134	2
976	Mamhead	Ma	20/930808	3
1056	Payhembury	Pa	31/089019	1

Girth size over 300cm made little difference to the composition of the lichen flora. Many yews with girth over 300cm which were not a host to significant lichens had ivy removed recently (2006) possibly after the importance of ancient yews was highlighted nationally. In 2014 ivy is once again becoming a problem in some churchyards. Few yews with girths under 295cm. were visited as those seen appeared to have no lichens with status.

Lichens on the ancient yew at Stoke Gabriel SX849572

lichen	Status	Frequency on this yew	Place on this yew
Bacidia laurocerasi		occasional	branches
Bacidia rubella		occasional	branches
Cliostomum griffithii		occasional	branches
Cresponia premnea	NIEC	frequent	trunk and branches
Cryptolechia carneolutea	EN NS P IR NIEC B	rare	trunk in runnel
Diploicia canescens		rare	trunk
Enterographa crassa		rare	trunk
Flavoparmelia caperata		frequent	branches
Hyperphyscia adglutinata		occasional	branches
Hypogymnia physodes		occasional	branches
Lecania cyrtella		occasional	twigs
Lecanora barkmaniana	NS	rare	branches, fertile
Lepraria lobificans		rare	trunk
Macentina stigenemoides	NS	rare	branch
Melanelia glabratula glab		occasional	branches
Opegrapha atra		frequent	branches
Opegrapha corticola	NS IR NIEC	common	trunk and branches

lichen	Status	Frequency on this yew	Place on this yew
Opegrapha herbarum		common	trunk and branches
Opegrapha prosodea	NS P IR NIEC	frequent	trunk
Opegrapha vermicellifera		common	trunk
Opegrapha vulgata		frequent	trunk and branches
Parmotrema perlata		occasional	branches
Phaeophyscia orbicularis		common	branches
Physcia tenella		frequent	twigs
Physcia tribacioides	S8 NS P	occasional	branches
Porina chlarotica		rare	shaded branch
Punctelia subrudecta		frequent	branches
Xanthoria parietina		rare	twigs

References

Benfield, B. 2001. *The Lichen Flora of Devon*. Newton Abbot

BLS mapping data base

Coppins, B.J. 2002. *Checklist of Lichens of Great Britain and Ireland*. British Lichen Society

Smith et al. 2009. *The Lichens of Great Britain and Ireland*. British Lichen Society.

Woods, R. & Coppins B.J. 2003. *A Conservation Evaluation of British Lichens.* British Lichen Society

Yew Tree Group web page.

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A review of the medullary chemistry of the genus *Usnea* in Britain and Ireland

Introduction

In 2009, RBGE undertook a lichen genetic barcoding project, whose purpose was to determine the utility of the nuclear internal transcribed spacer (ITS), to correctly identify lichens to the species level (Kelly, et al 2011). For that study, the authors tested a molecular barcoding approach for both a floristic data set, all the lichens that could be collected at a single lichen-rich site (Invertromie, Aberdeenshire), and for a difficult taxonomic group, *Usnea*. The *Usnea* specimens upon which the barcoding study was based, were assembled from donations from BLS members in addition to my own extensive collections, resulting in a total of 502 *Usnea* specimens. Each of these specimens was subject to standard morphological identification (Smith et al 2009), (Clerc 2011), and (Randlane et al 2009). TLC was used to aid identification, and, for a representative selection from each of the taxa thus identified, molecular barcoding (Schoch et al 2012) was carried out.

This paper reports the results of this chemical survey of 502 *Usnea* specimens from across Britain and Ireland, comparing findings with those reported from other recent studies.

Note: All *Usnea* species included in this paper have usnic acid in the cortex in variable amounts. Specimens of some species, notably *U. rubicunda*, have small, even trace, quantities particularly when growing in low light conditions.

Methods & Materials

TLC was carried out on each specimen according to the methods and techniques described by Orange et al (2001).

All specimens were extracted in acetone and firstly run using solvent G. Cryptostictic acid and salazinic acid were inseparable in this solvent and, where a spot indicated either or both of them was present, the specimen was rerun in solvent C to separate these frequent compounds. Where diffractaic acid or barbatic acids were found in solvent G, where they coincide, the specimen was rerun in solvent B' which allowed some separation of these two very similar compounds. The formulation of solvent B' used was as stated in Mietzsch et al (1994).

A substantial portion of the specimens were subjected to repeat TLC analysis, both to confirm results and to check different parts of the thallus.

SPECIES	Total number of Specimens	2'-O-demethylp	4-O-demethylbarb	4-O-demethyldiff	artunid1	artunid2	alectorialic	barbatic	bourgeanic	confumarproto	consalazinic	constictic	convirensic	cryptostictic	diffractaic	fumarprotocet	galbinic	lobaric	menegazziaic	murolic complex	norstictic	protocetraric	psoromic	salazinic	squamatic	stictic	thamnolic	nmc
U. articulata	12				6	6										12						8						
U. ceratina	26		3	3				26							26													
U. cornuta	90										1	90		26					18		29	13		61		39		
U. dasopoga	16						1																	15				1
U. esperantiana	16								16			16												16				
U. flammea	46											46		31				23	43		25					46		
U. flavocardia	5	2																					5					
U. florida	8						2																				8	
U. fragilescens v. mollis	33											33		28					24		24					33		
U. fulvoreagens	15											10		8					10		10					10		
U. glabrata	22									1			2			22						3						
U. glabrescens	10	3										6		7					6		7		3			7		
U. hirta	13																			10								3
U. rubicunda	23	2										17		8					2		17		3			17		
U. silesiaca	4																2							4				
U. subfloridana	70						14																		3		66	2
U. subscabrosa	4																					4						
U. wasmuthii	90		8					80			7													69				5
Total	502																											11

Table 1. (previous page) Compounds found showing number of specimens for each species. Abbreviated compounds: 2'-O-demethylp = 2'-O-demethylpsoromic; 4-O-demethylbarb = 4-O-demethylbarbatic; 4-O-demethyldif = 4-O-demethyldiffrataic; artunid1 = unidentified compound in U. articulata, artunid2 = second unidentified compound in *U. articulata*; confumarproto = confumarprotocetraric; fumarprotocet = fumarprotocetraric. nmc = no medullary compounds

SPECIES	2-o-demethylpsoromic acid	4-o-demethylbarbatic acid	4-o-demethyldiffractaic acid	U. articulata unid 1	U. articulata unid 2	alectorialic acid	barbatic acid	bourgeanic acid	confumarprotocetraric acid	connorstictic acid	consalazinic acid	constictic acid	convirensic acid	cryptostictic acid	diffractaic acid	fumarprotocetraric acid	galbinic acid	lobaric acid	menegazziaic acid	murolic acid complex	norstictic acid	protocetraric acid	psoromic acid	salazinic acid	squamatic acid	stictic acid	thamnolic acid	no medullary compounds percentage
U. articulata				±	±											+						±						
U. ceratina		±	±				+								+													
U. cornuta											±	+		±					±		±	±		±		+		
U. dasopoga						±																		+				**6%**
U. esperantiana								+				+												+				
U. flammea												+		±				±	±		±					+		
U. flavocardia	±																						+					
U. florida						±																					+	
U. fragilescens v. mollis												+		±					±		±					+		
U. fulvoreagens												±		±					±		±					±		
U. glabrata									±				±			+						±						
U. glabrescens	±											±							±		±		±			±		
U. hirta																				±								**23%**

SPECIES	2-o-demethylpsoromic acid	4-o-demethylbarbatic acid	4-o-demethyldiffractaic acid	U. articulata unid 1	U. articulata unid 2	alectorialic acid	barbatic acid	bourgeanic acid	confumarprotocetraric acid	connorstictic acid	consalazinic acid	constictic acid	convirensic acid	cryptostictic acid	diffractaic acid	fumarprotocetraric acid	galbinic acid	lobaric acid	menegazziaic acid	murolic acid complex	norstictic acid	protocetraric acid	psoromic acid	salazinic acid	squamatic acid	stictic acid	thamnolic acid	no medullary compounds percentage
U. rubicunda	±											±							±		±		±			±		
U. silesiaca																	±							+				
U. subfloridana						±																			±		±	3%
U. subscabrosa																						+		±				
U. wasmuthii		±				±	±				±																	6%

Table 2. Medullary Compounds by Species. + = always present, ± = sometimes present

Discussion

Geographic variation in chemical content of lichens is a well-known phenomenon (e.g.Randlane et al 2009), and this discussion is limited to only to the species concerned in the geographic area covered in this study.

Since the Kelly et al. (2009) paper, some taxonomic changes have been accepted for the British flora. *Usnea chaetophora* Stirt. has been reduced to a synonym of *U. dasopoga* (Ach) Nyl. (Clerc 2011) and *U. fulvoreagens* (Räsänen) Räsänen is now included within *U. glabrescens* (Nyl. ex Vain.) Vain. (Clerc 2011). The latter was treated separately in this study as it seemed quite distinct in the area studied, as opposed to other parts of Europe where there are intermediate taxonomic entities grading into *U. glabrescens* (*pers. com*. Clerc 2010).

1. U. articulata

The medulla of this species was reported to contain fumarprotocetraric acid (James, Clerc & Purvis, 2009). In this study, all (12) of the specimens of this species contained fumarprotocetraric acid in strong amounts. In addition 8 (representing 67%) of the specimens contained the depsidone protocetraric acid and 6 (representing 50%) contained two unidentified substances, which were both UV negative and pale yellow after treatment with 10% sulphuric acid followed by baking at 110° C. These substances occurred at approximately Rf 53 and Rf57 in solvent G and further work is required to identify these two compounds.

2. U. ceratina

The medulla of *U. ceratina* was reported to contain the depsides diffractaic and barbatic acids and, in addition, sometimes other accessory substances (James, Clerc & Purvis, 2009). In this study, it was extremely difficult to obtain consistent results showing the separation of diffractaic acid, barbatic acid and their accessories by TLC, despite repeated attempts. Solvent B' was used with careful preparation of the spotted plates by suspending above 60% formic acid in a TLC tank for 5 minutes before running. It is probable that HPLC techniques should be used to investigate the exact nature of the medullary chemistry of this species.

With due consideration of the doubts expressed above, in this study all (26) of the specimens probably contained both diffractaic and barbatic acids and 3 (representing 11%) contained 4-O-demethylbarbatic acid with a further 3 containing 4-O-demethyldiffractaic acid.

3. U. cornuta

All 90 studied specimens of *U. cornuta* contained constictic acid. *U. cornuta* has been reported (James, Clerc & Purvis, 2009) as having two chemotypes -

1. The constictic acid and salazinic acid type with, occasionally protocetraric acid as an accessory.
2. The stictic acid syndrome type, sometimes also containing salazinic acid.

In this study, 61 of the specimens of *U. cornuta* (representing 68%) contained constictic and salazinic acids and, of these, 13 (representing 14%) contained protocetraric as an accessory, often only as a trace. The remaining 29 specimens (representing 32%) contained the stictic acid complex in some form, often having cryptostictic, menegazziaic, and norstictic acids, and additionally 30% of these contained salazinic acid as an accessory. Norstictic acid was frequently present only as a trace, a fact previously noted by Clerc (1987).

4. U. dasopoga

U. dasopoga is the currently accepted name for what has previously been called *U. filipendula* in Britain (Clerc, 2011)

Sixteen specimens of *U. dasopoga* were analysed and, of these, 14 contained salazinic acid only, one having additional alectorialic acid with one specimen having no medullary compounds. The specimen which contained alectorialic acid showed no obvious fruiting bodies although there may have been apothecial primordia present. *U. dasopoga* does not frequently fruit in the area covered by this paper and the one fruiting specimen which was part of this project was carefully analysed, ensuring that part of an apothecia formed part of the extraction material. The latter did not reveal any alectorialic acid and so this does not seem to parallel the situation in *U. subfloridana* and *U. florida*, in which alectorialic acid is frequently present in the apothecia (James et al 2009).

5. U. esperantiana

All 16 specimens of *U. esperantiana* contained constictic, salazinic and bourgeanic acids. Previous literature (James, Clerc & Purvis, 2009) suggests that consalazinic acid is present, not constictic acid but, in this study, the use of solvents A, C, and G confirmed the strong presence of the latter. These two compounds run with similar Rfs in solvents C and G, but can be distinguished using solvent A, where constictic runs at Rf 7 and consalazinic runs at Rf 2.

6. U. flammea

All 46 specimens of this species contained variations on the stictic syndrome but half were also found to contain lobaric acid. The remaining 23 specimens were subjected to further TLC analysis, including spotting the plate at 6 times the normal concentration to evaluate whether lobaric acid was present in very small quantities. Of these 23 specimens only a further two were found to have traces of lobaric acid, bringing the total containing lobaric acid to 25 (representing 54%).

Within the stictic acid syndrome in this species, constictic and stictic acids were constant with menegazziaic occurring in 43 specimens (representing 93%) , cryptostictic in 31 specimens (representing 67%), and norstictic in 25 specimens (representing 54%). The norstictic acid was almost always present in trace quantities only.

7. U. flavocardia

In Britain and Ireland, *U flavocardia* is a relatively rare species. The herbarium at E contains only 3 specimens, and 1 of these was new on the basis of this survey. The studied sample was, was very small, consisting of only four specimens. All four of the specimens contained psoromic acid and one of these contained the accessory 2'-O-demethylpsoromic acid.

Two unknown substances were found within the range Rf26 – Rf40 in solvent G, the upper of which had a faint orange colour before charring treatment with sulphuric acid. Further work is required on the chemistry of this species and, indeed, on its distribution.

8. U. florida

This species is regarded as the fertile counterpart of *U. subfloridana*, although the latter species may also be found in the fruiting state, and both are genetically very similar, having been shown to be evolutionarily intermixed Arcticus et al (2002). All 8 specimens of *U. florida* in this study contained thamnolic acid and 2 of them (representing 25%) contained alectorialic acid as an accessory. The alectorialic acid seems to reside mainly in the apothecia (James et al, 2009). Unlike *U. subfloridana,* no specimens of this species have been found to contain squamatic acid.

9. U. fragilescens var. mollis

All 33 specimens of this species exhibited the stictic acid syndrome, with constictic and stictic acids being constant. Cryptostictic acid was present in 85% of specimens, menegazziaic acid in 73% and norstictic acid in 73%. The norstictic acid was only present as a trace in most of the specimens containing this substance.

U. fragilescens var. fragilescens is very rare in Britain and Ireland and its taxonomic status is questionable. It was not sampled during this study because there is only one specimen in the E herbarium).

10. U. fulvoreagens

This taxon is now regarded as a morphotype of *U. glabrescens* (Clerc 2011) but, for the purposes of this paper, it will be looked at separately.

All 15 specimens of this taxon had some variation on the stictic syndrome, although, in some cases, stictic acid itself was not present. Stictic, norstictic, menegazziaic, and constictic were all present in 10 of the specimens (representing 67%) but not necessarily in the same combination. Unknown substances were found in several specimens but these were not consistent and have yet to be identified.

11. U. glabrata

The 22 specimens of this distinctive species were all found to contain fumarprotocetraric acid. In addition protocetraric acid was found in 3 specimens (representing 14%) and, new to our area, convirensic acid in 2 specimens (representing 9%). 1 specimen (representing 4%) was found to contain confumarprotocetraric acid.

12. U. glabrescens

This species and its relationship with *U. wasmuthii* is not fully understood at present and its true distribution in the area of this study is not well known due to its frequent confusion with that species. It appears to be uncommon in Britain and Ireland and only 10 reliable specimens were found.

Previous literature (James, Clerc & Purvis, 2009) recognises 3 chemotypes of this species but this study only revealed two basic types –

1. The chemotype with the stictic syndrome comprised 70% of the material studied. Of these specimens all 10 contained stictic acid, 85% contained constictic acid, 71% menegazziaic acid, and 57% cryptostictic acid.
2. The chemotype with psoromic acid and its accessories accounted for the remaining 30% of the specimens available. Psoromic acid was always accompanied by 2'-O-demethylpsoromic acid.

Salazinic acid was not found in the specimens of *U. glabrescens* available.

13. U. hirta

Thirteen specimens of this species were examined and, of these, three had no medullary compounds and the remaining 10 contained the murolic acid complex.

14. U. rubicunda

The chemistry of this very morphologically variable species is complex and needs further work. Previous literature (James, Clerc & Purvis, 2009) recognises two chemotypes but this study recognises three chemotypes –

1. The stictic acid syndrome type was most abundant, with various components constituting 87% of the specimens analysed. Of these specimens 90% contained constictic and stictic acid, 10% menegazziaic acid, and 35% cryptostictic acid. Norstictic acid was present in 80% of this chemotype, always in low quantities.
2. The psoromic acid chemotype contains psoromic acid and 2'-O-demethylpsoromic acid as an accessory. This psoromic acid type constituted 13% of the specimens examined.
3. One specimen had only salazinic acid as a medullary compound. Of possible interest is the fact that this specimen is the only saxicolous specimen of *U. rubicunda* seen by the author.

Examples of this species from humid, sheltered, shady environments often become very elongated, grey in colour and have very low levels of cortical usnic acid.

15. U. silesiaca

This is a rare species in Great Britain and only four specimens were available on loan from the BM. Two of the specimens had been previously subjected to TLC and contained only salazinic acid, whereas the remaining two (BM000732054 & BM000747225) were analysed by the author and contained additionally galbinic acid, running at c. Rf 49 in solvent G. This substance has not been previously recorded in the lichens of Britain and Ireland.

16. U. subfloridana

Previous literature recognises two separate chemotypes, but this study has shown that the situation is not quite so straightforward. This species has a possibility of three medullary compounds- thamnolic, alectorialic, and squamatic acids and 94% of the specimens studied contained thamnolic acid. Alectorialic acid was found in 21% of the thamnolic acid strains of the specimens, not necessarily correlating with the presence of obvious apothecia. Two specimens (3%) had squamatic acid and one of these had squamatic and thamnolic acids. In addition, two specimens had no medullary compounds.

Given this situation, it does not seem relevant to attempt to split these combinations into separate chemotypes, but the nearly constant presence of thamnolic acid will almost always help to distinguish this species from *U. wasmuthii*, with which it is often confused.

17. U. subscabrosa

Only four specimens of this very rare species were studied and all four contained protocetraric acid only.

18. U. wasmuthii

The chemistry of this often misidentified species appears to be complex in a European context Randlane et al. (2009) but comparatively straightforward in the region of this study. As in the case of *U. subfloridana*, attempting to allocate the specimens to distinct chemotypes seems irrelevant given the range of combinations present.

Eighty-nine percent of the specimens contained barbatic acid, 70% contained salazinic acid, and 5% had no medullary compounds. Sixty-six percent of the specimens with medullary compounds had both barbatic and salazinic acids and 28% had barbatic acid without salazinic acid. Of the specimens with barbatic acid, 10% contained 4-O-demethylbarbatic acid as an accessory and 11% of those containing salazinic acid had consalazinic as an accessory.

Spot Test reactions

It is important, when spot testing *Usnea* specimens, that the medulla is correctly exposed. In a species with a thick axis, thick cortex and a compact medulla, the cortex must be carefully scraped away with a blade to expose the maximum amount of medulla possible. Also if no reaction occurs where it was strongly suspected from morphology, then try testing another area of the specimen as sometimes the chemistry can be inconsistent across the specimen as a whole, particularly concentrating on testing both older and younger (especially sorediata). Also be aware that specimens may have no medullary compounds especially in *U. subfloridana* and *U. wasmuthii,* and that these will therefore yield no positive spot tests.

SPECIES	C	CK	KC	K	Pd	UV
U. articulata	nr	nr	nr	nr	orange-red	
U. ceratina	nr	orange	nr	nr	nr	
U. cornuta chemotype 1	nr	as K reaction	as K reaction	yellow→orange-red	bright yellow→ (slowly) yellow-orange	
U. cornuta chemotype 2	nr	as K reaction	as K reaction	yellow→orange-red	bright yellow	
U. dasopoga	nr	as K reaction	as K reaction	yellow→orange-red	bright yellow→ (slowly) yellow-orange	
U. esperantiana	nr	as K reaction	as K reaction	yellow→red	bright yellow→ (slowly) yellow-orange	
U. flammea	nr	as K reaction	as K reaction	yellow (sometimes → orange)	yellow→dull yellow-orange	
U. flavocardia	nr	nr	nr	nr	golden yellow (persistent)	
U. florida	nr	as K reaction	as K reaction *[2]	golden yellow→ yellow-orange	golden yellow (persistent)	
U. fragilescens var mollis	nr	as K reaction	as K reaction	yellow (sometimes → yellow-orange)	yellow→(slowly)yellow-orange	
U. fulvoreagens	nr	as K reaction	as K reaction	yellow (weak)	yellow→(slowly)yellow-orange	
U. glabrata	nr	yellow→ orange	yellow→ orange	yellow→orange	yellow→(rapidly) rust red	
U. glabrescens chemotype 1	nr	as K reaction	as K reaction	yellow→(slowly) yellow-orange	yellow→(slowly) orange	
U. glabrescens chemotype 2	nr	nr	nr	nr	golden yellow (persistent)	
U. hirta	nr	nr	nr	nr	nr	
U. rubicunda chemotype 1	nr	as K reaction	as K reaction	yellow (sometimes → yellow-orange)	yellow→(slowly) orange	
U. rubicunda chemotype 2	nr	nr	nr	nr	golden yellow	
U. rubicunda chemotype 3	nr	as K reaction	as K reaction	yellow→orange-red	orange	
U. silesiaca	nr	as K reaction	as K reaction	yellow→orange-red	bright yellow→ (slowly) yellow-orange	
U. subfloridana	nr	as K reaction	as K reaction	+/- bright yellow	+/-bright yellow	+/- blue-white
U. subscabrosa	nr	nr	nr	nr (? slight yellow-brown)	yellow→orange	
U. wasmuthii	nr	as K reaction	as K reaction	+/- yellow→orange-red	+/-yellow→orange-red	

Table 3. Results of spot tests on the medulla of *Usnea* species: nr = no reaction
The colour of reactions was taken from actual specimens of the species and chemotypes, not from taking the known reactions of individual substances found by TLC. Reactions using Pd were carried out using both dissolved crystals in alcohol and Steiner's reagent. The reactions were the same but slightly slower to develop in the latter.

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References

Articus, K., Mattsson, J.-E., Tibell, L., Grube, M. & Wedin, M. (2002) Ribosomal DNA and b-tubulin data do not support the separation of the lichens *Usnea florida* and *U. subfloridana* as distinct species. *Mycological Research* **106:** 412–418.

Clerc, P. (1987) Systematics of the Usnea fragilescens aggregate and its distribution in Scandinavia. *Nordic Journal of Botany* **7**: 479-495.

Clerc, P. (2011) *Usnea*. In *Nordic Lichen Flora Volume 4 Parmeliaceae* (A. Thell & R. Moberg, eds): 107-127. Uppsala University.

James, P.W., Clerc, P. & Purvis, O.W. (2009) *Usnea.* In *The Lichens of Great Britain and Ireland* (C.W. Smith, A. Aproot, B.J. Coppins, A. Fletcher, O.L.Gilbert, P.W. James and P.A. Wolseley eds). The British Lichen Society.

Kelly, L. J., P. M. Hollingsworth, B. J. Coppins, C. J. Ellis, P. Harrold, J. Tosh & R. Yahr 2011: DNA barcoding of lichenized fungi demonstrates high identification success in a floristic context. - *New Phytologist* **191**: 288-300.

Mietzsch, E., Lumbsch, H.T. & Elix, J.A. (1994) *Wintabolites (Mactabolites for Windows) Users Manual. 2nd Edn. Essen:Universität Essen.*

Orange, A. et al (2001) *Microchemical Methods for the Identification of Lichens*. British Lichen Society.

Randlane, T. et al (2009) *Key to European Usnea Species.* In Bibliotheca Lichenologica Volume 100 (A. Thell, M.R.D. Seaward, T. Feuerer eds). Stuttgart.

Schoch, C. L., Seifert, K. A., Huhndorf, S., Robert, V., Spouge, J. L., Levesque, C. A., . . . Fungal Barcoding, C. (2012) Nuclear ribosomal internal transcribed spacer (ITS) region as a universal DNA barcode marker for Fungi. *Proceedings of the National Academy of Sciences of the United States of America* **109**: 6241-6246.

Smith, C.W. et al (2009) *The Lichens of Great Britain and Ireland* (C.W. Smith, A. Aproot, B.J. Coppins, A. Fletcher, O.L. Gilbert, P.W. James and P.A. Wolsley, eds). The British Lichen Society.

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Duration of sabal palm leaves and their lichen colonists in southwest Florida

Fig. 1. View of live oak hammock, FGCU campus, Ft. Myers, Florida.

Among the most specialized lichen communities are those that develop on the surfaces of leaves. To a small photosynthetic organism of negligible weight, the leaf appears to be prime real estate. As far as access to sunlight is concerned, the host plant has already taken steps to ensure that their leaves are positioned advantageously. However, most plants, to varying degrees, treat their leaves as disposable structures that are replaced in the short or medium term. Leaf colonizers must therefore have contingency plans. Since lichens, as symbiotic constructions, are by nature slow-growing, leaf-dwelling species will have to expedite their progress toward reproduction and dispersal to fit within the time frame of their substratum. Much of their specialized biology reflects adaptation to this itinerant existence (Lücking 2001). There are probably several reasons why foliicolous lichen communities occur mainly in the tropics, but the most obvious one is that the common trees of temperate climates have the inconvenient custom of shedding their leaves seasonally in preparation for inhospitable weather. Life span for a tropical tree leaf varies considerably according to species; extrapolations based on leaf production rates suggest an average somewhere around 2-3 years (Lücking 1998).

Foliicolous lichens do also occur in subtropical regions, and even in some fully temperate areas with oceanic climates. Here in southwest Florida (latitude 27°

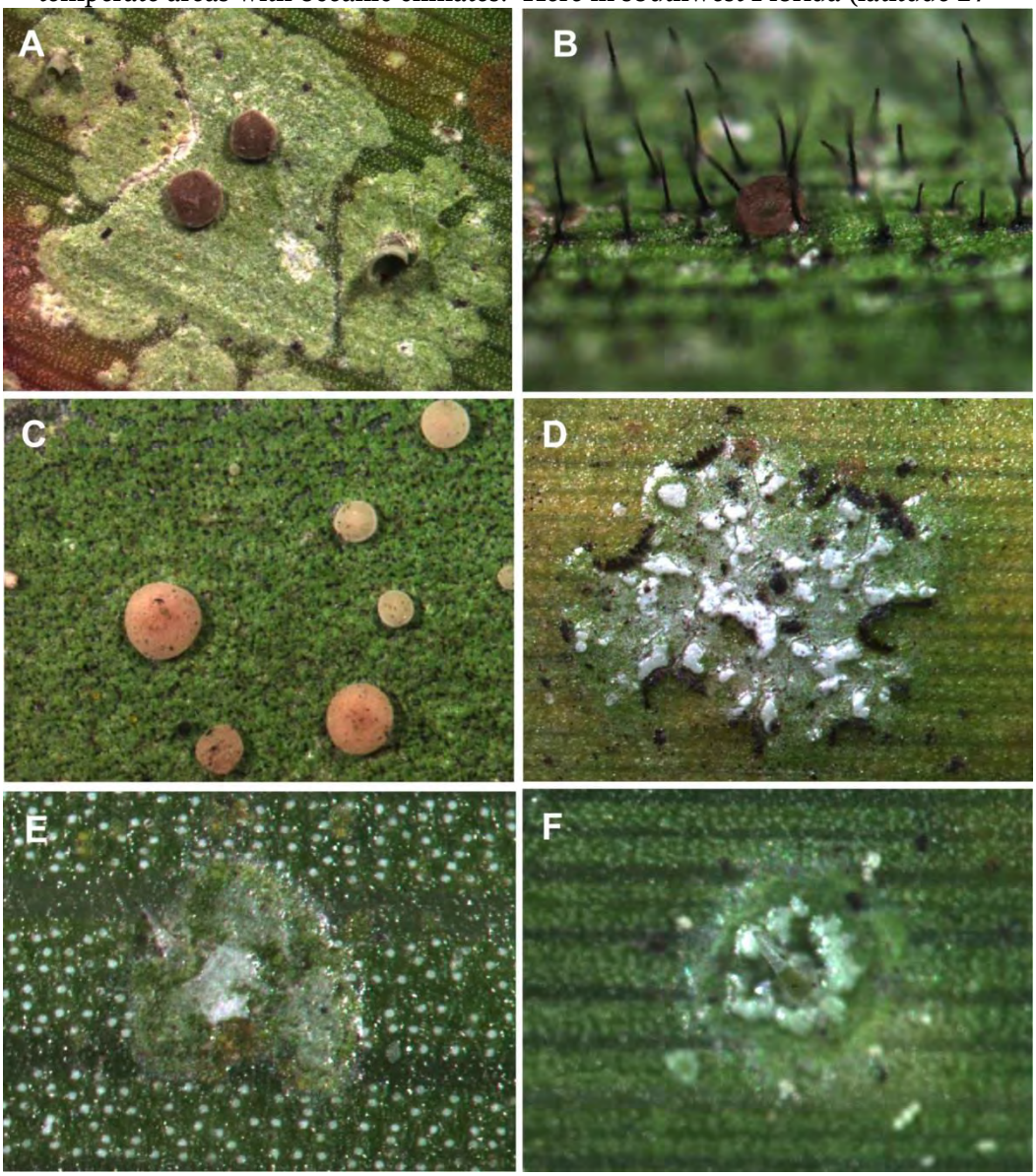

Fig. 2. Some foliicolous lichen occurring in live oak hammock on FGCU campus. A, *Calopadia puiggarii*. B, *Tricharia vainioi*. C, *Bacidina apiahica*. D, *Gyalectidium paolae*. E, *Gyalectidium appendiculatum*. F, *Gyalectidium floridense*. For descriptions, see Lücking 2008.

north) there are a number of species, some of which were recorded in a recent lichenological survey (Lücking et al. 2011). But the local foliicolous communities are not well studied. With respect to their host plants, these lichens have few workable choices. Tropical broadleaf communities with non-deciduous leaves are restricted to

sites with adequate drainage and protection from the occasional freeze, such as coastal shell-mounds. Elsewhere, one finds mostly cypress swamps and remnant patches of open pineland, the embattled representatives of natural vegetation among shopping centers, golf courses and gated communities. Neither the deciduous *Taxodium* nor the needle-leaved *Pinus* are adequate substrate for foliicolous lichens, but the ubiquitous sabal palm (*Sabal palmetto*), occurring transitionally among these plant communities, provides a refuge. Within a small "hammock" (patch of hardwood forest) on the Florida Gulf Coast University campus, understory sabal palm leaves host foliicolous lichen communities beneath a canopy of live oak (*Quercus virginiana*) and older sabal palms (Fig. 1). The foliicolous communities are dominated by *Calopadia puiggarii* -- not infrequently the only species found on a given leaf -- but a number of other taxa commonly occur (Fig 2). A few appear to be undescribed.

The sabal palm (or "cabbage palm") is widely distributed in the southeastern United States, and is clearly a key substrate species for foliicolous lichens in the region. But how long does its leaf actually last? How does this time frame compare with that required for a fungal propagule find a compatible alga and build a thallus upon the leaf surface? Will the average colonizing lichen have enough time to complete partner-contingent sexual reproduction, or will it more often have to resort to autonomous but genetically invariable asexual propagation? And can a foliicolous lichen hope to see its children and grandchildren grow up – that is, will more than one generation be completed on the same leaf? Before these basic questions can be addressed, we need to know more about the typical life span of the leaf substratum.

Now, the useful life span of a leaf from the plant's point of view is not necessarily the same thing from the perspective of a lichen colonist. Key differences lay in the initial and final stages of the leaf's existence. A palm leaf is a very complex structure, often quite large (even enormous). Palm trees usually do not produce vegetative branches from their vertical stem, since they lack the vascular cambium that other trees use to provide increments of mechanical and vascular support for ever-increasing numbers of branches and leaves. Palm leaves, borne on a single trunk, take on much of the function of branches. Each leaf has a very large photosynthetic surface (blade), but also a long and well-reinforced petiole to orient the blade and support its weight, and a sheathing base to stabilize the leaf upon the trunk. These hefty and elaborate structures take time to build. The sabal palm manages to produce only about 0-3 leaves per year (McPherson & Williams 1996); an individual leaf may already be more than a year old by the time it has fully emerged and unfurled its complex, plicate blade. On the other end of its lifespan, when a leaf's productivity is in decline, the plant at some point begins the process of withdrawing salvageable nutrients from the senescent leaf. But even a moribund leaf might continue to serve as a lichen substratum for some time before it is actually shed.

To directly observe the course of events for individual sabal palm leaves within the oak hammock, I chose eight plants of accessible height with "spear leaves" that had reached a meter or more in length and showed incipient signs of unfolding about to begin (Fig. 3A). This stage was taken to be the start of leaf surface availability to arriving lichen propagules. However, it is possible that propagules could establish even earlier on the surface of the tightly folded spear leaf, which would place successful colonists on the ridges and edges of the plicate blade once it expanded. Each spear leaf was marked by tying a narrow ribbon around its petiole. This was done in July of 2011. When checked the following year, marked leaves were fully expanded and new spear leaves had inserted themselves through the loop of ribbon; the ribbon had to be slid upward over them and back down again so that it encircled only the petiole of the chosen leaf without restricting expansion of newer ones. After two years, in July of 2013, all eight leaves appeared healthy, and either entirely green or mostly green with a small amount of withered tissue at the extreme tips of some leaflets and/or some scattered yellow spots on the blade. Development of foliicolous

Fig. 3. Sabal palm leaves at the hammock. A, spear leaf (arrows). B, spear leaf (arrows) that has begun to unfurl. C-E, four of the marked leaves three years after 1 m spear leaf stage.

lichen communities was evident on several of them. After a third year, in July 2014, the leaves were examined again and photographed. Three of the eight leaves were still quite green and healthy-looking, despite some browning at the leaflet tips (Fig. 3C-D). The remaining five had turned completely brown and appeared dead. However, all but one of these were still firmly attached to the trunk and held in display position like the living leaves (Fig. 3E-F). Superficially, these dead leaves were still structurally intact; in black-and-white versions of the photos shown, they cannot be distinguished from the living leaves. Many foliicolous lichens on the dead leaves looked very much alive and capable of dispersing propagules, even if their days were quite obviously numbered. Considering these observations, it seems reasonable to estimate the average duration of the sabal palm leaf as substrate for foliicolous lichens to be about three years. Some data on the chronology of foliicolous lichen life cycles at the site will be presented elsewhere, but suffice it to say for now that a few generations may possibly be completed on a given leaf, at least for lichens that colonize early and reproduce in a timely manner.

References:

Lücking, R. (1998) Ecology of foliicolous lichens at the "Botarrama" Trail (Costa Rica), a neotropical rain forest site. Part II. Patterns of diversity and area cover, and their dependence on microclimate and phorophyte species. *Ecotropica* 4: 1-24.

Lücking, R. (2001) Lichens on leaves in tropical rainforests: Life in a permanently ephemerous environment. *In* G. Gottsberger & S. Liede (eds.), Life forms and dynamics in tropical forests. *Diss. Bot.* 346: 41-77.

Lücking, R. (2008) Foliicolous lichenized fungi. Flora Neotropica Monograph 103. New York Botanical Garden, NY, USA.

Lücking, R., *et al*. (2011) The lichens of the Fakahatchee Strand Preserve State Park, Florida: Proceedings from the 18th Tuckermann Workshop. *Bulletin of the Florida Museum of Natural History* 49: 127-186.

McPherson, K. and Williams, K. (1996) Establishment growth of the cabbage palm, *Sabal palmetto* (Arecaceae). *American Journal of Botany* 83: 1566-1570.

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There are many ways for a lichen to die

I recently returned from a field trip to Glen Creran, a wooded valley lying between Oban and Fort William on the west coast of Scotland. I had been collecting data for my PhD study; investigating the dynamics of tree dwelling lichens in temperate rainforests.

During the six weeks spent in the woods, I had been recording the presence of nine lichen species on 600 randomly distributed trees throughout the glen; *Graphis scripta*, *Parmelia saxatalis*, *Pannaria conoplea*, *P. rubiginosa*, *Degelia atlantica*, *D. cyanoloma*, *Nephroma laevigata*, *N. parile* and *Lobaria pulmonaria*. I hope to return next year to repeat the survey, enabling me to estimate how many extinction events have occurred over the course of a single year. Assuming the populations are at equilibrium within these woodlands, I will be able to use the information gathered to determine estimates of both colonisation and dispersal rates.

Before I began my work however, armed with the knowledge that epiphytes are treated in ecology as 'patch tracking' (Snall et al. 2003), meaning that individual trees carry local populations that exist until tree death (Snall et al 2005), I had thought that local extinctions (being determined by tree fall) would be very rare events. Being able to detect an extinction rate over the course of a single year seemed highly unlikely and it was with some trepidation that I set out. However, as I began my work, I

started to see evidence of more varied and seemingly unpredictable ends that an unlucky lichen may meet. A more recent paper by Fedrowitz *et al*. (2012) supported my feeling; they found unpredictable extinction events were an important aspect to take into account when modelling the dynamics of epiphytic lichens.
In addition, as my data collection progressed, I found that some lichen 'populations' consisted of just a single individual on a tree, particularly in the case of the rarer species such as *Nephroma laevigata* and *N. parile*, leading me to the conclusion that local extinction events may not be as rare as I had thought…. The many 'ways that a lichen can die' which I documented during my study, are listed below:

1. Peeling bark – I found the natural peeling character of birch bark to have a potential impact on the extinction rate of crustose lichen species such as *Graphis scripta*. Effects are usually localised to a small area of the trunk, though in some instances, large pieces of outer bark were found to have peeled away, taking all their epiphytes with them.

2. Bark stripping — hungry deer are able peel bark from fairly high reaches of young trees, mainly affecting smooth bark communities of crustose lichens. The young rhododendron lurking next to the small tree on the left suggests that in the future, bark stripping may be the least of its problems however!

3. Slugs/snails [left below] – there seemed to be an abundance of Ashy-Grey Slugs (*Limax cinereoniger*) in the glen this year. Admittedly it would have to take a very hungry slug to eat an entire thallus of some of our larger epiphytes and there is some evidence to suggest that slugs ingesting lichen propagules are inadvertently helping them to disperse (Boch *et al*. 2011). However, grazing tracks were frequently seen on thalli and it is possible that such attacks may weaken thalli and slow growth (Asplund & Gauslaa 2008).

4. Branch snapping [right above] – large herbivores such as sheep, cattle and deer were found to snap young twigs from tree boles. These twigs provide a smooth bark habitat that may not be found elsewhere on the trunk. This effect was observed most frequently in cattle grazed woodlands.

5. Bark rubbing – the effects of sheep and cattle using tree boles as scratching posts was frequently observed. This action is thought to mainly affect fruiticose and foliose lichens growing amongst bryophyte mats which are relatively easily dislodged, rather than crustose species.

6. Lichen takeovers – competing lichens will grow over one another in a fight for supremacy and light. This effect was observed among both crustose and foliose species, though evidence was most obvious within the *Lobarion* community when large scale take overs were observed. Such overgrowth is likely to be slow and resulting local extinctions may only occur after several years.


7. Bryophyte takeovers – lichens and bryophytes are often found to grow side by side, however bryophytes are often the faster growing members of the community (Zoller *et al*. 2000) and will outcompete lichens by growing over the top of them in the competition for space and light.


8. Peeling bryophyte mats [see next page] – bryophyte mats were found to peel from tree boles, taking any lichen thalli along with them. This peeling may be started by an itchy herbivore (see point 5) or may occur during periods of high winds and/or heavy rain when the mats are saturated and are easily attached.

9. Birds – wind-blown bird nests were found to contain much lichen material. Foliose and fruiticose lichens, particularly *Hypotrachyna* and *Parmelia* spp., seemed to be used for these purposes. Some nests seemed to be comprised of a high percentage of lichen thalli, though whether these were collected from the ground (wind throw – see point 10 below) or from trees is unknown.

10. Rain/wind – poorly attached and thick thalli e.g. *Degelia* and *Pannaria* sp. tend to swell and become heavy after a rainshower, thus making them more susceptible to rain and other knocks that may send them tumbling from the trees. Here a piece of *Pannaria conoplea* was found with some bark still attached, lying on the ground. Whole thalli of other foliose species, e.g. *Lobaria*

pulmonaria, were often found. Thalli from more exposed places high up in the canopy are thought to be particularly susceptible to this effect.

11. Change in environment – slow changes to the environment of a tree are likely to cause local extinction events for epiphytic lichens. Seedlings and saplings may pose no threat to a nearby epiphyte, however as these young trees or shrubs gain height and the canopy develops, adjacent tree boles may experience a reduction in received light. This light reduction maybe of such a magnitude as to severely reduce the photosynthetic potential of its epiphytes, leading to slowed growth and eventual death. Rhododendron is an obvious culprit here. Alternatively, the changes to the environment may be much more sudden – the removal of nearby trees can transform a woodland habitat for epiphytes into a wayside tree habitat – the light and humidity levels being so different that the pre-existing species may find themselves ill-adapted to the new conditions.

12. Tree fall. Natural tree fall events within a woodland occur infrequently. However over the six weeks I spent in the woods carrying out my fieldwork I was lucky enough to hear such an event – the natural falling of what sounded like a rather large tree. Though the tree fall in itself would spell the end for attached epiphytes, the newly created gap will lift the light levels of surrounding trunks, thus providing an ideal habitat for epiphyte colonisation.

By the end of my fieldwork, I am feeling slightly more optimistic about detecting an extinction rate in my epiphytic species over the course of a single year. However, I will still be keeping my fingers crossed for an abundance of itchy sheep, hungry deer, brave slugs, nest-building birds, windy days, and ambitious bryophytes!

References

Asplund, J., Gauslaa, Y. (2008) Mollusc grazing limits growth and early development of the old forest lichen *Lobaria pulmonaria* in broadleaved forests. *Oecologia* **15**: 93-99.

Boch, S., Prati, D., Werth, S., Rüetschi, J., & Fischer, M. (2011) Lichen endozoochory by snails. *PLoS ONE* **6**(4): e18770. doi:10.1371/journal.pone.0018770

Fedrowitz, K., Kuusinen, M. & Snall, T. (2012) Metapopulation dynamics and future persistence of epiphytic cyanolichens in a European boreal forest ecosystem. *Journal of Applied Ecology* **49**: 493-502.

Snall, T., Ribeiro, P.J. & Rydin, H. (2003) Spatial occurrence and colonisations in patch-tracking metapopulations: local conditions versus dispersal. *Oikos* **103**: 566-578.

Snall, T., Pennanen, J., Kivisto, L. & Hanski, I. (2005) Modelling epiphyte metapopulation dynamics in a dynamic forest landscape. *Oikos* **109**: 209-222.

Zoller S., Frey, B. & Scheidegger, C. (2000). Juvenile development and diaspore survival in the threatened epiphytic lichen species *Sticta fuliginosa*, *Leptogium saturninum* and *Menegazzia terebrata*: conclusions for in situ conservation. *Plant Biology* **2**: 496-504.

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A surprising discovery in Kent

Sandhurst church is situated in the southernmost part of Kent very near the Kent/Sussex border. It stands on a ridge overlooking the Kent Ditch to the SW and the Rother valley to the SE. The churchyard is a Kent Wildlife Site designated by the Kent Wildlife Trust for its abundant biodiversity – flowers, insects, mammals including bats, and its lichens.

On a visit to the churchyard in May 2014 to update the lichen records, I was astounded to come across a single thallus of *Vulpicida pinastri* growing on the central rail of the three-railed chestnut fence which is the northern boundary of the churchyard. The thallus is 3.4 cm by 3.1 cm in size and is conveniently situated near the eastern end of the railings partly sheltered by a thick fence post and not in the immediate vicinity of car exhaust fumes from the car park. I have seen this species in Slovakia and in the Swiss Alps but I still couldn't quite believe my eyes when I saw it in Kent!

Vulpicida pinastri is mainly a boreal-montane lichen and it has been suggested that it is associated with late snow melt. It is found on acid-barked trees and on lignum but in its stronghold in the UK in the eastern Cairngorms, it occurs on relic

stands of old juniper (*Juniperus communis*) (Coppins, 2007). The wonderful yellow colour of the thallus is due to vulpinic acid and where it is plentiful the lichen was used to poison foxes (and wolves).

Vulpicida pinastri on chestnut fence rail at Sandhurst churchyard, Kent. Copyright Alan Bousfield.

What is it doing in Kent and how and when did it arrive? There have been sporadic records of *Vulpicida pinastri* from S. England (Exmoor and East Anglia) but most of the English records are from counties further north such as Durham and Northumberland. Steve Chambers found three small thalli on brash in a clear-felled conifer plantation in mid-Wales in 2011 but this Kent record seems to be the furthest south that the species has been recorded in the UK. Chris Ellis and Mark Binder (2007) suggest that three factors may be determining the distribution of *V. pinastri* in the UK:

1. Air pollution (both historical and present-day) in England may have limited its establishment and growth.
2. Climate warming may make the majority of England increasingly unsuitable for *V. pinastri*.
3. There is a lack of suitable habitat such as untreated fence posts.

Despite its geographical position, Kent can have a surprisingly continental-type climate and in winter it is often subjected to cold easterly winds which are not warmed by the narrow stretch of water between England and the Continent. It is possible that propagules of *V. pinastri* are carried on these easterly winds from the populations in Eastern Europe.

The long cold and snowy winters of 2009-2011 affected the whole of the UK including Kent and Steve Chambers (personal communication) suggests that these recent cold winters may have benefited the chance colonisation of this species.Wherever it came from, *Vulpicida pinastri* is a beautiful lichen to see but the chances of its long term survival at Sandhurst are probably not very strong.

My thanks to Sandy Coppins, Chris Ellis and Steve Chambers for helpful discussions, Janet Simkin for distribution data and Alan Bousfield for the photograph.

References

Coppins, S. (2007). Wildlife reports: Lichens. *British Wildlife* **18**(6): 443-444.

Ellis, C. and Binder, M. (2007). Inferred shift in the British distribution of *Vulpicida pinastri* using herbarium and mapping data. *British Lichen Society Bulletin* **101**: 4-10.

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Not new, not rare but perhaps interesting

Xanthoria snowcemica, on outer sea wall, Port St Mary, VC71, Isle of Man, GR 24(SC)/21269.67295, alt 5 m, July 2014. A typical site for this often overlooked and often over painted species. *B.J. Coppins & S.G. Price*

Brain Lichen says Gardyloo?

The Brain Lichen, *Diploicia canescens*, is one of the easiest lichens to recognise. It has dense convoluted folds (hence the nick-name – one of the few lichens that has a generally accepted one) that are the palest leaden grey and it is almost luminescent in its chalkiness. The individual rosettes are up to a couple of inches across, though usually smaller, but it can form a dense sward occupying big areas almost as a monoculture. Once you have your eye in, you can recognise it from a distance by jizz. In Gloucestershire, the bottom four feet of a spreading oak tree in pasture will often be pale because of this species. Shaded walls round an old cattle yard may have a thick crust of it.

Attic window in Standish with pale grey fan of *Diploicia canescens* under the opening light.

What I have just described is actually remarkable. Lichens are very choosy about what they grow on, so something that grows equally happily on brick and bark is responding to something very specific in its environment.

Diploicia canescens does well on lightly shaded, nutrient rich, vertical surfaces. Why then, I muse, is there a fan-shaped colony of it under the opening light of the attic window on my house? North-east facing so lightly shaded, vertical of course, but nutrient rich? The only explanation that readily occurs is that it has undergone years of nutrient enrichment from users of the attic depositing urine out of the window – whether directly (the sill is at 3ft so it would be possible for some) or from the chamber pot.

We have lived in the house since 2001, and are confident that this has not occurred in the recent past. Judging by the low number of occupants of the house over the latter part of the 20th century as reported by neighbours it is unlikely that the attics would have been pressed into bedroom service, but the presence of a servant's bell, and burn marks from tapers on the beams indicate that it was a well-used room in the more distant past. The house dates back to about 1750, and the census of 1851 says there were 10 people there including four servants.

Left: close up of young rosettes of *Diploicia canescens*; larger one is 1cm across. Right: How to identify *Diploicia canescens*. Dense chalky grey-white with white pruina (frosting). Often an additional dusting of algae. Edge pleated in soft rounded folds, like a brain. Centre with grainy greenish-white soredia (vegetative means of reproduction).

I have looked at pictures of the house when we first arrived, and the *Diploicia* fan is clear then. It is still there, largely unaltered in position and density. If it is responding to past nutrient enrichment, how long will it survive?

How common is this feature of a splash of *Diploicia* under a window, and is it largely restricted to attic bedrooms? I am now on the look-out for it, and any comments or observations would be welcome.

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Fertile *Normandina pulchella*

It was interesting to read about the record of *Normandina pulchella* in the Peak District National Park (David Hawksworth, BLS Bulletin 113). This species is not unusual in Carmarthenshire, but while trialling the *Chalara* ash survey here I was nevertheless quite surprised to record it on all ten of the 'Open' habitat ash trees and six out of the ten 'Plot' ash trees. More rewardingly, I found fertile squamules on two trees. One of these was an ash in my 'Plot' site, and the other on an old, leaning apple tree. The hymenial gel was K/I+ blue and the asci K/I-. The ascospores were 7-septate, avergaing 46 x 8 µm. Might fertile specimens also become more common in future?

Left: *Normandina pulchella* growing on *Frullania* on sheltered side of old apple tree. Right: fertile squamules in centre of photograph.

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BLS Summer Vacation Scholarship – investigating peptidase activity in lichens

This report provides a synopsis of the findings of my BLS Summer Vacation Scholarship at the University of Nottingham in 2014, under the supervision of Professor Peter Crittenden and Dr Niall Higgins, where peptidase activity in a variety of different lichen species was investigated.

Nottingham University Lichen Lab, Dr Niall Higgins (left), Yvette Harvey-Brown (middle) and Professor Peter Crittenden (right)

I have just completed my third year of a four year master of science degree at Nottingham. During my second year I undertook a research project to determine how the potential spread of *Chalara fraxinea* (ash dieback) across the UK might affect lichen biodiversity. I thoroughly enjoyed the project and was keen to gain more experience in lichenology, particularly in lichen biology. Fortunately the University of Nottingham has a very active lichen research group and with funding provided by the BLS this became possible. A current area of research at the Nottingham lichen lab is the investigation of surface bound enzyme activities in lichens. Surface enzyme activities are thought to be important because lichens often inhabit environments which are deficient in essential nutrients such as nitrogen (N) and phosphorus (P). Surface enzymes hydrolyse organic compounds releasing inorganic N and P which

can then be absorbed by the lichen. Previous research by Nottingham PhD student Jason Lewis (2012) showed that phosphomonoesterase (PME) activity, which catalyses the release of inorganic phosphorus, was higher in N-sensitive species (nitrophobes) than N-tolerant ones (nitrophytes). This pointed to a possible physiological difference between these two ecological groups.

Another potentially important group of enzymes for nutrient acquisition is peptidases. These enzymes hydrolyse amino acids from naturally occurring proteins or peptides and are thus classed as N degrading enzymes. Although peptidase activity has previously been demonstrated in ectomycorrhizal fungi (Shah *et al.*, 2013) their occurrence in lichens has not been documented and sources of organic N available to lichens in nature are poorly understood. The aim of my project was to compare the capacity for peptidase activity in 'nitrophytic' and 'nitrophobic' lichens, and to analyse whether peptidase and PME activities are correlated.

At the beginning of my placement 'nitrophytic' lichens were collected from Nottingham University Campus (e.g. *Xanthoria parietina, X. polycarpa, Physcia tenella*) and 'Nitrophobic' lichens, such as *Ramalina fraxinea* and *Lobaria pulmonaria* were collected in various sites in North Wales, Scotland and Derbyshire. Peptidase activities were assayed colorimetrically in a total of 15 species. Leucine and alanine aminopeptidase were analysed and activities were readily detectable in all lichens tested. In contrast to PME activity, peptidase activities were greater in 'nitrophytic' compared to 'nitrophobic' species. Why species apparently adapted to high N environments have greater levels of peptidase activity is not currently clear. As is often the case, more research will need to be done to find the answer.

This BLS scholarship provided me with a fantastic opportunity to improve my skills in lichen identification and physiological methods, and to experience being a member of a busy research group. It also gave me the chance to hone my bench skills in a laboratory. I am now about to embark on my year four research project in forest ecology and after graduation I am keen to begin a PhD programme in plant or fungal ecology. I am hoping that lichens might feature in my future research.

Acknowledgments

I would like to sincerely thank the BLS for funding this research, Peter Crittenden for helping with the application process and assisting with last minute lichen collecting. Lastly a big thank you to Niall Higgins for all his help, patience and advice throughout the placement.

References

Lewis, J. (2012) Bio-monitoring for atmospheric nitrogen pollution using epiphytic lichens and bryophytes. *PhD thesis*, University of Nottingham.

Shah, F., Rineau, F., Canbäck, B., Johansson, T. and Tunlid, A. (2013) The molecule components of the extracellular protein degradation pathways of the ectomycorrhizal fungus *Paxillus involutus*. *New Phytologist*, 200:875-887.

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Using DNA barcoding to identify the fungal and algal partners in the lichen symbiosis

Background to the project

In 2013 the University of East Anglia (UEA) was awarded a Research Councils UK grant to establish a school:university partnership programme. This partnership aims to embed research related activity into the secondary school environment to promote the development of skills, but also to enable opportunities for students to see how research is related to real-life questions and problems. As part of this programme Professor Kay Yeoman, from the School of Biological Sciences at UEA led a team of A-level students from five different schools, CNS High School, Wymondham Academy, Thetford Academy, Norwich School and East Norfolk 6th form to try to identify the fungal and algal partners in the mutualistic symbiosis of the lichen relationship.

Lichens seem on first appearances, to be a single organism, but they are in fact a mutualistic symbiosis between a fungus and an alga or cyanobacterium. Lichens are widely distributed through the world. They are useful indicators of pollution as they are very sensitive to sulphur dioxide level in the air. Despite their abundance in our environment, very little is known about the distribution of the algal partners in lichens and if this differs according to city or rural location. DNA barcoding is used for identification of species, it involves looking at a specific sequence of DNA. This sequence has to be an agreed section of DNA between all scientist doing barcoding projects. Barcoding can be used for different purposes, for example in the verification of herbal medicines and foodstuff, in biosecurity and trade in controlled species as well as in inventory and ecological surveys. The barcoding of animals is well underway, and uses the cytochrome c oxidase 1 gene, which codes for an enzyme found in the mitochondria which is important for respiration. Once a sequence has been obtained from a barcoding project, then it is submitted to the Barcode of Life Database, which is essentially a reference library which can then be used to identify unknown specimens. The barcoding technique involves chromosomal DNA extraction, and then amplification by Polymerase Chain Reaction (PCR) of the specific genes which are then sequenced and used for identification.

The aim of this research was to 'barcode' both the fungus and alga partners in lichens collected from across Norfolk.

Methods

To start the project, the students were given a workshop at the UEA on lichens and the molecular techniques they were going to use to barcode. Each school went back at the end of the day with a box of equipment, consumables and instructions needed for their research.

The students collected lichen samples from different locations within the locality, photographed and then identified them initially using a traditional taxonomic key. The chromosomal DNA was then extracted from the lichens using a DNA isolation kit obtained from Promega according to manufacturer's instructions. The DNA was then cleaned using a PCR inhibitor removal kit obtained from the Epigenetics Company according to manufacturer's instructions. This step was needed to remove to remove the phenolic compounds contaminating the DNA. The DNA was then analysed using DNA gel electrophoresis. The fungal and algal ITS genes were amplified using the fungal specific forward primer ITS1F-5' (5'-CTTGGTCATTTAGAGGAAGTAA-3') and the algal specific primer STICHO-ITS-F-5' (5'-GGATCATTGAATCTATCAACAAC-3'), respectively, both together with the universal reverse primer ITS4-3' (5'-TCCTCCGCTTATTGATATGC-3') (Fontaine *et al*. 2012).

The PCR products were cleaned using a kit supplied by Qiagen™, and sent for sequencing to the company MWG. The sequences obtained were then analysed using the BLAST analysis tool (*http://blast.ncbi.nlm.nih.gov/Blast.cgi*).

Results and Discussion

The initial step in the barcoding process was to collect lichen samples and gather data on location, photograph the samples and identify them using traditional taxonomic keys. Table 1 shows a selection of the range of lichens collected, and figure 1 shows a selection of images.

Sample Name	Identification	Latitude	Longitude	Location
EN4	*Lepraria incana*	52.5783N	1.72525S	Wall of grave yard
TA01	*Xanthoria polycarpa*	52°25.703N	0°45.423'E	Tree
TA04	*Physconia grisea*	52°25.634N	0°45.477'E	Tree
TA05	*Xanthoria polycarpa*	52°25.634N	0o45.477'E	Beech tree
TA07	*Hypogymnia physodes*	52°25.628N	0°45.471'E	Tree
TA11	*Xanthoria polycarpa*	52°25.619N	0°45.493'E	Tree
TA12	*Xanthoria parietina*	52°25.615'N	0°45.492'E	Gravestone
TA14	*Xanthoria polycarpa*	52°25.383'N	0°46.960'E	Tree
TA15	*Xanthoria polycarpa*	52°25.379'N	0°46.962'E	Tree
TA18	*Lepraria incana*	52°25.318'N	0°46.950'E	Tree
TA19	*Phycsonia grisea*	52°25.316'N	0°46.952'E	Tree
TA20	*Physcia tenella*	52°24.526'N	0°45.186'E	Metal bench
TA21	*Xanthoria parietina*	52°24.529'N	0°45.209'E	Stone marker

Table 1. A typical range of lichen samples collected by students

Figure 1. Images of the some of the lichen samples obtained in this barcoding project.

After initial identification, the chromosomal DNA from the lichens was isolated, and cleaned. Figure 2 shows a typical DNA agarose gel electrophoresis of the chromosomal DNA obtained from the lichen samples.

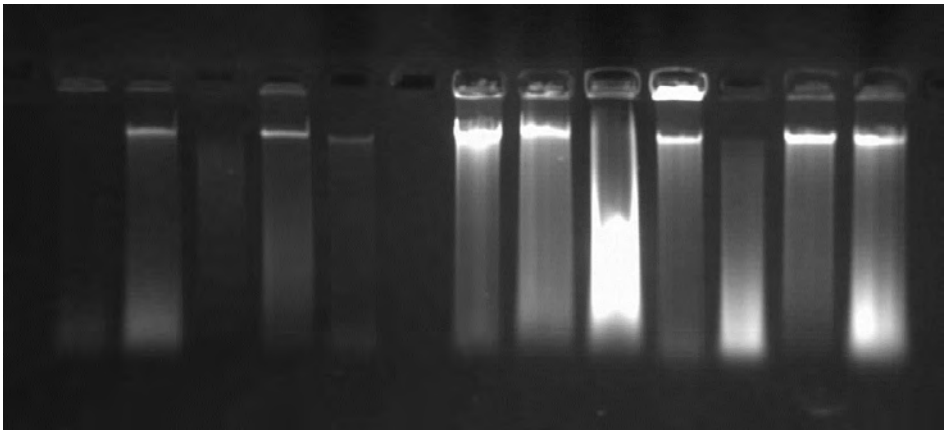

Figure 2. Chromosomal DNA extracted from lichen samples. Lanes 1-5 East Norfolk 6th form (samples 1-5 in lanes 1-5), Lane 6 is blank, Lanes 7-13 Thetford (Lane 7 = sample 05, 8 = sample 14, 9 = sample 15, 10 = sample 18, 11 = sample 19, 12 = sample 20, 13 = sample 21)

The chromosomal DNA was then used in a PCR reaction to amplify the specific sequences needed for the identification. Figure 3 shows a typical analysis of the fungal and algal PCR products obtained.

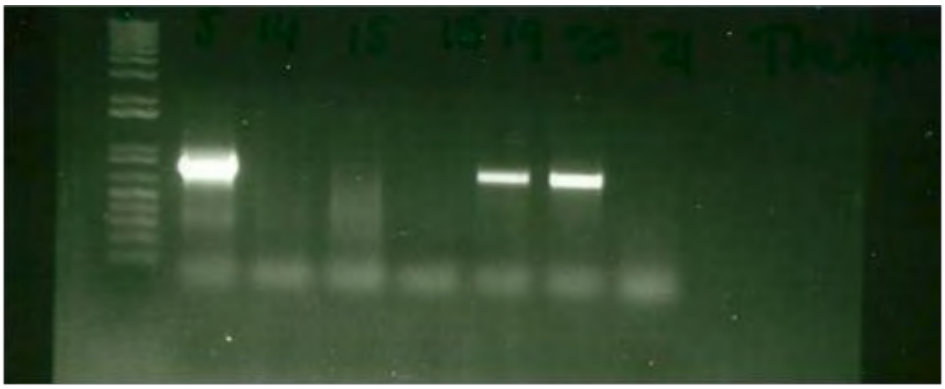

Figure 3. PCR products obtained from the amplification of chromosomal DNA isolated from lichen using the fungal specific primers , (Lanes 1-4) and algal specific primers (Lanes 5-7), M: marker.

The PCR products obtained were cleaned and sequenced by the company MWG. The fungi and algae were identified by analysing the sequences using BLAST (http://blast.st-va.ncbi.nlm.nih.gov/Blast.cgi). Lichens are generally named according to their morphology determining fungal partner. It has to be noted at this point, that given time constraints for our project, we only obtained partial sequences for the PCR products, further analysis would enable us to gain a more secure identification. The putative identifications are presented in table 2.

Algal Identification	**Lichen (Fungal) Identification**
Diplosphaera chodatii	*Xanthoria parietina*
Desmococcus olivaceus	*Physconia grisea*
Chlorophyta sp.	*Xanthoria aureola*
Stichococcus bacillaris	*Umbilicaria cylindrica*
	Caloplaca cerina
	Xanthoria polycarpa

Table 2 The species of algae and lichen identified through the barcoding technique

There were a few lichen samples for which both the algal partner and fungal partner were identified through the barcoding sequences. The algae identified included *Stichococcus bacillaris* obtained from the lichen *Xanthoria polycarpa* and *Diplosphaera chodatii* from the lichens *Umbilicaria cylindrica and Xanthoria parietina.* Mixing barcoding sequences with traditional identification, then *Chlorophyta sp.* was obtained from *Physcia tenella and Desmococcus olivaceus* from *Xanthoria polycarpa.* It is known that around 50% of lichen species form a partnership with algae belonging to the genus *Trebouxia* of the phylum *Chlorophyta* (Grube & Muggia 2010). The work presented in this article hints at a more diverse range of algae distribution, in particular *Diplosphaera chodatii* was identified from several different lichen samples. Thus *et al*. (2011) also identified *D. chodatii* from lichens in the family *Verrucariaceae*. More work however, would need to be done to fully sequence the barcoding PCR

products, to be certain of the identifications proposed above. Another interesting observation was the putative identification of the common alga *Desmococcus olivaceus*, we could not find any reference in the scientific literature of *D. olivaceus* as a phycobiont, although it is often found in the same habitat as lichens and grows on the surface of leaves. This could indicate that *D. olivaceus* was growing on the surface of the lichen, and thus the chromosomal DNA was isolated along with that of the true mycobiont and phycobiont. The difficulty of obtaining sufficient numbers of algae sequences from lichen samples mean that we were unable to say anything meaningful about the distribution of algae as phycobionts in Norfolk.

Despite a growing body of research, very little is known about the algae associated with lichens, and the sequences obtained from this piece of research will be added to the National Centre for Biotechnology Information DNA database (NCBI).

Challenges to the research project

This project was challenging, lichens are very tough, and it was hard to sufficiently break down the fungal and algae cell walls to extract the chromosomal DNA. The students had to persevere and alter their original protocol to extract DNA of sufficient quantity and quality for the PCR step. Despite this, many of the students were successful in obtaining a good amount of DNA pure enough for amplification. Another tricky step was the level of phenolic material isolated along with the DNA which upset the PCR reaction. The students had to clean the DNA before we could attempt the PCR. Finally though, we were able to send off PCR products for sequencing and to subsequently analyse the data.

Skills and Reflection

This was a challenging project, the students did a remarkable job in gathering samples and extracting the chromosomal DNA, which was a difficult task. They worked outside of school hours to complete the work and showed great tenacity when encountering problems, with one group having to begin again after their sample had been accidentally thrown away! Students taking part learnt the value of both traditional and modern molecular taxonomy, they were able to apply and then refine techniques. They also learnt that research is an on-going process, there are many technical pitfalls, with as many questions raised by the data as answered. I am very proud of their achievement.

References

Fontaine, K.M., Beck, A., Stocker-Worgotter, E. & Piercey-Normore, M.D. (2012). Photobiont relationships and phylogenetic history of *Dermatocarpon luridum* var. *luridum* and related *Dermatocarpon* species. *Plants* **1**(2): 39-60.

Grube, M. & Muggia, L. (2010). Identifying algal symbionts in lichen symbiosis. *Tools for Identifying Biodiversity: Progress and Problems* pp. 295-299.

Thus, H.; Muggia, L; Pérez-Ortega, S.; Favero-Longo, S.; Joneson, S.; O'Brien, H.; Nelsen, M.P.; Duque-Thus, R.; Grube, M.; Friedl, T.; et al. (2011). Revisiting photobiont diversity in the lichen family *Verrucariaceae* (*Ascomycota*). European Journal of Phycology **46**: 399–415.

Students from East Norfolk 6th Form

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Brian Coppins – 65 years old…..

On 10 May 2014, a celebration of Brian Coppins's 65th birthday occurred at the Royal Botanic Garden, Edinburgh, during which he was presented with a specially bound volume of the *Lichenologist* volume **46**(3) that was dedicated to him. Above, a group photo; below, Brian with his fellow editors Gintaras Kantvilas (left) and Alan Fryday (right).

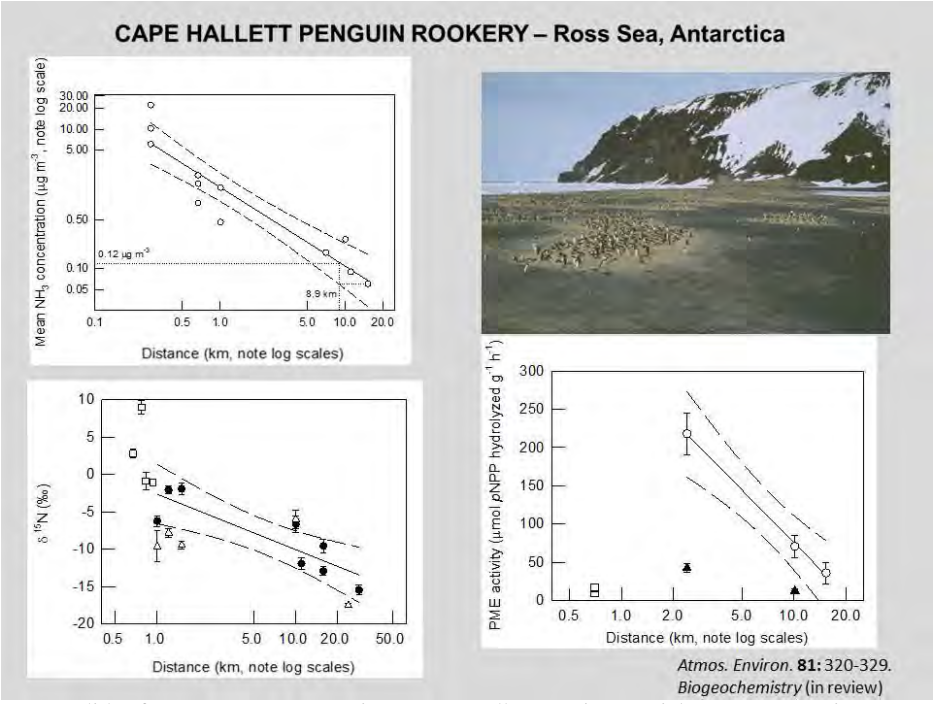
Taking trouble with lichen

On 13 May 2014 Professor Peter Crittenden gave his inaugural lecture at the University of Nottingham's School of Life Sciences, having been appointed to the chair of Plant and Microbial Ecology in 2013. Guests included university colleagues and people who have been key influences at many stages of his career, an astute school-master who had given early encouragement, friends and close family, together with an enthusiastic contingent of students and young researchers – testament to Peter's strong track record in guiding young scientists having the potential to launch their own research careers. On behalf of the University of Nottingham formal recognition of Peter's scholarship and the honour bestowed by professorial status were given by Pro-Vice-Chancellor Professor Sara O'Hara, herself keenly interested in environmental issues, as a geographer. Later over wine and canapés the audience mingled, taking opportunity to congratulate Peter personally and to thank those who have – and continue – to support this much respected key figure in British lichenology.

In his lecture, Professor Crittenden focused on the tight coupling of lichen chemistry to that of the atmosphere, enabling the use of lichens as accurate bio-indicators. His pioneering focus on how lichens can adjust to optimise the usage and capture of nitrogen and phosphorus marked a shift from previous work that had centred on the metabolism of carbon, and thus furthered understanding of lichen physiology in nutrient-poor habitats. His researches while at McMaster University (Canada) fuelled this pursuit through fieldwork in lichen woodlands of the Canadian Northwest Territories that are typically carpeted by *Stereocaulon* species (in the far northwest) or *Cladonia*s (in northeastern areas). Work in the Antarctica and Arctic regions was described, in which he explored the physiological response of lichens to rainfall (or snow) and nutrient enrichment (eg from penguins). His researches in extreme habitats have been paralleled by studies in the UK, both in the field and laboratory, including on surface enzyme activity and the relative balance of potassium and magnesium ions in the apices of *Cladonia portentosa*.

With his keen ability to spot and probe the curious, Peter and co-workers have noted that aspects of sex in lichens, such as patterns of outbreeding and selfing, result in variety or uniformity of offspring respectively. Molecular data supported these results and gave rise to the hypothesis that selfing can enable successful colonisation by lichens in harsh conditions where a stable, highly adapted genetic line would be advantageous. These findings were brought to the attention of wide scientific readership through a letter in *Nature*.

The dominance of mat-forming lichens in nutrient-poor habitats led Peter to the interesting connection that the three-dimensional forms of such lichens, eg *Cladonia* species, resemble trees as revealed by X-ray micro computed tomography. When in continuous swards these lichens bear a striking similarity to miniature forests and their branching structures can maximise the interception of light and capture of nutrients from rainfall.



Slides from Peter's presentation. Cape Hallett nutrient enrichment, Antarctica

Peter Crittenden (1984) discussing his lysimeter experiments with the late Professor Paavo Kallio, founder and director of the Kevo Subarctic Research Station. Present also is Peter's first son (in baby-carrier on his back).

Ecological significance of homothallism

brief communications

Reproductive systems

Sex and the single lichen

Lichens are physiologically adapted for growth in dry, nutrient-deficient and temporarily thermally extreme habitats[1], but it is unclear how the reproductive strategies of lichen symbionts might have evolved to maximize colonization. We now show that sexually reproducing lichen-forming fungi can self-fertilize, and propose that this breeding system allows these symbiotic organisms to reproduce successfully in harsh environments.

Nature **404:** 564.

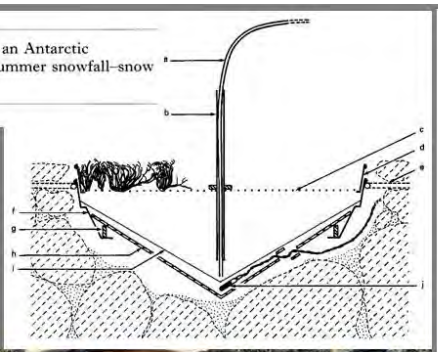
Haupt Nunataks, Wilkes Land, Antarctica

Namib Desert

Homothallism, letter to *Nature*

Nutrient exchange in an Antarctic macrolichen during summer snowfall–snow melt events

By P. D. CRITTENDEN



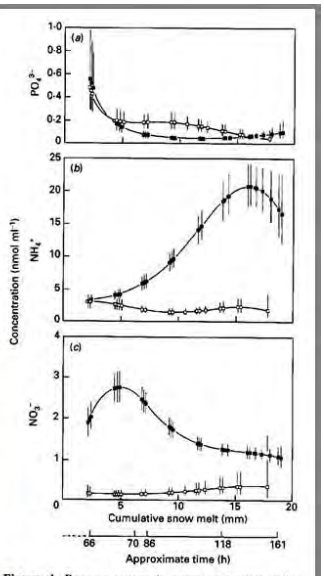


Figure 4. Progress curves in snow melt event 7 for concentrations of PO_4^{3-} (*a*), NH_4^+ (*b*) and NO_3^- (*c*) in unmodified snow meltwater (■) and throughfall from *Usnea sphacelata* (□). Snowfall commenced at *c.* 2300 hours on 30 January and snow melt was complete at *c.* 1400 hours on 6 February. Fitted values ($n = 5$) are shown together with 95% confidence limits. Note that the time scale is non-linear and provides an approximate indication only of time from the onset of snowfall.

Nutrient exchange in snow melt, Antarctica

Light touches of humour held attention rapt throughout the inaugural address, starting with reference to the John Wyndham novel (*Trouble with Lichen*, 1960) that lent its title to the event, and inclusion of a spoof cover page of *Private Eye* entitled 'Lichen Sex Scandal'. Illustrations were vividly used to introduce lichen symbiosis and the capacity of lichens to inhabit extreme environments by harnessing available water and nutrients (eg *Caloplaca elegantissima* in the Namib desert); and the challenge of fieldwork in taxing conditions (from swarms of midges in the Northwest Territories of Canada to the biting cold of polar regions). Peter generously acknowledged those who have influenced him, past and present colleagues from across the world and particularly those at the University of Nottingham who provide both professional stimulus – and healthy leisure challenges including the fast-pedalling of the Nottingham cycling group. He warmly thanked everyone for their support and, most especially, his wife Margaret and his two sons, who were present.

Biography

Peter Crittenden gained his first degree in botany at the University of London (Westfield College) in 1971 and completed his PhD at the University of Sheffield in 1974. As a NERC / NATO Overseas Research Fellow he was at McMaster University (Canada) 1975–77, before being appointed Junior Research Fellow at the University of Sheffield which led to a Lectureship, Senior Lectureship and then Readership, at the University of Nottingham. He worked as a visiting scientist in the Australian Antarctica (1995) and with Antarctica New Zealand (2004–5) and served as President of the International Association of Lichenology (2008–12). Peter has also served as President of the British Lichen Society (1998–99) and is Senior Editor of the BLS' academic journal, *The Lichenologist*. Honours bestowed include Honorary Membership of the British Lichen Society (2012) and the Acharius Medal for lifetime achievement in lichenology awarded by the International Association for Lichenology (at IMC10 in Bangkok, August 2014).

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British Isles List of Lichens and Lichenicolous Fungi

September 2014 update to list

The fully corrected list is available on the BLS web site, *www.britishlichensociety.org.uk*

We are indebted to Paul Diederich, Stefan Ekman and other checklist users, for bringing several of the required changes to our notice. Anyone encountering difficulties or errors regarding nomenclature or BLS code numbers, please contact one of us, as below.

E-mail contacts (with main responsibilities):
Brian Coppins (nomenclature, BLS and NBN species dictionaries, spelling, authorities, dates of publication): *lichensEL@btinternet.com*
Mark Seaward (allocation of BLS numbers and abbreviations): *m.r.d.seaward@bradford.ac.uk*
Janet Simkin (Recorder and spread-sheet species dictionaries): *janetsimkin@btinternet.com*

Add:			Notes
2633	*Abrothallus parmotrematis* #	Abro parmot #	
2630	*Arthonia lecanoricola* #	Arthon leca #	
2631	*Arthonia protoparmeliopseos* #	Arthon prot #	
2635	*Bacidia coprodes*	Baci copr	
2636	*Bacidia inornata*	Baci inor	
2628	*Lasiosphaeriopsis stereocaulicola* #	Lasio ster #	
2632	*Lichenostigma chlaroterae* #	Lichenostigma chla #	
2641	*Miriquidica subplumbea*	Miri subp	
2637	*Porpidia irrigua*	Porp irri	
2629	*Protothelenella santessonii* #	Protothel sant #	
2640	*Tremella parmeliarum* #	Tremel parm #	
850	*Verrucaria devensis*	Verrucar deve	Now considered an independent species and not a synonym of *Verrucaria praetermissa*.
2634	*Verrucaria lapidicola*	Verrucar lapi	

Change of epithet:						
Change from:			Replace with:			Notes
488	*Dictyonema interruptum*	Dict inte	488	*Dictyonema coppinsii*	Dict copp	
1305	*Sarcogyne privigna*	Sarcog priv	1305	*Sarcogyne hypophaea*	Sarcog hypo	

Change of abbreviation:						
Change from:			Replace with:			Notes
2004	*Abrothallus parmeliarum* #	Abro parm #	2004	*Abrothallus parmeliarum* #	Abro parmel #	

B.J. Coppins, M.R.D. Seaward & J. Simkin

Literature pertaining to British lichens - 55

Lichenologist **46**(3) was published on 12 May 2014, **46**(4) on 9 July 2014, and **46**(5) on 14 August 2014.

Taxa prefixed by * are additions to the checklists of lichens and lichenicolous fungi for Britain and Ireland. Aside comments in square brackets are by the author of this compilation.

BALOCH, E., GILENSTAM, G. & WEDIN, M. 2013. The relationships of *Odontotrema* (*Odontotremataceae*) and the resurrected *Sphaeropezia* (*Stictidaceae*)—new combinations and three new *Sphaeropezia* species. *Mycologia* **105:** 384–397. Many species of *Odontotrema* are transferred to the resurrected genus *Sphaeropezia* Sacc. (1884). A single British species is involved: *Sphaeropezia pertusariae* (Etayo, Diederich & Coppins) Baloch & Wedin (syn. *Odontotrema pertusariae*).

EKMAN, S. & SVENSSON, M. 2014. *Brianaria* (*Psoraceae*), a new genus to accommodate the *Micarea sylvicola* group. *Lichenologist* **46:** 285–294. Members of the *Micarea sylvicola* group are transferred to *Brianaria* S. Ekman & M. Svensson as: *B. bauschiana* (Körb.) S. Ekman & M. Svensson, *B. lutulata* (Nyl.) S. Ekman & M. Svensson, *B. sylvicola* (Flot. ex Körb.) S. Ekman & M. Svensson and *B. tuberculata* (Sommerf.) S. Ekman & M. Svensson.

EKMAN, S., WEDIN, M., LINDBLOM, L. & JØRGENSEN, P. 2014. Extended phylogeny and a revised generic classification of the *Pannariaceae* (*Peltigerales*, Ascomycota). *Lichenologist* **46:** 627–656. *Fuscopannaria sampaiana* is transferred to the new genus *Nevesia* P.M. Jørg., L. Lindblom, Wedin & S. Ekman as *N. sampaiana* (Tav.) P.M. Jørg., L. Lindblom, Wedin & S. Ekman. The European species of *Degelia* are transferred to the new genus *Pectenia* P.M. Jørg., L. Lindblom, Wedin & S. Ekman as: *P. atlantica* (Degel.) P.M. Jørg., L. Lindblom, Wedin & S. Ekman, *P. cyanoloma* (Schaer.) P.M. Jørg., L. Lindblom, Wedin & S. Ekman, *P. ligulata* (P.M. Jørg. & P. James) P.M. Jørg., L. Lindblom, Wedin & S. Ekman, and *P. plumbea* (Lightf.) P.M. Jørg., L. Lindblom, Wedin & S. Ekman.

HAFELLNER, J. 2013. Lichenicolous Biota (Nos 151–180). *Fritschiana* **76:** 47–68. *Lichen varians* Davies, the basionym of *Arthonia varians*, is lectotypified on the lichenicolous fungus depicted in the illustration in the protologue, and an epitype is selected from an example of no. 152 in this exsiccate.

HAFELLNER, J., OBERMAYER, W. & TRETIACH, M. 2014. *Miriquidica invadens*, an obligate youth parasite on *Sporastatia* with remarks and a key to species of the *M. griseoatra* group. *Lichenologist* **46:** 303–331. British material previously

known as *M. griseoatra* is shown to be two species: *M. griseoatra* s. str. (with a red-brown to dark violet-brown hypothecium) and *M. subplumbea* (Anzi) Cl. Roux (with a hyaline hypothecium).

HAWKSWORTH, D.L., AHTI, T., COPPINS, B.J. & SIPMAN, H.J.M. 2013. (2237) Proposal to reject the name *Lichen quisquiliaris* in order to protect the name *Leprocaulon microscopicum* (Ascomycota: Leprocaulales: *Leprocaulaceae*). *Taxon* **62:** 1335–1337.

HAWKSWORTH, D.L. & JØRGENESEN, P.M. 2013. (2196) Proposal to conserve the name *Alectoria fuscescens* (*Bryoria fuscescens*) against *Lichen chalybeiformis* and *Alectoria subcana* (Ascomycota: Lecanorales: *Parmeliaceae*). *Taxon* **62:** 1057.

JØRGENSEN, P.M. 2014. Taxonomy and nomenclature of *Collema fasciculare* (L.) G.H. Weber. *Lichenologist* **46:** 594. *Collema fasciculare* is considered not to belong to *Arctomia* (see Otálora & Wedin in *Lichenologist* **45:** 295–304 (2013), but to a separate genus for which an old name already exists, namely *Gabura* Adans. (1763). The consequent new combination *G. fascicularis* [as "*fasciculare*"] (L.) P.M. Jørg. is made.

LENDEMER, J.C. 2013. A monograph of the crustose members of the genus *Lepraria* Ach. s. str. (*Stereocaulaceae*, Lichenized Ascomycetes) in North America north of Mexico. *Opuscula Philolichenum* **11:** 27–141. *Lepraria finkii* (B. de Lesd.) R.C. Harris (1985) is taken up for the species previously known as *L. lobificans*. It was found that the type of *L. lobificans* was conspecific with (and an earlier name for) *L. santosii* Argüello & A. Crespo (2006), confined to the Mediterranean-Macaronesian region. A broad concept is taken for *L. neglecta*, including, for example, *L. borealis* and *L. caesioalba*. [An essential, well-illustrated reference for 'Leprariophiles'].

LÜCKING, R., BARRIE, F.R. & GENNEY, D. 2014. *Dictyonema coppinsii*, a new name for the European species known as *Dictyonema interruptum* (Basidiomycota: *Agaricales*: *Hygrophoraceae*), with a validation of its photobiont *Rhizonema* (Cyanoprokaryota: *Nostocales*: *Rhizonemataceae*. *Lichenologist* **46:** 261–267. To remove nomenclatural uncertainties, the basidiolichen known as *Dictyonema interruptum* is renamed as *D. coppinsii* Lücking, Barrie & Genney.

OBERMAYER, W. 2013. Dupla Graecensia Lichenum (2013, numbers 801–960). *Fritschiana* **76:** 1–45. The new combination *Lecanographa dilleniana* (Ach.) Hafellner & Obermayer (syn. *Lecanactis dilleniana*) is made.

ORANGE, A. 2014. *Porpidia irrigua*, a new species related to *P. contraponenda*. *Lichenologist* **46:** 269–284. A new species, *Porpidia irrigua* Orange, is described from the British Isles and Norway.

ORANGE, A. 2014. Two misunderstood species related to *Verrucaria praetermissa* (*Verrucariaceae*, lichenized Ascomycota). *Lichenologist* **46:** 605–615. *Leucocarposis devensis*, formerly thought to be a synonym of *V. praetermissa*, is shown to be a related species: *V. devensis* (G. Salisb.) Orange. An additional related species is the new *V. lapidicola* Orange.

OTÁLORA, M.A.G. & WEDIN, M. 2014. *Scytinium pulvinatum* comb. nov. (Collemataceae, Peltigerales). *Mycosphere* **5**(4): 502–503 [Doi 10.5943/mycosphere/5/4/1]. *Leptogium pulvinatum* is formally transferred to *Scytinium*, as *S. pulvinatum* (Hoffm.) Otálora, P.M. Jørg. & Wedin. This was an unfortunate omission from the paper by Otálora *et al.* (2013) [see Literature Pertaining 54].

PENTECOST, A. 2014. The cryptogamic epiphytes of Ash (*Fraxinus excelsior* L.) in an ancient pasture-woodland: relationships with some environmental variables of relevance to woodland epiphyte management. *Cryptogamie, Bryologie* **35:** 19–36. This study, carried out in West Sussex, recorded 115 epiphytes from 75 ash trees. It confirmed the importance of ash as a phorophyte, and emphasized the need for conservation measures in the wider context of woodland management, with the provision of open glades on different scales permitting a broad range of exposure and sheltered habitats plus a sustainable age-structure for the tree population to help stabilise woodland diversity.

PRINTZEN, C. 2014. A molecular phylogeny of the lichen genus *Biatora* including some morphologically similar species. *Lichenologist* **46:** 441–453. Phylogenetic studies show that *Bacidia beckhausii* is referable to *Biatora* as *Biatora beckhausii* (Körb.) Tuck. (1988).

RODRIGUEZ FLAKUS, P. & PRINTZEN, C. 2014. *Palicella*, a new genus of lichenized fungi and its phylogenetic position within *Lecanoraceae*. *Lichenologist* **46:** 535–552. *Lecanora filamentosa* is transferred to the new genus *Palicella* Rodr. Flakus & Printzen as *P. filamentosa* (Stirt.) Rodr. Flakus & Printzen.

SEAWARD, M.R.D. & RICHARDSON, D.H.S. 2013. Lichen flora of Clare Island. In SYNOTT, D. (ed.) *New Survey of Clare Island*. Pp 233–251. Dublin: Royal Irish Academy. [Not seen.]

TEHLER, A., DIEDERICH, P. & ERTZ, D. 2013. Proposal to reject the name *Lichen conspurcatus* (*Roccellaceae*). *Taxon* **62:** 1334–1335.

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New, rare and interesting lichens

Contributions to this section are always welcome. Submit entries to Chris Hitch, Orchella Lodge, 14, Hawthorn Close, Knodishall, Saxmundham, Suffolk, IP17 1XW, in the form of species, habitat, locality, VC no, VC name, (from 1997, nomenclature to follow that given in the appendix, see BLS *Bulletin* 79, which is based on the Biological Record Centre for instructions for Recorders, ITE, Monks Wood Experimental Station, Abbots Ripton, PE17 2LS, 1974). Grid Ref (GR) (please add letters for the 100km squares to aid BioBase and Recorder 2000, as these are used in the database and on the NBN Gateway), altitude (alt), where applicable in metres (m), date (month and year). NRI records should now include details of what the entry represents, eg specimen in Herb. **E**, Hitch etc., with accession number where applicable, field record or photograph, to allow for future verification if necessary or to aid paper/report writing. Determined/confirmed by, Comments, New to/the, Finally recorder. An authority with date after species is only required when the species is new to the British Isles. Records of lichens listed in the RDB are particularly welcome, even from previously known localities. In the interests of accuracy, the data can be sent to me on e-mail, my address is *cjbh.orchldge@freeuk.com*, or if not, then typescript. Copy should reach the subeditor at least a fortnight before the deadline for the *Bulletin*. *Please read these instructions carefully*.

New to the British Isles

Bacidia coprodes (Körb.) Lettau (1912): on mica-schist of west-facing crags, Glasallt Burn, Caenlochan SSSI, VC 90, Angus, GR 37(NO)/18-77-, August 1989. Herb. Coppins 13370 & Gilbert (**E**). Determinrd by S. Ekman. Description to be in a forthcoming paper by Stefan Ekman. **BLS No. 2635**. *B. J. Coppins*

Bacidia inornata (Nyl.) Blomb. & Forssell (1880): on shaded boulder near stream, with *Micarea lutulata*, Drummond Wood, Drummond Lochs SSSI, Crieff, VC 88, Mid-Perthshire, GR 27(NN)/8–1–, August 1978. Herb. Coppins 3617 (**E**). Determined by S. Ekman. Also known from two other localities in Mid-Perthshire, and one in Carmarthenshire, see below under **Other Records**. Description to be in a forthcoming paper by Stefan Ekman. **BLS No. 2636**. *B. J. Coppins*

Tremella parmeliarum Diederich (1996): on thallus of *Parmotrema reticulatum*, on fallen twigs of old *Pinus*, Glengarriff, VC H3, West Cork, GR 00(V)/931.561, May 2014. Herb. Paul s.n. (**E**). Determined by B. J. Coppins. Forming conspicuous, large brown 'galls', to 4 mm diam., on the thallus of the host. Previously known in Europe only from Portugal. For description and illustrations see Diederich in *Bibliotheca Lichenologica* **61:** 125–130 (1996). **BLS No. 2640** *H. Paul*

Other records

Abrothallus usneae: for details, see under *Lichenoconium cargillianum*.

Abrothallus usneae: on *Biatoropsis* 'galls' on *Usnea subfloridana*, Grudie Oakwood, Strath Bran, VC 106, East Ross, GR 28(NH)/2885.6165, March 2014. Herb. Coppins 24357 (**E**). New to the Vice-county. *B. J. Coppins, A. Acton & A. Taylor-Piggott*

Absconditella sphagnorum: two records from VC 46, Cardiganshire; (i) on sides of decaying *Sphagnum papillosum* capitula in upland blanket bog, Bryn yr Hyrddod, northeast of Teifi Pools, GR 22(SN)/805.690, alt 495 m, May 2014; (ii) on *S.papillosum* capitula on edge of bog moss mound draped in *Vaccinium oxycoccos* in small area of grazing-degraded *Molinia* blanket bog on upland saddle, north flank of Esgair Goch, east of Teifi Pools, GR 22(SN)/817.665, alt 445 m, June 2014. Herb. SPC. New to Wales. *S. P. Chambers*

Arthonia atlantica: on an overhanging rock face under old *Quercus* within *Quercus – Betula* pasture woodland, Coed Hafod-y-llyn, Hafod Garregog NNR, VC 48, Merionethshire, GR 23(SH)/5981.4513, May, 2014. A new vice-county record for this section 42 (BAP) species. *N. A. Sanderson*

Arthonia diploiciae: on thallus of *Diploicia canescens* on north wall of church, Nether Stowey, VC 5, South Somerset, GR 31(ST)/196.396, alt 60 m, February 2014. Herb. Coppins 24413 (**E**). New to the county. *B. J. Coppins*

Arthonia excipienda: on twigs of stunted *Fraxinus* sapling growing out of north-facing, low limestone outcrop, above the copper mine, Rassal SSSI, Kishorn, VC 105, West Ross, GR 18(NG)/8491.4317, alt *c.* 150 m, November 2013. Herb. Coppins 24331 (**E**). Second record of this species for the Vice-county, and from an unusual niche that suggests it could be a commoner species than supposed. *B. J. Coppins & A. Acton*

Arthonia fuscopurpurea: on *Peltigera hymenina* on mossy rock, eastern end of Grudie Oakwood, Strath Bran, VC 106, East Ross, GR 28(NH)/306.618, alt 120 m, March 2014. Herb. Coppins 24376 (**E**). New to the Vice-county.
B. J. Coppins & A. Taylor-Piggott

Arthonia graphidicola: parasitic on *Graphis scripta* on *Corylus*, *Fraxinus* and *Fagus*, Coed Hafod-y-llyn, Hafod Garregog NNR & Coed Crafnant, VC 48, Merionethshire, GR 23(SH)/6032.4433, 23(SH)/6033.4436, 23(SH)/6040.4449, 23(SH)/620.287 & 23(SH)/61-28, May, 2014. A rarely recorded parasite in Wales and these are the first records of this species from north Wales. *N. A. Sanderson*

Arthonia muscigena: on *Corylus*, Ivythorn Hill, Street, VC 6 North Somerset, GR 31(ST)/466.349, March 2014. New to the Vice-county. *D. J. Hill*

Arthonia phaeophysciae: with *Buelliella physcicola* on thallus of *Phaeophyscia orbicularis* on trunk of *Acer platanoides*, Poynings Avenue, Southchurch, Southend-on-Sea, VC 18, South Essex, GR 51(TQ/902.866, November 2011. Herb. P. M. Earland-Bennett. Determined by B. J. Coppins. New to Essex. *P. M. Earland-Bennett*

Arthonia pruinata: forming large patches on southwest and southeast sides of ancient *Quercus*, An Cuilinn, Grudie Oakwood, Strath Bran, VC 106, East Ross, GR 28(NH)/2941.6157, alt *c.* 140 m, March 2014. Herb. Coppins 24366 (**E**). New to the

Vice-county, and the northernmost British record.

B. J. Coppins, A. Acton & A. Taylor-Piggott

***Arthopyrenia fraxini**:* on *Corylus* & *Sorbus*, south-facing *Fraxinus- Corylus* woodland, Nant-y-gwyrddail, VC 48, Merionethshire, GR 23(SH)/677.145, February 2014, Coppins 24419 (**E**). New to the Vice-county. *B. J. & A. M. Coppins*

***Bacidia absistens*:** on twig of standing dead *Ulex europaeus* bush in scrubby woodland on river shingle, east bank of the Afon Rheidol, east of Rhiwarthen, VC 46, Cardiganshire, GR 22(SN)/656.793, alt 25 m, August 2014. Herb. SPC. New to the Vice-county. *S. P. Chambers & H. F. Clow*

***Bacidia circumspecta**:* in wound track on trunk of old *Betula,* Grudie Oakwood, Strath Bran, VC 106, East Ross, GR 28(NH)/2887.6159, March 2014. Herb. Coppins 24358 (**E**). New to the Vice-county. *B. J. Coppins, A. Acton & A. Taylor-Piggott*

***Bacidia friesiana**:* on *Sambucus*, Fancy Grove Wood, on west side of River South Esk, Newtongrange, VC 83, Midlothian, GR 36(NT)/32-64-, alt 160 m, June 2014. Herb. Coppins 24443 (**E**). New to southeast Scotland. *B. J. Coppins*

***Bacidia friesiana**:* on *Sambucus*, woodland strip west of Windford Dub Plantation, VC 82 East Lothian, GR 36(NT)/699.728, alt 150 m, June 2014. Herb. Coppins 24439 (**E**). New to the Vice-county. *B. J. Coppins*

Bacidia friesiana: on multi stemmed *Sambucus nigra* in Macey's Meadow orchard, West Malling, Kent, VC 16, West Kent, GR 51(TQ)/675.580, July 2014. Herb. Powell 3534. New to the Vice-county. *M. Powell & I. Blatchley.*

For the three following entries, see also **New to the British Isles**

***Bacidia inornata**:* on sheltered underhang in rock-face by stream, wood southeast of Cribyn Du, Allt Rhyd-y-groes NNR, VC 44, Carmarthenshire, GR 22(SN)/7–4–, July 1981. Herb. Coppins 8597 & Woods (**E**). Determined by S. Ekman. New to Wales. *B. J. Coppins*

***Bacidia inornata**:* on shaded rocks under trees by river, Moness Wood, Birks of Aberfeldy SSSI, Aberfeldy, VC 88, Mid-Perthshire, GR 27(NN)/85-47-, April 1986. Herb. Coppins 11270 (**E**). Determined by S. Ekman. *B. J. Coppins*

Bacidia inornata: on base of shaded acid stone wall, Allt na Ceardaich, Killin, VC 88, Mid-Perthshire, GR 27(NN)/57-34-, alt 175 m, April 1986. Herb. Fryday 2024 (**E**). Determined by S. Ekman. *B. J. Coppins*

***Bacidia viridifarinosa**:* fertile, on *Pinus* beside river path near waterfall, Lydford Gorge, VC 4, North Devon, GR 20(SX)/500.835, April 2014. Herb. Benfield s.n. (**E**). Determined/confirmed by B. J. Coppins. First British collection with apothecia; spores 3–6-septate, 20–33 x 3–4.5 µm. *B. Benfield* & Devon Lichen Group

Buellia badia: on wooden fence rail at entrance to Garon Park Golf Complex, Temple Sutton, Southend-on-Sea, VC18, South Essex, GR 51(TQ)/898.873, May 2014. Herb. P. M. Earland-Bennett. Scattered, but increasing in East Anglia.

P. M. Earland -Bennett

Buellia griseovirens: three records on hardwood benches, Southend-on-Sea, VC 18, South Essex, May 2014. Herb. P. M. Earland-Bennett. (i) Southchurch Park, GR 51(TQ)/896.849, confirmed by B. J. Coppins; (ii) Maplin Way, Thorpe Bay, GR 51(TQ)/921.844; (iii) the seafront, Thorpe Bay, GR 51(TQ)/921.843.

P. M. Earland-Bennett

Buelliella physcicola: for details, see under ***Arthonia phaeopyysciae***.

Calicium adspersum: with *Cyphelium inquinans* on lignum of trunk of ancient *Quercus*, Grudie Oakwood, Strath Bran, VC 106, East Ross, GR 28(NH)/3057.6189, alt 150 m, March 2014. Herb. Coppins 24362 (**E**). First Scottish record for this Critically Endangered species. *B. J. Coppins, A. Acton & A. Taylor-Piggott*

Caloplaca albolutescens: on concrete slab, Cranfield University, VC 30, Bedfordshire, GR 42(SP)/937.425, June 2014. Field record. This is the first confirmed record for the Vice-county. Previous tentative sightings of *C. albolutescens* in Bedfordshire were not confirmed due to the combination of the scanty, scarcely fertile thalli which are typical of many inland specimens, and former lack of confidence in the separation from *C. teicholyta*. *M. Powell*

Caloplaca albolutescens: on concrete steps beside locks, River Ouse, Godmanchester, VC 31, Huntingdonshire, GR 52(TL)/241.704, July 2014. New to the Vice-county. *M. Powell*

Caloplaca alociza: on Carboniferous limestone outcrop, top of Clifton Gorge, Clifton Downs side, Bristol, VC 34, West Gloucestershire GR 31(ST)/5635.7408, March 2014. New to the Vice-county. *D. J. Hill*

Caloplaca britannica: with *Caloplaca littorea,* on Carboniferous rock, on seashore near landing site, north end of Steep Holm Island, Bristol Channel, VC 6, North Somerset, GR 31(ST)/232.606, June 2014. Herb. Hill. Confirmed by B. J. Coppins. Second record for the Vice-county. *D. J. Hill*

Caloplaca flavovirescens: on concrete slab forming coping to low brick wall of car park, Mitchell Hall, Cranfield University, VC 30, Bedfordshire, GR 42(SP)/944.428, June 2014. New to the Vice-county. *M. Powell*

Caloplaca littorea: on Carboniferous rock on seashore, near landing site, north end of Steep Holm Island, Bristol Channel, VC 6, North Somerset GR 31(ST)/232.606, June 2014. Herb. Hill. Confirmed by B. J. Coppins. Growing with *Caloplaca britannica*. New to the Vice-county. *D. J. Hill*

Caloplaca lucifuga: in base enriched *Pertusarietum amarae* communities on four old *Quercus robur* trees in pasture woodland under restoration, Keeper's Lodge, Croft Castle, VC 36, Herefordshire, GR 32(SO)/4467.6626, 32(SO)/4470.6631, 32(SO)/4470.6628 & 32(SO)/4485.6629, May 2014. A new site with a strong population for this Vulnerable and Section 41 species. *N. A. Sanderson*

Caloplaca phlogina: mainly on elder – very common across Steep Holm Island, Bristol Channel, North Somerset VC 6. Centroid GR for island 31(ST)/228.606, June 2014. Herb. Hill. New to the Vice-county. *D. J. Hill*

Calvitimela aglaea: *c.* 22 thalli on three south-southwest inclined boulder slabs along rocky spine in upland sheepwalk, Creigiau Canol, VC 46, Cardiganshire, GR

22(SN)/803.688, alt 480 m, May 2014. Herb. SPC. New to the Vice-county.
S. P. Chambers

Candelariella medians forma ***steepholmensis***: on concrete gun emplacement, Steep Holm Island, VC 6, North Somerset, GR 31(ST)/225.606, June 2014. Herb. Hill. This is a grey form of this yellow species. I am not totally convinced of the taxonomic status of this taxon as I found there was a gradient of colour variants from grey to normal yellow. First record for this species, since it was first found and described in 1980. *D. J. Hill*

Carbonea vitellinula: on *Candelariella vitellina* on enriched top of Devonian Old Red Sandstone boulder beside upland stream, Afon Clydach, below Pont Clydach, Mynydd Du (Black Mountain), VC 44, Carmarthenshire, GR 22(SN)/738.196, alt 310 m, April 2014. Herb. SPC. New to the Vice-county. *S. P. Chambers*

Cetrelia olivetorum s. lat.: four large thalli, plus smaller thalli, on low sweeping branches of Fagus on sheltered wood edge tree between pasture woodland and heathland, lawn, east of Stricknage Wood, New Forest, GR 41(SU)2661.1256, October 2013. The first record from Hampshire for this declining and sensitive species since the 1990s. The very bright blue-white UV fluorescence of the medulla indicated the presence of perlatolic acid, so this material was *Cetrelia cetrarioides*.
N. A. Sanderson

Chaenotheca hispidula: on underside of old *Quercus* on rock outcrop, Grudie Oakwood, Strath Bran, VC 106, East Ross, GR 28(NH)/3054.6183, March 2014. Herb. Coppins 24360 (**E**). New to the Vice-county.
B. J. Coppins, A. Acton & A. Taylor-Piggott

Chaenothecopsis pusiola*:* associated with *Chaenotheca brunneola* on old stump, An Cuilinn, Grudie Oakwood, Strath Bran, VC 106, East Ross, GR 28(NH)/2957.6170, March 2014. Herb. Coppins 24367 (**E**). New to the Vice-county.
B. J. Coppins, A. Acton & A. Taylor-Piggott

Cladonia callosa: on earth bank and floor of old gravel pit in heathland, Lower Row, Holt Heath NNR, VC 9, Dorset, GR 41(SU)/0494.0479, March 2014. First record from Dorset of a lichen that has proved to be widespread in high quality heathland in the New Forest. Often found in disturbed sites and potentially much over looked in the lowlands. *N. A. Sanderson, B. Edwards* & the Wessex Lichen Group

Cladonia zopfii: a few thalli, including one large patch, in open areas in low and slow growing wet heath on edge of valley bog in heathland, Summerlug Hill, Holt Heath NNR, VC 9, Dorset, GR 41(SU)/0642.0471, March 2014. First record from Dorset of a lichen that has proved to be widespread if scarce in high quality heathland in the New Forest. It is likely to have occurred in other parts of lowland England but appears to be very sensitive to habitat degradation and is very likely to have been lost from most lowland heathland areas, but relic populations are worth looking out for elsewhere. *N. A. Sanderson, B. Edwards* & the Wessex Lichen Group

Cresporaphis weinkampii: on old Salix by pond, Garon Park Complex, Temple Sutton, Southend-on Sea, VC 18, South Essex, GR 51(TQ)/903.879, May 2014.

Herb. P. M. Earland-Bennett. Determined by B. J. Coppins. New to Essex.
P. M Earland Bennett

Cresporaphis weinkampii: on two Salix (1 youngish, 1 old) by lake, Southchurch Park, Southchurch, Southend-on-Sea, VC18, South Essex, GR 51(TQ)/898.849, June 2014. Herb. P. M. Earland-Bennett. Confirmed by B. J. Coppins. Second Essex record. *P. M. Earland-Bennett*

Cryptolechia carneolutea: on ancient elm, *Ulmus* x *vegetata*, during Devonshire Association meeting, Goodshelter, East Portlemouth, VC 3, South Devon, GR 20(SX)/764.387 July 2014. *B. Benfield*

Cryptolechia carneolutea: good material on thick trunk of old *Hedera* growing over limestone outcrop beside the coast path, Branscombe, VC 3, South Devon GR 30(SY)/213.881, Sept. 2014. *B. Benfield*

Dimerella lutea: on *Sorbus* twig, by Bells Burn, Shielsike Crags, Kielder Forest, VC 80, Roxburghshire, GR 35(NY)/5982.9353, alt 288 m, April 2014. Herb. McCutcheon s.n. (**E**). Determined by B. J. Coppins. New to the Vice-county.
D. E. McCutcheon

Dimerella lutea: in base rich flushed area of bark on old *Quercus robur* in pasture woodland under restoration, Keeper's Lodge, Croft Castle, VC 36, Herefordshire, GR 32(SO)/4470.6631, May 2014. New to the Vice-county and the Welsh Marches.
N. A. Sanderson

Diploschistes actinostomus: on boundary wall of churchyard, Hever, Kent, VC 16, West Kent, GR 51(TQ)/476.448, June 2013. Herb. Powell 3113. New to the Vice-county and second British record. *M. Powell and I. Blatchley*

Halecania viridescens: on bark of sloping cherry branch, Macey's Meadow orchard, West Malling, Kent, VC 16, West Kent, GR 51(TQ)/675.580, July 2014. New to theVice-county. *M. Powell and I. Blatchley.*

Echinodiscus lesdainii: on *Lecania cyrtella* on trunk of *Acer pseudoplatanus*, on wooded basalt ridge to north of Binny Craig, VC 84, West Lothian**,** GR 36(NT)/04-73-, alt 130 m, June 2014. Herb. Coppins 24447 (**E**). New to the Vice-county. *B. J. Coppins*

Endocarpon pallidulum: on natural outcrop, damp cliff by landing site, Steep Holm Island, Bristol Channel, VC 6, North Somerset, GR 31(ST)/23209.60735, June 2014. Herb. Hill. Confirmed by B. J Coppins. This species is characteristically saxicolous rather than terricolous like the other British species. New to the Vice-county and second record for Britain. *D. J. Hill*

Fuscopannaria ignobilis: two thalli on trunk of *Quercus*, An Cuillin, Grudie Oakwood, Strath Bran, VC 106, East Ross, GR 28(NH)/2935.6157, March 2014. Field record. Northernmost British record of this species, and new to the Vice-county.
B. J. Coppins, A. Acton & A. Taylor-Piggott

Fuscopannaria sampaiana: on *Corylus* at two locations in Grudie Oakwood, Strath Bran, VC 106, East Ross, GR 28(NH)/292.616 & 28(NH)/305.618, March 2014. A rather easterly locality and new to the Vice-county.
B. J. Coppins, A. Acton & A. Taylor-Piggott

Halecania viridescens: on large fallen branch of Fraxinus, fallen from the canopy, Simpson's Fromus Valley, The Suffolk Flora Preservation Trust, Kelsale, VC 25, East Suffolk, GR 62/383.665, June 2014. Herb. Hitch (S15). Determined by M. Powell. New to the county. *C. J. B. Hitch*

Lecanactis dilleniana: on vertical rock face of schist near waterfall, east of Inverpattack Lodge, Strath Mashie, VC 97, West Inverness-shire, GR 27(NN)/5667.9029, alt *c.* 270 m, March 2014. Herb. Coppins 24380 (**E**). New to the Vice-county. *B. J. Coppins*

Lecania erysibe: grey blastidiate form, with abundant apothecia, on breeze block, Barking, VC 18, South Essex, GR 51(TQ)/935.897, April 2008. Herb. P. M. Earland-Bennett. Determined by B. J. Coppins. This grey blastidiate form is common in East Anglia, but virtually always without apothecia. *P. M. Earland-Bennett*

Lecanora barkmaniana: a small thallus on large branch of Fraxinus fallen from canopy, Simpson's Fromus Valley, The Suffolk Flora Preservation Trust, Kelsale, VC 25, East Suffolk, GR 62/379.667, March 2014. Herb. Hitch (Y1931). Determined by M. Powell. New to the county. *C. J. B. Hitch*

Lecanora campestris* subsp. *dolomitica: extensive on basic sandstone headstone in churchyard, Bolnhurst, VC 30, Bedfordshire, GR 52(TL)/080.587, July 2014. A previous survey of the churchyard in 1992 recorded *Pertusaria amara* which is somewhat similar in appearance. New to the Vice-county. *M. Powell & P. Findlay*

Lecanora farinaria: on post and rail fencing, north edge of Park Wood, grounds of Hever Castle, Hever, Kent, VC 16, West Kent, GR 51(TQ)/484.453, June 2013. Herb. Powell 3111. New to Vice-county. *M. Powell and I. Blatchley*

Lecanora farinaria: fertile, on *Corylus,* in north-facing Corylus woodland, Pen-y-bedw, Bro Machno, VC 49, Caernarvonshire, GR 23(SH)/774.479, alt *c.* 200 m, February 2014. Herb. Coppins 24425 (**E**). New to Wales. *B. J. & A. M. Coppins*

Micarea globulosella: on treated wooden gate to Bull Pit, Kent Wildlife Reserve, Lenham Heath, Kent VC 15, East Kent, GR 51(TQ)/910.498, June 2013. Herb. Powell 3075. Third British record and new to the Vice-county. *M. Powell and I. Blatchley*

Lecanora horiza: abundant on east faces of sunny calcareous tombs in churchyard, Payhembury, VC 3, South Devon, GR 31(ST)/088.017, September 2014. New to the county. *C. J. B. Hitch and B. Benfield*

Lecanora quercicola: in base enriched *Pertusarietum amarae* community on old *Quercus robur* in pasture woodland under restoration, Keeper's Lodge, Croft Castle, VC 36, Herefordshire, GR 32(SO)/4470.6631, May 2014. A new site for this Vulnerable and Section 41 species. *N. A. Sanderson*

Lecidea diducens: on sandstone gravestone in churchyard, Combe St Nicholas, Chard, VC 5, South Somerset, GR 31(ST)/301.112, November 2013. Determined by B. J. Coppins. New to the Vice-county. *D. J. Hill*

Lecidea hypopta: on lignum on standing dead large *Quercus robur* hulk in pasture under restoration, Keeper's Lodge, Croft Castle, VC 36, Herefordshire, GR

32(SO)/4473.6633, May 2014. A considerable extension to its range. New to the Vice-county and the Welsh Marches. *N. A. Sanderson*

Lecidea promixta: on coarse-grained gritstone ledge becoming exposed in base of wasting peat gully in upland blanket bog erosion complex, Bryn yr Hyrddod, northeast of Teifi Pools, VC 46, Cardiganshire, GR 22(SN)/806.689, alt 490 m, May 2014. Herb. SPC. New to the Vice-county. *S. P. Chambers*

Leptogium pulvinatum: among moss tufts on boundary wall of churchyard, Kings Ripton, VC 31, Huntingdonshire, GR 52(TL)/261.765, July 2014. New to the Vice-county. *M. Powell*

Lichenochora aipoliae: on *Physcia aipolia* on *Fraxinus* twig, by top path, Goblin Combe SSSI, VC 6 North Somerset, GR 31(ST)/47-65-, February 2014. Herb. Coppins (**E**). Presumably this species, but asci are 8- not 4-spored; spores *c.* 12–13 × 6 µm. New to the Vice-county. *B. J. Coppins*

Lichenoconium cargillianum: with *Abrothallus usneae* on *Usnea subfloridana*, northwest of Carn na Leitire, Abriachan Forest Trust woodland, VC 96, Easterness, GR 28(NH)/54-34-, alt 300 m, October 2013. Herb. Coppins 24341 (E). New to Scotland. *B. J. Coppins*

Lichenoconium lichenicola: on *Physcia tenella* on *Larix* twig, Harehope Burn, VC 78, Peebleshire, GR 36(NT)/215.438, alt *c.* 250 m, December 2013. Herb. Coppins 24388 (**E**). New to the Vice-county. *B.J. Coppins & C.J. Ellis*

Lichenoconium lichenicola: on *Physcia tenella* on *Fraxinus* twig, Newlands Bridge, Gifford, VC 82, East Lothian, GR 36(NT)/571.670, alt 210 m, March 2014. , Coppins 24411 (E). New to the Vice-county. *B.J. Coppins*

Lichenosticta alcicornaria: on thallus of *Cladonia ciliata* var. *tenuis,* Haytor Quarries, Dartmoor, VC 3, South Devon, GR 20(SX)/7610.7755, alt 400 m, March 2014. Herb. Coppins 24414 (**E**). New to Devon. *B. J. Coppins*

Megalospora tuberculosa: on two adjacent old *Quercus* within *Quercus – Betula* pasture woodland, Hafod-y-llyn-isaf, Hafod Garregog NNR, VC 48, Merionethshire, GR 23(SH)/5963.4432 & 23(SH)/5964.4433, May, 2014. A new site for this section 42 (BAP) species. *N. A. Sanderson*

Melanohalea exasperata: two thalli on low wooden fence around a green, Salisbury Avenue, Southchurch, Southend-on-Sea, VC 18, South Essex, GR 51(TQ)/901.869, April 2014. Herb. P. M. Earland-Bennett. Without apothecia, but with low warts with pseudocyphellae at the apices. New to East Anglia. *P. M. Earlend-Bennett*

Melanohalea exasperatula: on *Fraxinus* branch, Barwick Wood, VC 30, Bedfordshire, GR 42(SP)/96-60-, March 2014. Herb. Powell 3389. New to the Vice-county. *M. Powell*

Menegazzia subsimilis: at five locations, locally very frequent, on well sheltered, but well lit rock slabs, but also on an adjacent *Betula* in open pasture woodland, together with *Menegazzia terebrata*, generally more common, Coed Crafnant, VC 48, Merionethshire, GR 23(SH)/6177.2852, 23(SH)/6178.2847, 23(SH)/6181.2860,

23(SH)/6183.2867 & 23(SH)/6185.2868, alt 110 – 130 m, May 2014. First record for Wales for this species since the 19th century. *N. A. Sanderson*

Miriquidica leucophaea: on gently sloping shoulder of an old sandstone headstone in churchyard, Alconbury, VC 31, Huntingdonshire, GR 52(TL)/184.761, June 2014. Herb. Powell 3497 and digital images. An unexpected discovery in a lowland churchyard. New to the Vice-county. *M. Powell*

Nectriopsis micareae: on *Micarea prasina* agg. on *Betula*, Shian Wood SWT reserve, Benderloch, VC 98, Argyll Main, GR 17(NM)/904.416, October 2013. Herb. Coppins 24320 (**E**). Second British record for the species. New to the Vice-county. *B. J. & A. M. Coppins*

Opegrapha gyrocarpa: on brickwork, low down on north wall of church, Bolnhurst, VC 30, Bedfordshire, GR 52(TL)/080.587, July 2014. New to the Vice-county. *M. Powell & P. Findlay*

Opegrapha saxigena: on vertical north-northeast-facing side of large gritstone boulder at east end of Brest Rhiw-ddu, below Pont Clydach, Mynydd Du (Black Mountain), VC 44, Carmarthenshire, GR 22(SN)/737.197, alt 300 m, April 2014. Herb. SPC. New to the Vice-county. *S. P. Chambers*

Opegrapha viridipruinosa: on trunk of *Acer pseudoplatanus*, on wooded basalt ridge to north of Binny Craig, VC 84, West Lothian**,** **GR** 36(NT)/04-73-, alt 140 m, June 2014. Herb. Coppins 24448 (**E**). New to the Vice-county. *B. J. Coppins*

Opegrapha viridis: on *Acer campestre*, Ivythorn Hill, Street, VC 6 North Somerset, GR 31(ST)/471.345, March 2014. New to the Vice-county. *D. J. Hill*

Parmelia ernstiae: a single thallus on north side of brick garden wall, Eastern Avenue, Temple Sutton, Southend-on-Sea, VC 18, South Essex, GR 51(TQ)/898.872, March 2014. Herb. P. M. Earland-Bennett. Confirmed by B. J. Coppins. New to East Anglia. *P. M. Earland-Bennett.*

Parmelinopsis horrescens on *Quercus* in garden, Lee Ford, Budleigh Salterton, VC 3, South Devon, GR 30(SY)/047.826 Sept. 2014. New to the Vice-county. *B. Benfield*

Parmotema perlatum: on branch of *Prunus spinosus* below west-facing crags, Binny Craig, VC 84, West Lothian**,** 36(NT)/042.736, alt 150 m, June 2014. Herb. Coppins 24452 (**E**). New to the Vice-county. *B. J. Coppins*

Pertusaria coronata: on trunk of large *Quercus cerris*, Nettlecombe Park, VC 5, South Somerset, GR 31(ST)/0558.3775, alt 90 m, February 2014. Herb. Coppins 24415 (**E**). New to the county. *B. J. & A.M. Coppins* and *P. A. Wolseley*

Pertusaria coronata: on several different trunks of large *Quercus*, Grudie Oakwood, Strath Bran, VC 106, East Ross, GR 28(NH)/2872.6165, March 2014. Herb. Coppins 24356 (***E***). New to the Vice-county. *B. J. Coppins, A. Acton & A. Taylor-Piggott*

Petractis nodispora: plentiful on north and west churchyard walls, mostly pycnidiate and with apothecia in one place, in churchyard, Hinton Charterhouse, North Somerset VC 6. April 2014. Herb. Hill. Confirmed by A. Orange. This may be an overlooked species especially if it is not fertile. New to the county and England. *D. J. Hill*

***Pezizella epithallina**:* on underside of *Lobaria pulmonaria* on *Corylus*, Shian Wood SWT reserve, Benderloch, VC 98 Argyll Main, GR 17(NM)/90-41-, October 2013. Herb. Coppins 24315 (**E**). An unusual host, as it is normally on *Peltigera* spp.

B. J. & A. M. Coppins

Phaeographis smithii: a single thallus on branch of *Fraxinus pennsylvanica* [1979.206A], Dawyck Botanic Garden, VC 78, Peebleshire, GR 36(NT)/1685.3472, alt *c.* 230 m, December 2013. Herb. Coppins 24385 (**E**). An usually eastern record. New to the Vice-county. *B. J. Coppins & C. J. Ellis*

Phaeophyscia sciastra: on *c.* 9 mid-channel flat topped boulders of Devonian Old Red Sandstone and Carboniferous gritstone, along a *c.* 30 m stretch in bouldery upland stream, immediately above Pont Clydach ,Afon Clydach, Cefn y Truman, Mynydd Du (Black Mountain), VC 44, Carmarthenshire, GR 22(SN)/739.196, alt 320 m, April 2014. Herb. SPC. New to the Vice-county. *S. P. Chambers*

Physcia stellaris: on *Fraxinus* twig, Spaniorum Hill, Easter Compton, VC 34, West Gloucestershire, GR 31(ST)/566.816, April 2014. Field record. New to the Vice-county. *D. J. Hill & J. Bailey*

Placidium boccanum: on east window sill of church porch, Axbridge, VC 6, North Somerset, GR 31(ST)/431.580, July 2014. Herb. Hill. Confirmed by Othmar Breuss, Vienna. This species looks like *P. squamulosum*, but grows directly on rock/stone and is black underneath. New to the county and second British Record. *D. J. Hill*

Pleurosticta acetabulum: a single large thallus, over two metres above ground level, on trunk of *Acer platanoides* Southchurch Boulevard, Southend-on-Sea, VC 18, South Essex, GR 51(TQ)/911.864, September 2014. Herb. P. M. Earland-Bennett. Odd single thalli are turning up in areas where not present before. *P. M. Earland-Bennett*

Polyblastia albida: on Carboniferous limestone outcrop, top of Clifton Gorge, Clifton Downs side, Bristol, VC 34, West Gloucestershire, GR 31(ST)/5636.7396, March 2014. Herb. Hill. New to the Vice-county. *D. J. Hill*

***Porina byssophila**:* Lleyn Peninsular, VC 49, Caernarvonshire (i) on *Corylus*, Ty'n y Parc [Ty'n-y-parc], GR 23(SH)/241.286, alt 40 m, February 2014. Herb. Coppins 24431 (**E**); (ii) on *Corylus*, Gallt y Bwlch SSSI, GR 23(SH)/345.441, alt *c.* 70 m, February 2014. Herb. Coppins 24430 (**E**). Apparently new to the Vice-county, but previous records of *P. aenea* may include this species.

B. J. & A. M. Coppins and *D. Lamacraft*

***Porina byssophila**:* on *Acer pseudoplatanus,* The Pineapple, Airth, VC 86, Stirlingshire, GR 26(NS)/89-88-, alt 10 m, April 2014. Herb. Coppins 24408 (**E**). New to the Vice-county. *B.J. Coppins & J.C.E. Hope*

***Porina lectissima**:* on flushed basaltic rocks on northeast-facing slope, Binny Craig, VC 84, West Lothian**,** GR 36(NT)/043.735, alt 190 m, June 2014. Herb. Coppins 24459 (**E**). New to the Vice-county. *B. J. Coppins*

Porpidia speirea: on flat slabs of mildly basic Devonian Old Red Sandstone on stream bank, below Pont Clydach, Afon Clydach, Mynydd Du (Black Mountain), VC 44,

Carmarthenshire, GR 22(SN)/738.196, alt 310 m, April 2014. Herb. SPC. New to the Vice-county. *S. P. Chambers*

***Pronectria pertusariicola**:* on *Pertusaria leioplaca* on *Corylus*, Bryn-celynog, Nant Prysor, VC 48, Merionethshire, GR 23(SH)/758.370, alt 300 m, February 2014. Herb. Coppins 24416 (**E**). New to Wales. *B. J. & A. M. Coppins* and *D. Lamacraft*

Protoblastenia cyclospora: on Carboniferous limestone outcrop, "The Gully" towards top of Clifton Gorge, Clifton Downs side, Bristol, VC 34, West Gloucestershire, GR 31(ST)/563.746, August 2009. New to the Vice-county. *D. J. Hill & J. Bailey*

***Ramalina fraxinea*:** on *Acer platanoides* in avenue at Barnham Broom Country Club, VC 27, East Norfolk, GR 63(TG)/0891.0904, August 2014. The second post 2000 record for the vice county for this species and only the third since 1960. *P. W. Lambley*

Ramonia chrysophaea: in base rich flushed area of bark on old *Quercus robur* in pasture woodland under restoration, Keeper's Lodge, Croft Castle, VC 36, Herefordshire, GR 32(SO)/4463.6629, May 2014. This Near Threatened and Section 41 species was new to the Vice-county and the Welsh Marches. *N. A. Sanderson*

Ramonia dictyospora: on spongy bark on old *Fraxinus* within *Fraxinus – Ulmus – Corylus* pasture woodland, Coed Crafnant, VC 48, Merionethshire, GR 23(SH)/6207.2879, alt 150 m, May 2014. A new site for this section 42 (BAP) species. *N. A. Sanderson*

Rhizocarpon geographicum: on top of old sandstone headstone, in churchyard, Kings Ripton, VC 31, Huntingdonshire, GR 52(TL)/261.765, July 2014. An immature thallus, presumably a young colonist. New to the Vice-county. *M. Powell*

Rinodina immersa: on limestone stone pressed into bare ground on floor of old quarry, Llanymynech, VC 47, Montgomeryshire, GR 33(SJ)264. 217, May 2014. New to the Vice-county. *D. J. Hill*

***Rinodina interpolata**:* on cliff-face under tree canopy, eastern end of Grudie Oakwood, Strath Bran, VC 106, East Ross, GR 28(NH)/306.619, alt *c.* 120 m, March 2014. Herb. Coppins 24382 (**E**). It is tempting to think that this could be near where James Stirton originally collected this species from "Ross, near Garvie" in 1887. *B. J. Coppins & A. Taylor-Piggott*

Sarcogyne privigna: on southeast-facing side of large quartz-gritstone boulder set in bank of bouldery upland stream, Afon Clydach, Cefn y Truman, Mynydd Du (Black Mountain), VC 44, Carmarthenshire, GR 22(SN)/739.195, alt 330 m, April 2014. Herb. SPC. New to the Vice-county. *S. P. Chambers*

Schismatomma niveum: on dry bark in *Lecanactidetum premneae* community on old *Quercus robur,* within pasture woodland under restoration, Keeper's Lodge, Croft Castle, VC 36, Herefordshire, GR 32(SO)/44782 66302, May 2014. A considerable range extension. New to the Vice-county and the Welsh Marches. *N. A. Sanderson*

***Scoliciosporum pruinosum**:* on *Quercus,* The Pineapple, Airth, VC 86, Stirlingshire, GR 26(NS)/89-88-, alt 10 m, April 2014. Herb. Coppins 24409 **(E**). New to the Vice-county. *B. J. Coppins & J. C. E. Hope*

Scoliciosporum sarothamni: fertile, on low wooden fence rail, Newington Avenue, Southchurch, Southend-on-Sea, VC 18, South Essex, GR 51(TQ)/902.868. December 2013. Confirmed by B. J. Coppins. The first British record for this species was at nearby Hockley in 1988 (BLS *Bulletin* 65 Winter 1989, p, 37) and the present record is only the second time it has been found in the county. *P. M. Earland-Bennett.*

Spirographa fusisporella: on *Pertusaria corallina* on Devonian Old Red Sandstone boulder beside upland stream, Afon Clydach, Cefn y Truman, Mynydd Du (Black Mountain), VC 44, Carmarthenshire, GR 22(SN)/739.196, alt 330 m, April 2014. Herb. SPC. New to the Vice-county. *S. P. Chambers*

***Stenocybe nitida*:** on *Plagiochila punctata* on *Quercus* in valley bottom, Dendles Wood NNR, VC 3, South Devon, GR 20(SX)/612.621, August 2014. Second Devon record for this species. *B. Benfield, R. Jeffery, N. Bacciu & A. Knott*

Stigmidium arthoniae: on *Arthonia radiata* on *Corylus*, within south-facing *Fraxinus - Corylus* woodland, Nant-y-gwyrddail, VC 48, Merionethshire, GR 23(SH)/677.145, February 2014. Herb. Coppins 24421 (**E**). New to Wales. *B. J. & A. M. Coppins*

Stigmidium arthoniae: on *Arthonia radiata* on *Corylus,* eastern end of Grudie Oakwood, Strath Bran, VC 106, East Ross, GR 28(NH)/306.618, alt 120 m, March 2014. Herb. Coppins 24375 (**E**). New to the Vice-county. *B. J. Coppins & A. Taylor-Piggott*

Strangospora moriformis: on weathered post, Bull Pit, Kent Wildlife Reserve, Lenham Heath, Kent VC 15, East Kent, GR 51(TQ)/910.498, June 2013. Herb. Powell 3076. New to the Vice-county. *M. Powell and I. Blatchley.*

Strigula calcarea: on shaded limestone cliff, Ebbor Gorge NNR, Wookey, VC 6, North Somerset, GR 31(ST)/522.484, May 2014. Confirmed by A. Orange – "the first British record on a natural outcrop for this species". It may well be overlooked when pycnidiate. New to the Vice-county and England. *D. J. Hill*

Strigula calcarea: on wall, Steep Holm Island, Bristol Channel, VC 6, North Somerset, GR 31(ST)/225606), June 2014. Second record for this species for the Vice-county. *D. J. Hill*

Strigula jamesii: on trunk of *Acer pseudoplatanus*, on wooded basalt ridge north of Binny Craig, VC 84, West Lothian**,** GR 36(NT)/04-73-, alt 130 m, June 2014. Herb. Coppins 24446 (**E**). New to the Vice-county. *B. J. Coppins*

Strigula taylorii: on *Acer pseudoplatanus,* The Pineapple, Airth, VC 86, Stirlingshire, GR 26(NS)/89-88-, alt 10 m, April 2014. Herb. Coppins 24407 (**E**). New to the Vice-county. *B. J. Coppins & J. C. E. Hope*

Thelidium impressum: on shaded limestone cliff Ebbor Gorge NNR, Wookey, VC 6, North Somerset, GR 319)/522.484, May 2014. New to the Vice-county. *D. J. Hill*

Thelidium pyrenophorum: several thalli on old limestone coping slabs of boundary wall of churchyard, Kings Ripton, VC 31, Huntingdonshire, GR 52(TL)/261.765, July 2014. Herb. Powell 3521. Many of the spores in specimens of this species appear to be simple and a careful search after clearing with nitric acid is often required to find septate spores. New to the Vice-county. *M. Powell*

Thelocarpon laureri: on horizontal basalt surface at top of ridge to north of Binny

Craig, VC 84, West Lothian**,** GR 36(NT)/042.741, alt 125 m, June 2014. Herb. Coppins 24443 (**E**). New to the Vice-county. *B. J. Coppins*

Thelotrema macrosporum*: on Corylus*, An Cuilinn, Grudie Oakwood, Strath Bran, VC 106, East Ross,GR 28(NH)/29-61-, March 2014. Herb. Coppins 24369 (**E**). Second record of this species for the Vice-county. *B. J. Coppins, A. Acton & A. Taylor-Piggott*

Trapeliopsis gelatinosa*:* on mossy turf in crevice, base of west-facing crags, Binny Craig, VC 84, West Lothian**,** GR 36(NT)/04-73-, alt 160 m, June 2014. Herb. Coppins 24451 (**E**). New to the Vice-county. *B. J. Coppins*

Unguiculariopsis lesdainii: on *Lecanora saligna* on low wooden fence rail, Salisbury Avenue, Southchurch, Southend-on-Sea, VC, 18, South Essex, GR 51(TQ)/901.869, April 2014. Herb. P. M. Earland-Bennett. Determined by B. J. Coppins. The second record for South Essex for this seldom recorded species. *P. M. Earland-Bennett*

Usnea flammea: about a dozen thalli on low branch of *Fraxinus,* Spaniorum Hill, Easter Compton, VC 34, West Gloucestershire, GR 31(ST)/566.816, April 2014. New to the Vice-county. *D. J. Hill & J Bailey*

Verrucaria bryoctona: on karst, where there is a population of *Fulgensia fulgens*, Brean Down, VC 6 North Somerset GR 31(ST)/286.588, April 2013. New to the Vice-county. *D. J. Hill*

Verrucaria squamulosa: extensive on brick gully, south side of church, Alconbury, VC 31, Huntingdonshire, GR 52(TL)/184.761, June 2014. Herb. Powell 3496. New to the Vice-county. *M. Powell*

Vulpicida pinastri: a single thallus *c.* 3.4 x3.1 cm, on chestnut rail fence by church car park, Sandhurst, Kent, VC 15, East Kent, GR 51(TQ)/790.273, alt *c.*70m, May 2014. Herb. Blatchley. A southerly extension to the sporadic records for this species in England. New to theVice-county. *I. Blatchley and J. Pitt*

Wadeana minuta: on trunk of mature *Quercus*, Grudie Oakwood, Strath Bran, VC 106, East Ross, GR 28(NH)/2872.6164, March 2014. Herb. Coppins 24354 (**E**). New to the Vice-county. B*. J. Coppins, A. Acton & A. Taylor-Piggott*

Corrigendum

Roccella fuciformis. This record in BLS *Bulletin* No. 114 Summer 2014, p. 82 should read *R. phycopsis.* It was correctly written in the article in the same B*ulletin* p. 39, but due to an aberration was changed in the NRI entry.

BLS Autumn 2013 Workshop - The genus *Usnea*

Saturday 21st to Friday 27 September 2013
Tutor: Dr Rebecca Yahr, Royal Botanic Garden Edinburgh

Group in Rothiemurchus Forest 23 September 2013: left to right: Richard Brinklow, Paul Cannon, Steve Price, Graham Boswell, Pat Wolseley, Juliet Bailey, David Hill, Annelie Burghause, Heather Paul, Catherine Tregaskes, Brian Coppins, Becky Yahr, Lisdar I Sudirman, Ginnie Copsey, Sheila Reid, Andy Acton, Heather Colls, John Douglass.

Usnea is one of those tricky conspicuous genera that beguile beginners with ease of genus-identification, and then have everyone, experienced or not, tearing their hair out at some point. RBGE used the genus as a test case to see if our commonly-used species concepts hold up in molecular analyses (which mostly they do), and as a thank you to the membership of the BLS for providing a rich and interesting set of test specimens, offered up a workshop on identification of the genus in the field. The workshop was intended

1) to enable attendees to make reliable determinations in the field for those specimens for which that is possible and;
2) to understand what it is possible and what is not possible to determine in the field;
3) to understand what specimens it is worth collecting for TLC testing.

Workshop Bases & Accommodation

The workshop had two meeting bases to enable the *Usnea* species of both eastern and western Scotland to be studied. The eastern base (21-24 Sept) was at the Badaguish Outdoor Centre, Aviemore, Inverness-shire and the western base (24-27 Sept) at the Grey Gull Inn, Ardrishaig, by Lochgilphead, Argyll.

Workshop Programme

Sat 21st	Arrive at Badaguish; meet-up in the late afternoon; welcome & introduction Introduction to *Usnea* Identification, I.
Sun 22nd	Morning: Specimen and character study, Introduction to *Usnea* Identification, II: The 'big' pinewood species. Afternoon: Field day 1 Loch Morlich; pinewoods in the vicinity of NH975092 Evening: talk - Chemical variation; study of collected specimens
Mon 23rd	Field day 2 trail beyond Rothiemurchas campground; in the vicinity of NH910084 Evening: talk - British *Usnea* distribution and observations; the pinewood 'little' species; study of collected specimens
Tue 24th	Travel to The Grey Gull Inn, Ardrishaig Site visit en-route at Inverpattack near Loch Laggan in the vicinity of NN566903 Evening: talk - Introduction to the *Usnea* of western Scottish distribution; study of collected specimens
Wed 25th	Field day 3 - Taynish National Nature Reserve - Atlantic Oak woodland; in the vicinity of NR791911 Evening: talk - Additonal *Usnea* of western Scottish distribution; *Usnea* taxonomy and phylogeny; study of collected specimens
Thu 26th	Field day 4, West - Barnluasgan Wood - Oak and hazel woodland – part of the Knapdale SSSI;in the vicinity of NR737851 Evening: *Usnea* parasites (Parasiti Usnearum: a talk & paper by Dr. Brian Coppins); Summary of workshop; study of collected specimens; close of meeting.
Fri 27th	Departure

Attendees:

Andy Acton, Juliet Bailey, Graham Boswell, Richard Brinklow, Annelie Burghause, Paul Cannon, Heather Colls, Brian Coppins, Ginnie Copsey, John Douglass, Jenny Ford, David Hill, Heather Paul, Steve Price, Sheila Reid, Lisdar I Sudirman, Catherine Tregaskes, Pat Wolseley, Becky Yahr (tutor).

Throughout Saturday 21st afternoon the workshop participants began to gather at the Badaguish forest lodges near the foot of the Cairngorm Mountains. Despite having only a very short distance to travel (having spent the previous week at RSPB Abernethy Reserve, just over the hill from Badaguish) I managed to be one of the last

to arrive and found most people already settled into the comfortable lodges. After a lovely supper the workshop proper began, with Becky Yahr starting us off with an introduction to the genus *Usnea*. The first thing we learn was that there were only 19 species of British *Usnea* – so how hard can this be? Hmmmmmm... The next thing we learned was that although *Usnea* may be the easiest genus to identify, it can probably lay a reasonable claim to be one of the hardest genus to identify to species level.

Becky Yahr tutoring the *Usnea* workshop, Badaguish. Photo: Steve Price

The pinewood "big 4" introduced us to the species we were most likely to encounter whilst at Badaguish, namely *U. subfloridana*, *U. hirta*, *U. dasopoga* and *U. wasmuthii*. By the end of the evening my head was spinning with all the features I had to look out for; shrubby or pendant, soralia or isidia, tuberculate or concave, black bases, white bases, cracks like brick work, foveoles and papillae – I was itching to get out into the field and see how much I could remember and start to try and identify.

On Sunday morning after a review of what we had learnt the night before, and an introduction to the concept of the CMA – cortex medulla axis ratios, we set off for a field visit to Loch Morlich. Having been reminded not to be too obvious with our sample collecting knives due to the large numbers of members of the public who would also be on site, we were off. We spent a really enjoyable morning with a **very** patient Becky, who was continuously being bombarded with "is this wasmuthii?, is this wasmuthii?". *Usnea wasmuthii* seeming to be the hardest to get to grips with. I have to admit to finding the identification of the brickwork cracking at the base very hard to clarify in my mind. It was great to find a lovely sample of *U. dasopoga* though, with the "fishbones" clearly on display – just like the photo on Becky's slides! Armed with an array of specimens to take back and examine more closely with the microscopes, we returned to Badaguish for lunch. As the weather was so favourable part of the group decided it was too good an opportunity to miss,

in going "up" after lunch, so I joined a party climbing Meall a' Buachaille to see the wind clipped lichen heath at 800m. This was a fantastic oppostunity to see many new (to me) species, with highlights being *Flavocetraria nivalis, Thamnolia vermicularis* and *Alectoria ochroleuca*. A far cry from the flatness of my Cambridgeshire home. After another lovely meal the evening was spent working on the specimens collected earlier in the day.

Monday saw us visiting Rothiemurchus forest – back on the hunt for *Usnea* and trying not to get sidetracked into looking at other genera. I find this really hard to do, as being relatively new to the study of lichens there are still so many species I have never seen before... On Monday evening we had plenty of opportunity once again to study our specimens and use the herbarium specimens to compare features and aid in identifications. The evenings talk introduced us to "the littles"; *U. glabrata, U, esperantiana, U. flavocardia* and *U. fulvoreagens* and a decision tree also made it clear when it was acceptable to "let it live and get over it" if the specimen was less than 5 cm and had no soralia or isidia. The witches fingers of *U. esperantiana* had caught my attention and I was determined to find them in the second half of the workshop. Sadly however, that hope did not come to fruition.

Discussions at Inverpattack. Photo: Steve Price

Tuesday morning saw us packing up and leaving the lodges at Badaguish – we had been looked after excellently, it is not often as a Coeliac that I don't have to worry about what food I may be given, but the lady who cooked for us was really knowledgable and looked after Ginny and myself really well. The lodges had been really comfortable, even if the showers were a little strange – the raised edges of the drains meaning that more time was needed to mop the floor afterwards than was actually spent showering! A stop on route near Loch Laggan gave us more chance to practice our developing *Usnea* identification skills. As we headed west we started to see some of the big lichens on the roadside trees, with the passengers being able to record *Flavoparmelia caperata* and *Lobaria pulmonaria* becoming quite abundant the further west we travelled. After a quick stop in Fort William for fuel,

we continued on to Ardrishaig and the Grey Gull Inn. The *Usnea* programme continued after a (slightly awkward) dinner – I think that too many lichenologists descending to the dining room at once was more than the hotel could cope with, although things improved greatly after the first evening. We had space at the village hall, for presentations and microscopes to be used, where we also had the added bonus of singing coming from the other room. We were now briefed on the Western big 3 (+3), namely *U. cornuta, U. fragilescens* var *mollis* and *U. flammea,* with *U. esperantiana, U. flavocardia* and *U. rubicunda* being the +3.

Usnea flammea, showing the lack of blackening at the base (left) and the primary axis with conspicuous annular cracking

Wednesday saw us heading off to Taynish NNR to look for our new group of species, although being reminded that *U. subfloridana* was still likely to be the most common species we saw. Some of the *U. flammea* that we found had a very odd, chalky / china clay like appearance. Brian Coppins told us this was *Kalchbrenneriella cyanescens*, a lichenicolous fungi. We had also been seeing a lot of *Biatoropsis usnearum*, mostly on *U. subfloridana.* Still no sign of the elusive witches fingers. I had a chuckle at lunchtime when David Hill asked "where do we go from here?" and couldn't help saying "is it down to the lake I fear". This would have made no sense unless you happened to be listening to Top of the Pops in 1982 (some lyrics from a song by Haircut 100 in case you are wondering!). In the evening we returned to the village hall to examine newly collected specimens. Someone had bought along a specimen of *U. sphacelata* that had been collected on a visit to mainland Europe. This was an amazing species – striped like a zebra – and I wish we had it growing here in

the UK. Becky took us through a review of all the British species, by now we were all familiar with isidia, lax medulla, papillae and etc, but none-the-less it was great to have the review, and also a copy of Becky's excellent presentation to take away and use as a refresher next time we visit an *Usnea* rich area (I am lucky if I even see *U. subfloridana* at home).

Usnea rubicunda, showing the orange-brown primary axes

Thursday and we were out again at Barnluasgan Wood nature reserve, an old oak and hazel woodland. Once again an amazing day. There was much to distract the attention from *Usnea* species, so I could not help but look at *Pseudocyphellaria crocata* and *P. norvegica* amongst the Lobaria on some old hazel, and *Caloplaca ferruginea* on ash by the loch-side, all of which were new to me. Another highlight was seeing my first slow worm curled up in the sun on the side of the path. Not so good were all the ticks that swarmed over us when we sat down on some short grass for lunch. The site also had an abundance of *Usnea spp*, with a newly fallen silver birch providing rich pickings for the whole party. The *'Usnea* of the week award' had to go however, to the foot long specimens of *U. rubicunda* that were festooning some of the oaks towards the top of the hill. In the evening after waving Ginny off on her coach, we returned to the village hall for a talk about taxonomy and phylogeny from Becky, followed by a talk from Brian about fungal parasites on *Usnea* – some of which we had of course already encountered earlier in the week. After making sure that everyone had copies of the electronic resources we returned to the hotel, the end of the workshop looming near.

After breakfast on Friday everyone started to wend their way towards home. It had been a great week, and although the only interesting *Usnea* I have seen since (almost the only *Usnea*) was *U. articulata* growing on the ground amongst the heather on Ramsey Island (Pembrokeshire), I learnt a lot, and came away with some fantastic resources to help me in the future when I am able to visit *Usnea* rich habitat again.

Records collected during this meeting have been submitted to the lichen database but because this meeting was principally a learning workshop rather than a field meeting the records have not been listed in this report.

Main reference documents and keys to *Usnea*

Randlane, T., Tõrra, T., Saag, A. & Saag, L. (2009). Key to european *Usnea* species. *The Diversity of Lichenology: Jubilee Volume, Bibliotheca Lichenologica* **100**: 419–462 [A key for 32 *Usnea* species which have been reliably recorded in Europe is presented; short descriptions, extrapolated distribution maps and photographs of diagnostic characters are provided for each species.]

Clerc, P. (1998). Species concepts in the genus *Usnea*. *Lichenologist* **30**: 321–340.

Clerc, P. (1987). On the morphology of soralia in the genus *Usnea*. *Bibliotheca Lichenologica* **25**: 99-102.

Coppins, B.J. (2013). *Parasiti Usnearum* [or: A cobbling together of info on the lichenicolous fungi on *Usnea*]. An edited version of this paper is reproduced below.

Catherine Tregaskes, with *Steve Price and Rebecca Yahr*
catdra@tragoc.f2s.com

Parasiti Usnearum

[or: A cobbling together of info on the lichenicolous fungi on *Usnea*]. An edited version of a paper prepared for and presented at the BLS Workshop on *Usnea*, 21 to 27 September 2013.

World Checklist (probably not comprehensive!)
Taxa in **bold** type are recorded from British Isles. *Taxa apparently restricted to the genus *Usnea* (incl. *Neuropogon* and *Protousnea*)

Ascomycetes

***Abrothallus usneae**	**Lecanora usneicola* [Antarctica]
***Catillaria usneicola**	**Leptosphaeria usneae* [Transcaucasia, on *U. florida*]
***Lichenostigma maureri**	**Neobarya usneae* [S America: Colombia]
***Endococcus apiciicola**	*"*Phacopsis" usneae* [Kerguelen Is.]

**Carbonea neuropogonis* [S. America: Chile]	**Roselliniella papuana* [PNG & S America: Colombia]
**Plectocarpon usneae* [Africa: Rwanda]	**Stigmidium alectoriae* [Kerguelen Is. & Chile]
**Plectocarpon usneaustralis* [S. America: Chile]	**Trichonectria australis* [S America: Argentina]
**Pronectria fragmospora* [S. America: Chile]	**Trichonectria usneicola* [S America: Colombia]
**Pronectria occulta* [S. America: Chile]	

Basidiomycetes

Biatoropsis usnearum	***Tremella santessonii* [Africa & PNG]
**Cystobasidium usneicola* [Canada: British Columbia]	***Tremella stevensiana* [Australia & PNG]

Conidial fungi

Kalchbrenneriella cyanescens	***Phaeosporobolus usneae***
Lichenoconium cargillianum	***Zevadia peroccidentalis***
Lichenoconium erodens	**Phoma dubia* [New Zealand]
Lichenoconium lecanorae	**Stromatopogon baldwinii* [Australasia]
Lichenoconium usneae	**Stromatopogon geminatum* [USA: Oregon]
Pseudoseptoria usneae	

Synopsis of British Species

1. With black apothecia or perithecia

Abrothallus usneae

Apothecia black, convex ['arthonioid'], *c.* 0.1–0.3 mm diam. Hamathecium with paraphyses. Ascospores brown, 1-septate, 14–18 × 5–7 μm. On thallus, but most often on the 'galls' of *Biatoropsis usnearum*. Mainly on *U. subfloridana* and *U. cornuta*; Scottish Highlands (*c.* 15 records).

Catillaria usneicola

Apothecia black, plane, marginate, to 0.1 mm diam. Hamathecium with paraphyses. Spores colourless, simple, 4.5–6 × 1.5–2um. On main stems of *Usnea dasopoga* and *U. wasmuthii*; Argyll and Easterness (2 records).

Endococcus apiciicola

Perithecia 0.07–0.12 μm diam, aggregated in clusters at apices of stems. Paraphyses absent. Spores brown, 1-septate, 9–11 × 3.5–4 μm. On *Usnea florida* and *U. wasmuthii* in SW England and Wales.

Lichenostigma maureri

Ascomata stromatic, without well-defined hymenium or hamathecium, 0.07–0.12 mm diam. Ascospores 1-septate, colourless to brown and finely warted. Mainly on main stems. *Usnea subfloridana* and *U. wasmuthii* in E. Scotland (3 records on *Usnea*, but a few others on *Pseudevernia furfuracea*).

2. With black pycnidia or similar conidiomata

Lichenoconium cargillianum

Pycnidia 0.1–0.175 (–0.2) mm diam. Conidiogenous cells (7–)8–10(–12) µm long, conidia brown, irregularly subglobose, warted, 5–7 (–7.5) × 3.5–5 (–6) µm. In apothecia of *U. florida*; Ireland (Co. Wicklow).

Lichenoconium erodens

Pycnidia (0.02–)0.03–0.05(–0.06) mm diam. Conidiogenous cells (3.5–) 4–5 (–6) µm long. Conidia brown, subglobose, verruculose, 2–3.5(–4) µm. Ubiquitous species on many hosts.

Lichenoconium lecanorae

Pycnidia (0.03–) 0.04–0.08 (–0.10) mm diam. Conidiogenous cells (4–) 5–7 (–8) µm long. Conidia brown, subglobose, ±smooth, (2.5–) 3–4.5 (–5.5) µm. Ubiquitous species on many hosts, but rarely recorded from *Usnea*, and then on the 'galls' of *Biatoropsis usnearum*.

Lichenoconium usneae

Pycnidia (0.04–)0.05–0.08(–0.11) mm diam. Conidiogenous cells (5–) 7–9 (–6) µm long. Conidia brown, subglobose, ±smooth, (2.5–) 3–4 (–5) µm. Ubiquitous species on many hosts.

Phaeosporobolus usneae

Conidiomata stromatic, superficial, convex, black, (0.03–) 0.05–0.75 (–0.90) mm diam., but sometimes confluent. Conidia irregularly subglobose to ellipsoid, brown, finely warted, 15–25 µm diam., composed of 6–12 or more cells, individual cells 4–6 µm diam. Widely occurring in Scotland, also from SW England, but probably much overlooked. May be the anamorph of *Lichenostigma maureri*. 3

Pseudoseptoria usneae

Pycnidia immersed to erumpent, black, 0.75–0.10 (–0.20). Conidiogenous cells 6–12 × 3–5 µm. Conidia colourless, simple, cymbiform with abruptly truncated base, (10–) 12–14 (16) × (3–) 3.5–4 µm. Only British record is from Skye, recorded on *Usnea* sp. In Spain and Italy it is found on *Usnea dasopoga* s. lat.

Zevadia peroccidentalis

Conidiomata stromatic, black, shiny, (1–) 2–3 (–3.5) mm across, sometimes coalescing to form aggregations 5–7 mm across. With thin wall breaking down to reveal conidia. Conidia dark brown, rough-walled, 0 (–1)-septate, 5–7.5 µm diam., formed in short chains of 2–4. On *Usnea flammea* in Ireland (Co. Mayo).

3. Conidiomata absent, conidia hyaline, producing a frost-like coating of the host thallus

Kalchbrenneriella cyanescens

Conidia produced over the surface of the host from erect conidiophores, 15–23 µm long, giving a 'frosted' or 'pruinose' appearance. Conidia arising in chains, non-septate, 5.5–7.0 × 3–4 µm. Widely occurring in Scotland, also from SW England, but probably much overlooked. In Britain on shrubby Usneas, especially *U. flammea*, but also *U. subfloridana*, *U. wasmuthii* and once on *U. hirta*.

4. With gall-like basidiomata

Biatoropsis usnearum

Basidiomata convex, ±subspherical or becoming lobate, variably whitish pink to reddish brown to dark brown or blackish, 0.2–2.5 mm diam. Basidia when mature, clavate to subcylindrical, with 1–3 transverse septa, 20–44 × 3–6.5 μm; basidiospores subglobose to ellipsoid, with a distinct apiculus, 4.5–8 × 4–7.5 μm. Chains of colourless, non-septate conidia, 3–5 × 2–3.5 μm, often present. Very common, and found on most British species of *Usnea*. Sometimes with secondary infections by other species, e.g. *Abrothallus usneae* and *Lichenoconium* spp.

Acknowledgements: To all of the authors cited below.

References

David, J.C. & Hawksworth, D.L. (1995) *Zevadia*: a new lichenicolous hyphomycete from western Ireland. *Bibliotheca Lichenologica* **58:** 63–71.

Diederich, P. (1992) *Stromatopogon baldwinii* Zahlbr., a lichenicolous coelomycete with dimorphic conidia. *Lichenologist* **24:** 371–375.

Diederich, P. (1996) The lichenicolous Heterobasidiomycetes. *Bibliotheca Lichenologica* **61:** 1–198.

Diederich, P. (2002) *Kalchbrenneriella* Diederich & M.S. Christ., a new genus to accommodate the lichenicolous hyphomycete *Torula cyanescens*. *Bryologist* **105:** 411–414.

Diederich, P. & Christiansen, M. S. (1994) *Biatoropsis usnearum* Räsänen, and other heterobasidiomycetes on *Usnea*. *Lichenologist* **26:** 47–66.

Etayo, J. (2000) Aportacíon a la flora liquénica de las Islas Canarias. VI. hongos liquenícolas de La Palma. *Bull. Soc. Linn. Provence* **51:** 153–162.

Etayo, J. (2008) Two new lichenicolous fungi: an *Opegrapha* and a *Plectocarpon* species (Ascomycota: *Roccellaceae*) from Chile. *Lichenologist* **39:** 543–547.

Etayo, J. (2002) Aportación al conocimiento de los hongos liquenícolas de Colombia. *Bibliotheca Lichenologica* **84:** 1–154.

Etayo, J. & Breuss, O. (2004) *Stromatopogon geminatum* spec. nova, a further lichenicolous fungus growing on Usnea. *Österr. Z. Pilz.* **13:** 277–279.

Etayo, J. & Sancho, L.G. (2008) Hongos liquenícolas del Sur de Sudamérica, especialmente de Isla Navarino (Chile). *Bibliotheca Lichenologica* **98:** 1–302.

Hafellner, J. (1982) Studien über lichenicola Pilze und Flechten II. *Lichenostigma maureri* gen. et spec. nov., ein in den Ostalpen häufiger lichenicoler Pilz (Ascomycetes, Arthoniales). *Herzogia* **6:** 299–308.

Hawksworth, D.L. (1977) Taxonomic and biological observations on the genus Lichenoconium (Sphaeropsidales). *Persoonia* **9:** 159–198 + 9 plates.

Hawksworth, D.L. (1981). The lichenicolous Coelomycetes. *Bull. Brit. Mus. (Nat. Hist.), Bot. Ser.* **9**(1) 1–98.

Hawksworth, D.L. (1982) Notes on British lichenicolous fungi IV. *Notes RBG Edinb.* **40:** 375–397.

Hawksworth, D.L. & Hafellner, J. (1986) *Phaeosporobolus usneae*, a new and widespread lichenicolous deuteromycetes. *Nova Hedwigia* **43:** 525–530.

Report of the BLS Field Meeting to West Iceland, 20 -27 July 2014

Skeljaháls, 23 July 2014. *Standing left to right:* Ásta Davíðsdóttir, Hörður Kristinsson, Heather Colls, Graham Boswell, Annelie Burghause, Andy Acton, Les Knight, Peder Aspen, Paul Cannon, Silke Werth, Frank Burghause, Brian Gale, Alan Orange, Dominic Whalley, Steve Price, Starri Heiðmarsson. *Seated / kneeling:* Heather Paul, Pat Wolseley, Sue Knight, Maxine Putnam, Ginnie Copsey.

The meeting visited and recorded lichens on a wide range of sites and habitats in Vestur-Island. We were based in the 'Gamli Skóli', the old school, of the Agricultural University of Iceland (Landbúnaðarháskóli Íslands) at Hvanneyri near Borgarnes. This formed an excellent and central base for our expeditions around the province and here we were provided with good bedroom accommodation and ideal laboratory facilities with the added bonus of stunning sunsets.

Our thanks are due to Silke Werth and Starri Heiðmarsson for their pre-meeting and on-the-spot organisation and hosting of the group; to Hörður Khristinnson who in the field and lab shared his vast experience and knowledge of Icelandic lichens; to Bergthora and Starri Heiðmarsson who each deserve a gold star, as well as our sincere thanks, for providing the food and Bergthora for catering for us so magnificently throughout our stay (including a taste of *Cetraria islandica* soup). And to all of them for making us so welcome.Thanks are also due to those members of the

party who agreed to hire cars and drive throughout the week. It is trusted that they received adequate recompense from all their passengers.

To aid our trips into the field we were each provided with a copy of *The Draft Checklist of Icelandic Lichens* prepared by Hörður and Starri. This document listed taxa by province and it was hoped that during the meeting we could add new province records for Vestur-Island and new species for Iceland.

This meeting was a great opportunity to study not only the lichens of typical Icelandic habitats but also those lichens that back home can usually only be found after a 6 mile trek across peat bog followed by the ascent of a 3,000 foot Scottish peak.

Attendees:
Andy Acton, Peder Aspen, Annelie Burghause, Frank Burghause, Graham Boswell, Paul Cannon, Heather Colls, Ginnie Copsey, Ásta Davíðsdóttir, Brian Gale, Starri Heiðmarsson, Les Knight, Sue Knight, Hörður Kristinsson, Alan Orange, Heather Paul, Steve Price, Maxine Putnam, Silke Werth, Dominic Whalley, Pat Wolseley.

Sunday, 20th of July

The shore at Kleifarvatn. Photo: Steve Price

Because individuals arrived at different times there was both a morning and late afternoon rendezvous time at Keflavik Airport. The first stop of the 'morning party' was an impromptu one at the side of the airport road (N64.000º W22.626º) where the

relatively bare leveled lava provided a good introduction to the richness of the terricolous lichens to be found on almost every other site we visited during the week. Here *Cladonia*, *Stereocaulon* and *Cetraria* were abundant.

The first planned site visit was to the western shore of **Kleifarvatn** a freshwater lake on the Reykjanes peninsula (N63.933º W21.994º) here terricolous communities and rocks and outcrops along the shore were studied. The initial impression of richness of the area was re-enforced by the presence of *Alectoria ochroleuca*, *Pannaria hookeri*, *Psoroma hypnorum* and *Peltigera leucophlebia*. The basalt revealed itself to be fairly basic with soil-pockets in the cliffs supporting four *Solorina species*: *S. bispora*, *S. octospora*, *S. saccata* and *S. spongiosa*.

On the way back to meet up with the remainder of the group a short visit was paid to the **Krýsuvík-Seltún** hot springs (N63.895º W22.054º). This gave many of us our first close-up experience of geothermal activity and of the sulphurous air that would accompany us throughout the week – in particular from the hot water piped directly to the washrooms and showers at the University accommodation. Here (at the springs not the showers) Annelie Burghause spotted *Cladonia vulcani* hiding, exactly as the book says in a pocket of "volcanic (even hot) soil, growing even in the sphere of sulphuric fumes." (Nordic Lichen Flora vol 5). Vestur-Iceland is the only area in Europe where this lichen is found.

The group now fully complete, apart from one Nordic-Scot who had to be swept-up later, visited an area SW of the airport composed of lava rocks and areas with shallow soil near **Urð** along road 45 (N63.955º W22.705º). Here discussions started in earnest, and would last all week, about the identification of *Stereocaulons* including the fern like *S. alpinum* and *S. arcticum*. *Thamnolia vermicularis* in this coastal site also caused some whoops of joy from us lowland Brits..... and the moonwort fern (*Botrychium lunaria*) on steroids – many up to 12cm tall.

Nearby at **Stafnes** (N63.971º W22.748º), with its orange-painted lighthouse, we looked at coastal rocks where some of the customary coastal species were found. When it was time to leave here Alan Orange had to be persuaded to abandon his attempts to rescue perithecial wonders from an unyielding rock. The two hour journey north to the accommodation, was pleasantly interrupted en-route by a pre-arranged meal.

Monday, 21st of July

The area of the **Glymur waterfall**, Borgarfjarðarsýsla (N64.387º W21.254º) gave us an introduction to the upland lichen flora and habitats and included birch forest and shrubs, lava rocks and an open tundra-like landscape. The day involved on the way out crossing a mountain river by way of a log bridge (with a slack-wire hand-rail to give a re-assuring but false sense of security) and on the return leg the fording of a shallow section of the same river. The waterfall itself with a cascade of 196m is the tallest in Iceland. The upland species including *Peltigera hyperborea* and *Pseudephebe miniscula* received close attention. Although it must be said that lunch with *Peltigera britannica* was rather nice.

Umbilicaria hyperborea near the waterfall at Glymur

A breakaway group of lowland sheep, as opposed to mountain goats, visited several nearby sites offering more gentle access. These were: **Storibotn** (N 64.385 W 21.293); the **Þyrilsnes Peninsula** (N 64.383 W 21.422); **Svinadalur** (N 64.468 W 21.520); and **Dragavegur** (N 64.509 W 21.541). Here they recorded a very good range of *Cladonia* and *Peltigera*.

Tuesday, 22nd of July

This day entailed a bit of a drive north to the Snæfellsnes Peninsula where throughout the day we were rewarded with superlative scenery. Not only that but at the first site, grassland at the head of the fjord the **Kolgrafafjörður** (N64.910 W23.102), we were pleased to be confronted by an abundance of *Nephroma arcticum* in a sea of *Cetaria islandica*. Meanwhile from the base of the adjacent mountain the gentle chip, chip, chip of the Orange chisel could be heard.

Gufuskálar (N64.903 W23.933) a former military area west of Hellisandur presented us with some terricolous lichens worth lying down for, indeed at one time it looked as though the whole group had been struck down by some sci-fi ray gun, bodies being scattered across the bare mineral earth. Among the goodies here were *Caloplaca cerina* unusually found growing on a moribund *Peltigera* and *Santesoniella arctophila* growing on mosses. The rock here was a little more yielding and *Hydropunctaria aractina* (new to Iceland) and several other *Verrucarias* were taken away for further examination.

Alectoria sarmentosa subsp. *vexillifera* near the waterfall at Glymur

Catillaria contristans overgrowing *Andreaea* near the hot springs at Laugarfoss

A 'drive in crater' was the next stop. **Hólahólar crater** (N64.784 W23.922) had become a tourist car park before its designation as a protected area. Our interest was it being the site of *Lobaria scrobicularia* which was re-found and in addition *Fuscopannaria praetermisa* and *Peltigera leucophlebia* were also noted.

The final site for the day was at the **Þúfübjarg** (N64.737 W23.775) bird breeding cliffs at the western end of the Snæfellsnes peninsula. This was a site for an old record of *Pseudocyphellaria crocata,* this was not re-confirmed. But to re-find it probably required inspection of the cliffs from the end of a rope – marginally outside of the capability, not to mention the assessed risks, of this party.

Wednesday, 23rd of July

On our visit to the area of old birch forest at **Húsafellsskógur** (N64.698 W20.859) we found only a very limited range of species and coverage of lichens. This is probably a reflection of the fact that in general there is very little forest in Iceland and consequently virtually no reservoir of corticolous species available for colonisation. The old roadway into the forest did however provide a good range of terricolous species, *Peltigera* in particular.

The **Hallmundarhaun** lava field is 52 km long and the large lava tube, **Víðgelmir,** (N64.752 W20.802) is 1.5km of negotiable cave. The extent of the rock exposure was intimidating when all one was armed with was a hand-lens! Colonisation was at a very early stage, just lichens and bryophytes, so anywhere comfortable and convenient provided lichenological rewards aplenty. *Flavocetraria nivalis*, *Gowardia nigricans* (*Alectoria nigricans*); and *Ochrolechia grimmia* were some of the highlights, the latter causing much discussion about the differences between that and *O. tartarea*.

Having cajoled, threatened and bribed the group to depart this wonderland we made a short trip to the equally rewarding area of **Skeljaháls,** west of Strútur mountian (N64.735 W20.802). Here the tundra-like habitat - an open area of soil, rocks and gravel and patches of dwarf-shrub heath - was also hard to leave. *Megaspora verrucosa* was one of the delights for saxiphiles whilst the *Flavocetraria nivalis* was to die for.

The tourist area of **Hraunfossar** (N64.701 W20.978) was intriguing with its floury glacial river flow being forced through narrow gorges and then being joined by a 0.5km long waterfall issuing from between lava flows. Here beside the path a patch of *Peltigera aphtosa* was discovered.

Thursday, 24th of July

The highpoint on road 52 at **Uxahryggir** (N64.438 W21.043), is normally considered one of the better viewpoints in the area – but not today when in heavy rain we explored the boulders and dwarf shrub heath. Only partly daunted by wet necks and steamed-up lenses we were rewarded with some good finds including *Solorina crocea.* Meanwhile *Umbilicarias* swollen by the rain seemed to have adopted various disguises including changing species!

Bodies (active and moribund) examining lichens at Skeljaháls. Photo: Steve Price

Flavocetraria nivalis at Skeljaháls. Photo: Steve Price

Following this some elected to expose white flesh and take delight in soaking awhile in the hotpots at **Laugarfoss** (N64.493 W21.176) and **Krosslaug** (N64.54 W21.203). Boulders and gravel also gave some lichenological pleasure.

Friday, 25th of July

The jagged and contorted lava at Norðurárdalur, **Svartagil** (N64.754 W21.519) and the sparsely vegetated zone along road side provided another species rich set of habitats to inspect.

A few km further north along the same road at **Túnprýði** (N64.802 W21.432) we were presented with the richest lichen and bryophyte dominated heaths I have seen. This graded up to the base of a line of basalt cliffs. *Stereocaulon alpinum* and *S. tomenstosum* were both found fertile and in that state could easily be compared. Eight species of *Peltigera* (no *P. britannica*) and fourteen species of Cladonia – including some magnificaent *C. borealis* and *C. gracilis var. elongata* which was described as 'when wet smelling like a lichenologists old sock'. On the cliffs were a few scraps of *R. subfarinacea,* this was the only *Ramalina* of the whole trip. Not even any at the coast.

Up in the hills along road 60 at **Miðdalur**, (N64.857 W21.513) the weather deterred all but the most waterproof. These brave few recorded only a handful of species from the rocks in a small canyon before being won over by the temptations of coffee and cake. The café back down in the valley, where the weather was fair, was next to the **Grábrók** 'tourist volcano cone' (N64.771, W21.538). An enjoyable walk around here was geologically interesting and also gave wonderfully close-up views of chicks of ptarmigan (*Lagopus muta*).

Saturday, 26th of July

On the outskirts of Reykjavík at **Heiðmörk** (N64.066 W21.729) is a quite extensive well established plantation of Sitka spruce, Norway spruce and Lodgepole pine. This together with birch forest and rocks in a recent lava field supported quite rich communities of terricolous and epiphytic lichens. The highlight of the site was the finding of fertile *Peltigera aphthosa.*

The final site of the trip was to nearby **Rauðhólar** (N64.093 W21.748). These red craters, better described as pseudo-craters, were formed by the expulsion of hot-air and gas rather than any substance. (I would not at this point draw any parallel with the BLS Council). Here the now familiar terricolous and saxicolous lichen communities were found together with, most fittingly, the diminutive annual flower *Koenigia islandica* (Iceland purslane), found in the UK only on Mull and Skye, and alongside it, of course, was *Cetraria islandica.*

A great end to a great week, thanks again.

Taxa recorded

Below is the list of the 192 taxa recorded from the specimens determined to date. This list, subject to critical appraisal by Starri Heiðmarsson and Hörður Kristinsson, indicates those that are considered to be new to Iceland (I) and to Vestur-Island (v).

A full list by site will been sent to all attendees. A pdf file of this can be sent out by email to BLS members upon request to the Steve Price. email: fieldmeetings@britishlichensociety.org.uk

	Alectoria ochroleuca		*Cladonia pocillum*
	Alectoria sarmentosa subsp. *vexillifera*	*I*	*Cladonia polydactyla*
	Anaptychia runcinata		*Cladonia pyxidata*
	Arctomia delicatula		*Cladonia rangiferina*
	Arthorhaphis alpina		*Cladonia stricta*
v	*Aspicilia calcarea*		*Cladonia subcervicornis*
	Athallia holocarpa (Caloplaca holocarpa)		*Cladonia subulata*
v	*Baeomyces rufus*		*Cladonia uncialis* subsp. *biuncialis*
	Bryoria chalybeiformis		*Cladonia vulcani*
	Buellia insignis		*Cystocoleus ebeneus*
	Caloplaca cerina		*Dibaeis baeomyces*
I	*Caloplaca cerinelloides*		*Diploschistes scruposus*
	Caloplaca nivalis		*Ephebe lanata*
v	*Catillaria contristans*		*Epilichen scabrosus* on *Cladonia* squamules and on *Baeomyces rufus*
v	*Cetraria aculeata*		*Flavocetraria nivalis*
	Cetraria islandica		*Flavoplaca citrina (Caloplaca citrina)*
	Cetraria muricata		*Fuscidea gothoburgensis*
	Cetraria sepincola		*Fuscopannaria praetermissa*
	Cetrariella delisei		*Gowardia nigricans (Alectoria nigricans)*
	Cladonia arbuscula	*v*	*Gyalidea fritzei*
	Cladonia arbuscula subsp. *mitis*	*I*	*Gyalideopsis scotica*
	Cladonia borealis		*Gyalolechia flavovirescens (Caloplaca flavovirescens)*
	Cladonia cariosa		*Haematomma ochroleucum* var. *ochroleucum*
	Cladonia cervicornis		*Haematomma ochroleucum* var. *porphyrium*
	Cladonia cervicornis subsp. *verticillata*	*I*	*Hydropunctaria aractina*
	Cladonia chlorophaea		*Hymenelia cyanocarpa*
	Cladonia ciliata		*Ionaspis lacustris*
	Cladonia ciliata var. *tenuis*		*Ionaspis odora*
	Cladonia coccifera agg.		*Japewia tornoensis*
v	*Cladonia coniocraea*	*I*	*Lathagrium cristatum (Collema cristatum)* - 1st located record in I
	Cladonia cornuta	*v*	*Lathagrium fuscovirens (Collema fuscovirens)*
	Cladonia cyathomorpha		*Lecanora chlarotera*
v	*Cladonia diversa*	*v*	*Lecanora gangaleoides*
v	*Cladonia fimbriata*		*Lecanora intricata*
	Cladonia furcata		*Lecanora polytropa*

v	*Cladonia gracilis*		*Lecanora rupicola*
	Cladonia gracilis var. *elongata*		*Lecanora symmicta*
	Cladonia humilis		*Lecidea confluens*
	Cladonia macroceras	*v*	*Lecidea fuscoatra*
	Cladonia ochrochlora		*Lecidea lapicida* var. *pantherina*
	Lecidella asema		*Placopsis gelida*
	Lecidella elaeochroma		*Placopsis lambii*
v	*Lepraria borealis*		*Placynthium flabellosum*
v	*Lepraria elobata*		*Polychidium muscicola*
	Lepraria rigidula		*Porpidia cinereoatra*
	Lichenomphalia alpina		*Porpidia crustulata*
v	*Megaspora verrucosa*		*Porpidia flavicunda*
	Melanelia hepatizon		*Porpidia macrocarpa*
	Melanohalia exasperata		*Porpidia melinodes*
	Micaria lignaria		*Porpidia speirea*
	Miriquidica atrofulva		*Porpidia tuberculosa*
	Miriquidica complanata		*Protopannaria pezizoides*
	Nephroma arcticum		*Protoparmelia badia*
	Nephroma laevigatum		*Pseudephebe minuscula*
	Ochrolechia androgyna		*Pseudephebe pubescens*
	Ochrolechia frigida	*v*	*Psilolechia leprosa*
I	*Ochrolechia frigida* forma *lapuensis*	*v*	*Psora rubiformis*
	Ochrolechia grimmiae		*Psoroma hypnorum*
	Ochrolechia parella		*Psoroma palaeaceum*
	Ochrolechia tartarea	*v*	*Psoroma tenue*
	Ochrolechia xanthostoma		*Ramalina subfarinacea*
	Pannaria hookeri		*Rhizocarpon badioatrum*
	Parmelia omphalodes		*Rhizocarpon geographicum*
	Parmelia saxatilis	*v*	*Rhizocarpon petraeum*
	Parmelia sulcata		*Rhizocarpon reductum*
	Peltigera aphthosa		*Rusavskia elegans (Xanthoria elegans)*
	Peltigera britannica	*v*	*Santessoniella arctophila*
	Peltigera canina		*Sclerococcum sphaerale*
	Peltigera didactyla		*Scytinium gelatinosum (Leptogium gelatinosum)*
	Peltigera extenuata	*v*	*Scytinium pulvinatum (Leptogium pulvinatum)*
	Peltigera hymenina		*Solorina bispora*
	Peltigera leucophlebia		*Solorina crocea*
	Peltigera malacea	*v*	*Solorina octospora*
	Peltigera membranacea		*Solorina saccata*
	Peltigera neckeri		*Solorina spongiosa*
	Peltigera polydactylon		*Sphaerophorus fragilis*
	Peltigera ponojensis		*Sphaerophorus globosus*
	Peltigera praetextata		*Sporastatia testudinea*
	Peltigera rufescens		*Stereocaulon alpinum*
	Pertusaria corallina		*Stereocaulon arcticum*

	Pertusaria pertusa	*v*	*Stereocaulon condensatum*
	Phaeophyscia orbicularis	*I*	*Stereocaulon dactylophyllum*
	Physcia caesia	*I*	*Stereocaulon evolutum*
	Physcia tenella		*Stereocaulon glareosum*
	Placidium lachneum		*Stereocaulon leucophaeopsis*
	Stereocaulon rivulorum		*Umbilicaria proboscidea*
	Stereocaulon tomentosum		*Umbilicaria torrefacta*
	Stereocaulon vesuvianum		*Varicellaria lactea (Pertusaria lactea)*
	Stereocaulon vesuvianum var. *nodulosum*		*Verrucaria degelii*
	Tephromela atra		*Verrucaria ditmarsica*
	Thamnolia vermicularis	*I*	*Verrucaria elaeomelaena s.l.*
	Trapelia coarctata		*Wahlenbergiella striatula (Verrucaria striatula)*
	Tremolecia atrata		*Xanthoria candelaria*
	Umbilicaria cylindrica		*Xanthoria parietina*
	Umbilicaria hyperborea		*Xanthoria polycarpa*
I	*Umbilicaria polyrhiza*		

British Lichen Society Field Meetings & Workshops Programme 2015

Field Meetings Secretary: Steve Price, Woodlands, Combs Road, Combs, High Peak, Derbyshire SK23 9UP
email *fieldmeetings@britishlichensociety.org.uk*

*note: **All members** of whatever level of experience are welcomed on **all BLS Field Meetings**. No member should feel inhibited from attending by the fact that some meetings may be associated with BLS Council meetings or the AGM. Workshops, on the other hand, may be aimed at members who have some level of experience. If so this fact will be specified in the meeting notice.*

BLS AGM Field Outing

Sunday 18th January 2015

A one day field outing will follow the AGM. This year we will visit Brookwood Cemetery, near Woking, Surrey [grid reference SU951569, postcode GU24 0BL, website *www.brookwoodcemetery.com*]. Brookwood (originally known as the London Necropolis) was established in 1854 to provide burial space for the rapidly growing London population. It incorporates military cemeteries for soldiers from nine countries and a number of Muslim burial grounds as well as for the Church of England, Catholic and non-conformist assemblages and more exotic religions such as Zoroastrianism. It's a big site with plenty of trees to survey as well as the memorials.

Brookwood has its own railway station (in fact at one time it had two!) so it is easy to visit using public transport (South West trains from Waterloo and Clapham junction). At the time of writing train times for the day are not available, but we will aim to meet at Brookwood station at 10.30AM. That time may change once train times are confirmed, so if you are not planning to attend the AGM and Swinscow lecture contact Paul Cannon beforehand (*p.cannon@kew.org*, 07597 551059) to receive the latest information..

BLS WINTER WORKSHOP - University of Nottingham, School of Life Sciences

The lesser used stains, tests and techniques in lichen identification
Friday 20th to Sunday 22nd February 2015
Host **-** Peter Crittenden
Tutors **-** Brian Coppins, David Hill and Mark Powell

This workshop will be based on the less used stains, tests, features and techniques helpful in lichen identification. There are quite a few tests for features in apothecial

sections like sedifolia grey, HNO_3 reactions, crystal tests for lecanoric/gyrophoric acids. Not all the colour changes in for example apothecial sections that are described in keys and descriptions are correctly observed, especially if one does not know exactly what to look for e.g. how much does the colour actually change. Additionally there are the less obvious spore characters and anatomical characters e.g. tissue types such as in cortex of Physciaceae and exciples of Collema and epinecral layers.

Costs
There is a charge of £50 per attendee to cover part of the cost of using the laboratory, the balance of the cost is being subsidised by the BLS.

Outline timetable
Friday 20th 19.30 – introduction and evening tuition;
Saturday 21st morning – field trip to local site;
Saturday 21st afternoon – tuition and laboratory work;
Sunday 22nd to 16.00 – tuition and laboratory work.

Booking on the workshop
Places on the workshop are limited. Booking should be made through the Field Meetings Secretary, Steve Price (email *fieldmeetings@britishlichensociety.org.uk*) and send the workshop fee of £50 to him at Woodlands, Combs Road, Combs, High Peak, Derbyshire SK23 9UP. Cheques to be made payable to 'The British Lichen Society' (not 'BLS' please).

Hotel accommodation
A number of rooms have been pre-reserved in the De Vere Venues East Midlands Conference Centre & Orchard Hotel, The University of Nottingham, University Park, Nottingham, NG7 2RJ reservations tel: 0115 8760863. *Bookings are to be made directly with the hotel*. This hotel is on the University campus and is within easy walking distance of the School of Life Sciences..
Rooms have been reserved for the nights of Friday 20th and Saturday 21st and also, should anyone wish or need to stay over, for Sunday 22nd. The special room rate arranged for workshop attendees is £40 single occupancy and £49 double occupancy per night including breakfast and VAT.
Attendees are to book directly with the hotel. In order to obtain these rates please quote **'Lichen Society'** and the date of arrival. A credit/ debit card will be needed to guarantee the bookings.
Payment can then be made directly with the Hotel on arrival.

These rooms are bookable up until 19th January 2015 and after this time any further bookings will be subject to availability and the best available rates. There is plenty of other accommodation available in the area and in the City of Nottingham.

Further information
Maps, site plans and further details of the workshop will be sent out to attendees prior to the meting.

BLS SPRING MEETING 2015 – Snowdonia

Saturday 2th to Saturday 9th May 2015
Local organiser - Ray Woods

Snowdonia in the north of Wales has much to offer the lichenologist. Allan Pentecost in his Lichen Flora of Gwynedd published in the Lichenologist 19(2) in 1987 pgs 97-166 lists the presence of over 850 taxa. Whilst Alan Orange and others have done a little work in the area subsequently, the lack of a resident lichenologist has meant the few new records have been made for almost a quarter of a century. We hope to examine a wide range of habitats from the Celtic rain forest through basic upland rocks to lakes and rivers.

The main objective of the meeting will be to explore the lesser recorded parts of the area. Opportunities will be provided for both the mountain goats and the valley lovers amongst the membership.

Meeting base & accommodation
The meeting will be based in Capel Curig at the Plas y Brenin Mountain Centre where the Bryn Engan Farmhouse (grid ref SH719576) has been rented for the week by the BLS. This offers accommodation in 12 single rooms and 1 twin room. All bedrooms are en-suite and bed-linen and towels are provided. It has a fully equipped kitchen. Meals will be available in the main house and can be purchased as required. See *http://www.pyb.co.uk/accommodation-master.php* for details.

Additional sleeping accommodation may become available in Plas-y-Brenin's main house. If demand for bed spaces in Bryn Engan Farmhouse exceeds the 14 spaces then this option will be pursued. Other accommodation: hotels, bed & breakfast and self catering cottages is available in the area of Capel Curig. Per person costs for staying in Bryn Engan Farmhouse (excluding meals) for the week is: £160.80 This is the rental split 14 ways.

For information, details of the Centre are:
Plas y Brenin National Mountain Centre, Capel Curig, Conwy, LL24 0ET
01690 720214 *http://www.pyb.co.uk/*

Booking
Book through the Field Meetings Secretary, Steve Price, by email to *fieldmeetings@britishlichensociety.org.uk* or by post to Woodlands, Combs Rd, Combs, High Peak, Derbyshire SK239UP. Send a deposit of £30 (payable to The British Lichen Society). Note that the balance of the payment will be requested by the BLS prior to the meeting.

Microscope work
A room for microscope work and for workshop sessions has been organised at the centre.

Travel
Capel Curig is on the A5 (London to Holyhead Road) and the Centre is about 400 metres from the village along the A4086. From the North take the M56, A55, A5 or A470. Traffic congestion is sometimes heavy on the roads in holiday periods.

For travel by train you need to get to Llandudno Junction Railway Station. The Centre will arrange a pick up once a day. See the Plas y Brenin website for details. There are also occasional trains during the day which run between Llandudno Junction and Betws-y-Coed, which is 6 miles from the Centre. From Betws-y-Coed, there is an infrequent bus service to Capel Curig. Please see *www.traveline-cymru.info* or phone 0871 200 22 33 for up to date bus times.

Useful Maps

- OS Explorer (1:25000) Outdoor Leisure map 17 - Snowdon & Conwy Valley and
- OS Explorer (1:25000) Outdoor Leisure map 18 - Harlech, Porthmadog & Bala

BLS SUMMER MEETING 2015 – Unst, Shetland (including workshop sessions on the genus *Cladonia*)

Saturday 4th to Friday 10th July 2015
Local organiser: Rebecca Yahr
Cladonia tutor: Annelie Burghause

Unst is the northernmost island in the British Isles. Just 12 miles long by five miles wide it offers a variety of habitats including low, rocky shores, sheltered inlets, high cliffs, fellfield, sub-arctic stony deserts of serpentine, heathery hills, peat bogs and sandy shores but not many trees.

During the week workshop sessions on the genus *Cladonia* will be tutored by Annelie Burghause.

Meeting base & accommodation
The meeting will be based in the north of the island at Saxa Vord where 5 fully-equipped self -catering houses at Nordabrake (grid ref HP664134) have been booked by the BLS. Each house has a double, a twin and a single room. Linen and towels are provided.
See *http://www.saxavord.com/* for details.

Per person costs: for use of a double or twin room £120 per person for the week; for use of a single room £165 for the week.. Note that the houses are actually booked to Saturday 11th. So it is possible, should anyone wish, to stay on for the extra night.

Meals will be available in the on-site restaurant as well as at the Baltasound Hotel. There are three general stores on the island

Booking
Book through the Field Meetings Secretary, Steve Price, by email to *fieldmeetings@britishlichensociety.org.uk* or by post to Woodlands, Combs Rd, Combs, High Peak, Derbyshire SK239UP. Send a deposit of £30 (payable to The British Lichen Society). Note that the balance of the payment will be requested by the BLS prior to the meeting.

Microscope work
The lounges of the houses will be 'requisitioned' by the organisers for microscope work and for workshop sessions.

Travel
The possibility of hiring a mini-bus from Edinburgh is being investigated. If you would be interested in using this option please inform the Field Meetings Secretary.

The Saturday to Friday duration of the meeting has been chosen to allow the following ferries to be taken to and from the Shetland:
Friday 3rd evening ferry from Aberdeen to arrive in Lerwick on morning of Saturday 4th; Friday 10th evening ferry from Lerwick to arrive in Aberdeen on the morning of Saturday 11th.

The ferries to and from Shetland are operated by NorthLink Ferries see *http://www.northlinkferries.co.uk/.* Public transport services will take attendees from the ferry to arrive in Unst by mid afternoon. Flights to Shetland from various locations arrive at Sumburgh Airport in the South of Mainland.

The journey from Mainland Shetland to Unst involves two inter-island ferries (Mainland to Yell and Yell to Unst) and it is recommended to book vehicles onto ferries in advance on 01595 745804, timetables can be found on the Shetland Islands Council website. see *http://www.shetland.gov.uk/ferries/*

Before you go
- Useful map: OS Explorer map 470 (1:25000) Shetland - Unst, Yell & Fetlar
- Useful book: Shetland Lichens, Dalby, K., Dalby, C., published by Shetland Amenity Trust, Lerwick, 2005 (this book appears to be available from the Shetland Heritage Shop see: *http://www.shetlandheritageshop.com*)

BLS AUTUMN MEETING 2015 – Forest of Dean, Gloucestershire

Thursday 24th to Monday 28th September 2015
Local Organiser – Juliet Bailey

The Forest of Dean is an ancient Royal hunting forest in west Gloucestershire with a wooded heartland of about 15 by 15 miles. The river Wye is to the west and the river Severn to the south, both tidal here. The Dean has a remarkable geology, an elongated bowl rising from sea level to a rim of limestone hills over 200m high, enclosing coal measures, with sandstone coming to the surface around the outer edge. It has a rich industrial heritage of iron and coal mining and stone quarrying dating back to pre-Roman times.
It is especially renowned for its oaks, though few are more than 200 years old when Nelson was scandalised by the condition of the forest and ordered a strategic planting to provide ship-timber. Much of the Dean is now managed by the Forestry Commission for commercial forestry and amenity. Until the 1950s there were extensive heaths within the Forest. These were planted with conifers at that time, and only in the most recent decades have attempts been made to restore the heathland element.
Big recent changes in the look of the Forest have resulted from the foot-and-mouth epidemic of 2001 when the free-roaming sheep were culled. Sheep are back, but in much reduced numbers. A new element in the mix is a rapidly expanding population of wild boar, currently estimated at about 800. Over the weekend we will explore the impact of these varying elements on the Dean's lichen flora.

Meeting Base
The meeting will provisionally be based in the Fountain Lodge, Parkend, in the heart of the Forest of Dean [details of the accommodation are currently being finalized].

Booking
Please advise Juliet Bailey *jabailey99@gmail.com* and Steve Price, the Field Meetings Secretary *fieldmeetings@britishlichensociety.org.uk* of your intention to attend. Further details will be sent out as soon as possible.

Timetable
The meeting will run from the evening of Thursday 24th when we meet to lunchtime on Monday 28th September when the meeting will finish in the field.

Further details of the programme will be sent out to attendees nearer the time of the meeting.

Notice of Annual General Meeting 2015

Venue

The AGM and Winter Meeting for 2015 will be held at the Jodrell Building, Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AB, on Saturday 17 January 2015.

For the BLS meetings approach the Jodrell Building by the Jodrell Gate on Kew Road (at any of the visitor gates an entrance fee will be charged). Should you find this gate closed, pick up the phone in the grey box at the right hand side, which will connect you to Kew Constabulary. Let them know that you are attending the BLS meetings, and they will release the gate for you. (A local map showing the location of the Jodrell Building is available on the BLS website, or contact Paul Cannon.)

Kew Gardens is well signposted from all the major local roads. The South Circular (A205) passes the north-east corner of Kew Gardens and Kew Road (A307) forms the eastern border. There is no parking at the Jodrell Building but parking can usually be found on Kew Road or around Kew Green.

The venue is about 10 min walk from Kew Gardens Station (District Line tube, also London over-ground) or Kew Bridge Station (South West trains). Buses 65 and 391 stop directly outside the Jodrell Building (bus stop 'Mortlake Road').

Exhibition

Exhibits can be put up in the Jodrell Building from 15.00 on Friday and should be ready for viewing by 17.30. They can be viewed during tea breaks until the close of the meeting on Saturday. Please advise Paul Cannon by e-mail (*p.cannon@kew.org*) of your requirements for tables or display stands before **Monday 5 January** as these have to be ordered in advance, and arrange with him if you need access by car when bringing any bulky or heavy items.

Timetable

Friday 16 January:

17.30 – Reception (wine and soft drinks) and Exhibition in the Atrium of the Jodrell Building, with posters and the announcement of the winners of the photographic competition.

18.30 – **Swinscow Lecture in Lecture Theatre**

We are delighted to announce that Prof. Mark Seaward will present the 2015 Swinscow Lecture on "Spots before the eyes – half a century of mapping lichens"

19.30 – Dinner after the Swinscow Lecture at the Coach and Horses on Kew Green, cost £25. Booking is essential, please see the form posted to you with this *Bulletin*. The Book Auction will take place after dinner.

Saturday 17 January:

9.45 – Coffee and tea, poster and photographic exhibition in the Reception area of the Jodrell Building

10.30 – Annual General Meeting, Lecture Theatre, Jodrell Building

13.00 – Lunch (at own expense). Restaurants within a few minutes walking distance are situated within the gardens and around Kew Green.

14.00 Winter Meeting. Introduction – Janet Simkin, President of the Society
14.10 Early findings from the Lobarion project. *Peter Lambley, Pat Wolseley & Ray Woods*
14.40 Democratising Data: present and future support for lichen recording. *Les Knight*
15.20 Tea in Reception
15.50 Lichens in the Sea Room: the Shiants. *Brian Coppins*
16.15 Wind, waves, and wanderers – monitoring change in the populations of *Heterodermia leucomela* on the Isles of Scilly. *Holger Thüs*
16.40 TBC
17.05 Arrangements for field meeting. *Paul Cannon*
17.15 Close

Post-AGM meal
For those who would like to eat together after the AGM, a booking will be made at a local restaurant near Kew Gardens Station, a few minutes walk from the Jodrell Building, at 19.00, menu a la carte. (Numbers will be confirmed on Saturday morning.)

Nominations for Officers of the Society
Nominations are invited for Officers for 2015 and for three members of Council for the period 2015–2018 (retiring at the AGM held in early 2019). Proposals should be sent by e-mail or in writing to the Secretary (Dr. Chris Ellis, Royal Botanic Garden Edinburgh, 20A Inverleith Row, Edinburgh, EH3 5LR, Scotland C.Ellis@rbge.ac.uk) at least two weeks before the AGM. No person may be nominated without their consent. Theresa Greenaway, Les Knight and Alan Silverside are due to retire from Council and are not eligible for re-election. We thank them all for their service.

AGM Agenda

Please sign the attendance list and write your own name badge.

1. Apologies for absence
2. Minutes of the Annual General Meeting held at the University of Nottingham, January 2014.
3. Matters arising.
4. Reports of Officers and Committee Chairs:

4.1	President	(Janet Simkin)
4.2	Secretary	(Christopher Ellis)
4.3	Treasurer	(John Skinner)
4.4	Membership Secretary	(Heidi Döring)
4.5	Conservation	(Bryan Edwards)
4.6	Data	(Les Knight)
4.7	Education and Promotions	(Sally Eaton)
4.8	Members' Services	(David Hill)
4.9	*Bulletin* Editor	(Paul Cannon)
4.10	Senior Editor Lichenologist	(Peter Crittenden)
4.11	Website Editor	(Janet Simkin)
4.12	Field Meetings Secretary	(Steve Price)
4.13	Librarian	(Ray Woods)
4.14	Archivist	(Mark Seaward)
4.15	Herbarium Curator	(Richard Brinklow)

5. Election of Officers, including three members of Council
6. Subscription fees and changes to the Constitution
7. Any other business
8. Date and place of AGM 2016

Abstract of Swinscow Lecture

Spots before the eyes: half a century of mapping lichens
Mark R.D. Seaward (*University of Bradford*)

The Mapping Scheme has undoubtedly been one of the Society's success stories: not only has it contributed to our knowledge of the distribution, ecology and status (and thereby conservation) of lichens in Britain and Ireland, but it has also involved a very large proportion of our membership as well as non-members, particularly ecologists and environmentalists, in fieldwork – affectionately known as "square bashing". The history of the BLS Mapping Scheme will be traced from its inception in September 1963, and acceptance in January 1964, to show the development of data retrieval, access and output. Particular attention will be paid to the evolution of mapping

cards, the improvement in computer facilities and the elaboration of chorological material, site and red data lists. Reference will also be made to the importance of using historical data and herbaria to provide a dynamic dimension to maps. Tribute will be paid to the many who have made the Mapping Scheme and subsequent development of a BLS Database such on-going successes.

Post-AGM excursion

On Sunday 18th January we will visit Brookwood Cemetery, near Woking (see information on Field meetings on page 123). If you intend to take part but can't be at Kew for the AGM, please contact Paul Cannon beforehand (*p.cannon@kew.org*, 07597 551059) in case plans change nearer the time.

Accommodation

A range of accommodation is available within walking distance of the Royal Botanic Gardens. You may find a list of local B&Bs near RBG Kew helpful, which is available at *www.kewaccommodation.com*. (When making your booking, mention that you are attending a meeting at RBG Kew. Several of the more commercial businesses may offer a discount.)

Local Organiser

Dr Paul Cannon, Mycology Section, Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AB, email *p.cannon@kew.org*.

Proposed Constitutional and Subscription changes

Council has agreed that certain changes to our constitution are needed regarding categories of membership and subscriptions and the purpose of this note is to explain why these are considered necessary and to present the changes to be proposed at the AGM in January 2015.

The proposal is to separate the subscription to the Society from the cost of the *Lichenologist*. Under the proposal most of us would be 'Regular' members paying a subscription that would be subject to discounts for age and student status. Regular membership would confer voting rights and receipt of all publications except *The Lichenologist*. To subscribe to *The Lichenologist*, an extra payment would be added, slightly less for the electronic form than for hard copy.

In 2015, there is no intention to increase subscriptions which will remain the same and there will be no change to your entitlements for the subscription you pay. But in

2016, it is proposed to have a modest subscription increase of £5 together with a £5 increase for *The Lichenologist*.

Why do we want to change membership categories?
The current system of membership categories is unnecessarily complex and new members find it somewhat confusing. People often do not realise that Ordinary and Associate members have the same membership rights but differ in entitlements to publications.

Also, separating the membership subscription from the subscription to the *Lichenologist* will make it easier for both individuals and the Society to reclaim Gift Aid from the British tax authorities. *The Lichenologist* is a scientific journal with content that is mainly not about the Society's business and as such is not eligible for Gift Aid.

Why do we want to increase subscriptions in 2016?
The short answer is that the costs of running the Society are going to increase and we need to budget for this. At present a huge burden of work falls upon a fairly small number of people who are finding it difficult to cope with the administrative work load. Several of those people are in full time jobs and employers today are far less inclined to support such 'sidelines' as society activities than was the case a few years ago. Consequently we are seriously considering following the route taken by many similar societies and taking on an administrator (initially part-time) to assist our Officers and Committees with aspects of their work. Council is at present working urgently on this and we have preliminary costings which will of course be significant. While our reserves are healthy Council is committed to their deployment on the Society's principal objectives as a charity and intends that administrative costs should, as far as possible, be met from income. Income from the *Lichenologist* has been healthy in recent years but this has not always been the case and in future may be uncertain.

Why do we want to increase Lichenologist subscriptions in 2016?
The Lichenologist has its own finances with both income and expenditure. Its income comes from BLS members' subscriptions and subscriptions paid directly to the publishers from organisations around the world. Its expenditure is the sum of editorial, publishing and mailing costs. We have been fortunate that our Editor and his team have kept his costs very low for many years but there are changes on the horizon here and we are likely to need to provide more financial support for that team. Publication and mailing costs increase steadily. Income is difficult to predict but we can be fairly certain that sale of the digital archive, a great boost in recent years, will decline.

It is possible that income will be higher than expected and it might not be necessary to raise the subscription to *The Lichenologist* for another year. But to be on the safe

side we feel it is advisable to raise that annual subscription by the small amount of £5.

The proposed changes in membership categories and subscriptions

Category	**2015 proposal, £**	**2016 proposal, £**	**Notes**
New Membership categories			
Regular	25.00	30.00	
Regular with discount	10.00	15.00	inc. Junior, Senior, Student
Family	5.00	5.00	no change
Life	250.00	300.00	at present equivalent to 10x Regular. As Life membership includes the Lichenologist the actual payment will be £450 with printed copies, or £400 with electronic.
Lichenologist options			
Lichenologist, paper	10.00	15.00	10x if taken up with Life
Lichenologist, electronic	5.00	10.00	10x if taken up with Life

In terms of the current categories the changes would be:

Category	**2014 sub, £**	**2015 sub, £**	**2016 sub, £**
Ordinary	35.00	35.00	45.00
Associate	25.00	25.00	30.00
Electronic	30.00	30.00	40.00
Senior Associate	10.00	10.00	15.00
Junior/Student	10.00	10.00	15.00
Family	5.00	5.00	5.00
Life	350.00	350.00	450.00
Life Electronic	300.00	300.00	400.00

Note that you would be able to subscribe to Life Membership with or without *The Lichenologist*.

Proposed changes to the wording of the Constitution, in detail

Proposed new wording	Commentary
3. Membership	The significant changes are in this section. The changes in '5. Subscriptions' follow as a result of these changes in membership categories.
The Society shall have Honorary members, Regular members and Family members.	The categories of Ordinary, Associate, Senior Associate and Student Associate are all deleted. The term 'Regular' is used to avoid confusion with any of the deleted categories.
Honorary members shall be nominated by the Council in accordance with the criteria outlined in Rule 13 and elected on a majority vote of those present and voting at a General Meeting of the Society. Election of an Honorary Member should not increase their number beyond 2.5% of the total membership at that time. They shall enjoy the same benefits as Regular members but shall pay no subscription and receive *The Lichenologist* free of charge.	As membership subscription and subscription to the *Lichenologist* are separated, the latter has to be mentioned here.
Regular members shall be persons who have signed the form of membership and paid the subscription. They have full membership rights and receive the *Bulletin*. Regular members are entitled to subscribe to *The Lichenologist* at a special member's rate. Members under the age of 18 are not eligible to vote at a General Meeting or serve on Council.	New paragraph replacing the paragraphs which provided details of Ordinary and Associate membership.
Full-time students, persons under the age of 18 and persons aged 65 or over are entitled to take up Regular membership at a discounted subscription.	All references to Associate Membership (including Student Associate membership and Senior Associate membership) removed.
Regular members aged 65 or over may pay a life subscription.	
Family membership is available to persons living in the same household as a Regular member. Family members receive no publications and have no right to vote at a General Meeting or serve on Council.	Family membership is basically seen as a supportive activity and is accordingly minimally priced.

Proposed new wording	Commentary
5. Subscriptions	
Subscription rates for Regular and Family membership including the discounts and life subscription option specified in rule 3 shall be determined at a General Meeting of the Society by a majority vote of those present and voting.	No change in meaning.
At the same time a member's subscription rate for *The Lichenologist* shall be determined in the same way.	New sentence.
Subscriptions shall relate to one or more calendar years and shall be payable in advance on or before 1st January each year.	No change.
A person joining the Society as a Regular member who has signed the form of membership and paid a subscription shall be entitled to receive all the Society's publications to which he or she is entitled and are issued during the calendar year(s) for which the subscription is paid.	This means the *Bulletin* plus any other notices and mailings from the Society but not the *Lichenologist* for which an additional subscription is payable.
Members who have not paid a current subscription…etc.	Unchanged section concerning actions to be taken if a subscription is not paid, culminating in termination of membership.

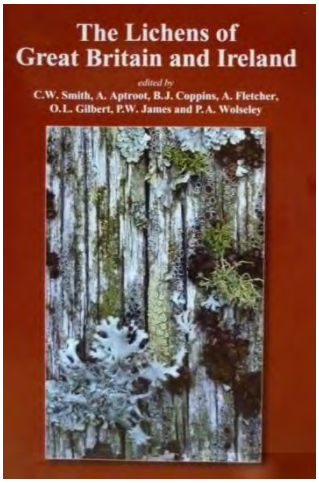
At the AGM in 2012 Council was asked to consider options for student members to receive *The Lichenologist*. Under the proposal a student, from January 2016, could be a Regular member with a student discount for £15 and subscribe electronically to *The Lichenologist* for £10 with a total discount of 37.5% (a total of £25 compared to the undiscounted price for the same entitlements of £40) or in hard copy for £15 with a total discount of 33% (a total of £30 compared to £45).

Lastly, we mention above the need for our Society to further its charitable objectives (promoting the study of lichens, the conservation of lichens and their habitats and raising awareness of their importance). We recognise that Council does not have the monopoly on good ideas and welcome any suggestions from the membership at any time. Anything you put forward will be seriously considered.

John Skinner, Treasurer: British Lichen Society
& Heidi Döring, Membership Secretary
October 2014

Publications and other items for sale

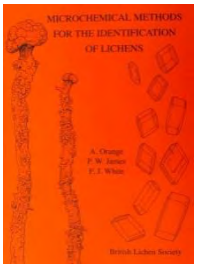
Please contact The Richmond Publishing Co. Ltd, P.O. Box 963, Slough SL2 3RS, tel. (+44) (0)1753 643104, email rpc@richmond.co.uk to purchase these items.



Cat.1. The Lichens of Great Britain & Ireland. Ed. Smith et al. (2009). Hardback, 700pp.
This work, a much enlarged revision of 'The Lichen Flora of Great Britain and Ireland published in 1992, reflects the enormous advances in lichen taxonomy over the last two decades. There are keys to 327 genera and 1873 species, with detailed descriptions and information on chemistry and distributions. The language is accessible, avoiding obscure terminology and the keys are elegant. The Lichens of Britain and Ireland is undoubtedly the standard work for the identification of lichens in Great Britain and Ireland and will be indispensible to all serious students of lichens and to other biologists working in the related fields of ecology, pollution, chemical and environmental studies.

BLS members: £45.00 ; non-members £65.00
Postage & Packing £7.50 UK, £15.00 overseas
(note this is a very heavy book!).

Lichen Atlas of the British Isles, ed. M.R.D. Seaward
The Atlas has been published in fascicles, unbound A4 sheets hole-punched for keeping in a ring binder. Each species account includes a distribution map and a discussion of the lichen's habitat, ecology, identification and status.
Cat.2. Fascicle 2: *Cladonia* part 1 (59 spp). 1996. **Out of print.**
Cat.3. Fascicle 3: The foliose *Physciaceae* (*Anaptychia*, *Heterodermia*, *Hyperphyscia*, *Phaeophyscia*, *Physcia*, *Tornabea*) plus *Arctomia*, *Lobaria*, *Massalongia*, *Pseudocyphellaria*, *Psoroma*, *Solorina*, *Sticta*, *Teloschistes*. (54 spp) 1998.
Cat.4. Fascicle 4: *Cavernularia*, *Degelia*, *Lepraria*, *Leproloma*, *Moelleropsis*, *Pannaria*, *Parmeliella*. (36 spp) 1999.
Cat.5. Fascicle 5: Aquatic Lichens and *Cladonia* part 2. (64 spp). 2000.
Cat.6. Fascicle 6: *Caloplaca*. (58 spp) 2001.
All fascicles are offered to members at a special price of £4.00 each , (approximately half price). Price to non-members is £6.00 per fascicle. Postage & Packing £3.50 UK, 10.00 overseas, per fascicle.
Cat.7. Fascicles 3 to 6 for £12.00 (Buy 3, get one free!). Price to non-members is £6.00 per fascicle. Postage and packing £8.50 UK, £25.00 overseas.



Cat.8. Microchemical Methods for the Identification of Lichens by A. Orange (2010)

2nd edition, with two colour plates. Full of useful information on pigments, crystals, colour tests with reagents and TLC. Price £9 members, £11 non-members.

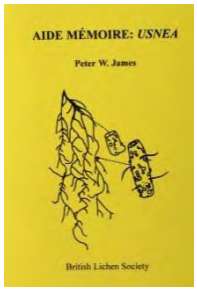
Cat.9. Conservation Evaluation of British Lichens and Lichenicolous Fungi by B.J.Coppins and R.G. Woods (2012)

An update and revision of the 2003 edition and now extended to include lichenicolous fungi. Provides a comprehensive catalogue of threat statuses. Also included are lists of specially protected species in England, Scotland and Wales and those species for which Britain has an internationally important population. It now no. 13 of the JNCC's Species Status volume series. A4 paperback 155pgs. £7. Postage and Packing £5.00, £12.50 overseas.

Cat.10. Surveying and Report Writing for Lichenologists Ed. D.J. Hill (2006)

Guidelines on commissioning surveys, fieldwork, identification and report writing, aimed principally at those people and organisations commissioning surveys and at those undertaking them. However, much of the information is of value to any lichenologist engaged in field recording.

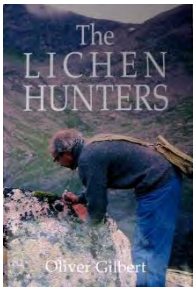
BLS members £7.00; non-members £10.00. Postage & Packing £2.50 UK, £6.50 overseas.



Cat.13. Usnea 'Aide Memoire' by P.W. James

A5 booklet with drawings and many useful tips for identifying the British species of this difficult genus.

BLS members £2.00; non-members £3.00. Postage & Packing £1.50 UK, £2.50 overseas.



Cat.14. The Lichen Hunters by O.L. Gilbert (2004). Hardback, 208pp.

If you have been on any lichen field meetings in the last fifty years, this is a book you will enjoy. The late Oliver Gilbert's boundless enthusiasm comes across in every page as he describes field meetings and explorations around Britain. Many past and present members of the Society are fondly remembered in this delightful book. Special price, now £6.00. Postage & Packing £4.50 UK, £10.50 overseas.

Cat.15. 'Understanding Lichens' by George Baron (1999). Paperback, 92pp.
An excellent introduction to lichenology, from the basic biology of lichens to their environmental importance as well as the history of the science.
BLS members £8.95; non-members £9.95. Postage & Packing £2.50 UK, £6.50 overseas.

Cat. 16. A Field Key to Common Churchyard Lichens by Frank Dobson (2003)
Spiral-bound book with strong paper. Illustrated keys to lichens of stone, wooden structures, soil and mosses. 53 colour photographs. Covers many common lowland lichens.
BLS members £6.50; non-members £7.50. Postage & Packing £2.50 UK, £6.50 overseas.

Cat. 17. A Field Key to Coastal and Seashore Lichens by Frank Dobson (2010)

A superb guide to over 400 species. 96 colour photographs. In the same format as cat. 16.
BLS members £10.00; non-members £12.00. Postage & Packing £2.50 UK, £6.50 overseas.

Cat. 18. A Field Key to Lichens on Trees by Frank Dobson (2013)

A superb guide to around 500 species. 96 colour photographs. In the same format as cat. 16.
BLS members £15.00; non-members £17.00. Postage & Packing £2.50 UK, £6.50 overseas.

Cat. 21 and 22. Lichen Wall Charts illustrated by Clare Dalby.

Two beautifully illustrated wall charts, **'Lichens on Trees'(cat.21)** and '**Lichens on Rocky Seashores' (cat.22)** have been produced by artist Clare Dalby. Each is A1 size (80cm wide x 60cm high) and feature over 40 species in colour, nomenclature updated to 2010.
£5.00 per poster, £4.00 per poster for purchases of 8 or more. Postage & Packing (for up to two posters) £3.00 UK, £6.50 overseas.

Cat.23. Parmelia identification CD-Rom
Although the nomenclature has been superceded, this CD provides a useful range of photographs and other information for identification.
BLS members: £5.00; non-members £7.00. Postage & Packing £2.00 UK, £5.00 overseas.

Cat.24. Lichen Identifier CD-Rom
This is a simple to use multi-access computer key that enables the user to find the species name and characteristics of most British and Irish lichens. It is divided into field and microscopical characters and any information available may be entered in any order to obtain a solution. With the majority of species, a few characters, noted in the field, are sufficient to identify the species. A brief note on each species further assists separation of similar species. It was originally based on *The Lichen Flora of Great Britain and Ireland* by O.W. Purvis et al (1992). It includes every species mentioned in that book plus many that have been more recently described or added to the British list. The nomenclature agrees with the most recent version of the BLS checklist. It can therefore be used to identify any of the lichens contained in the above *Flora*. In addition, it includes many species that have been added to the British and Irish lists since that time.

Lichen-Identifier will run on a PC with a 486 DX or later processor running Windows NT, 95, 98, 2000, XP, Vista and Windows 7. We regret that it is not available for Apple Mac except under PC emulation or 'Boot Camp'.

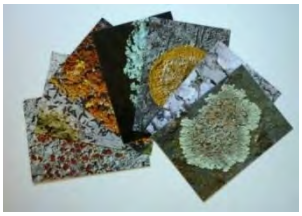
Improvements in Version 3 of *Lichen-Identifier* include: Completely revised data, where possible, using the completed sections of the new Flora, plus many recently described species. The conservation evaluation from *A Conservation Evaluation of British Lichens* is given for each species. Over 750 colour photographs of improved quality with a scale added to each. Every map has been updated and maps of lichenicolous fungi are included, although these are not part of the actual key.

Please note that this program includes a DataPower 2 reader which will run on an individual computer. It will not run on a multiple system in client/server mode. If you are using a server system, a site licence for DataPower 2 is required.

BLS members £26.00 for version 3, (£15.00 for upgrade from version 2).
Non-members £28.00 for version 3, (£15.00 for upgrade from version 2).
Postage & Packing £2.50 UK, £6.50 overseas.

Cat.25. Greetings Cards/Notelets by Claire Dalby

A set of five cards with envelopes, featuring five exquisite pen and ink illustrations of British lichens.
£2.00 per set. Postage & Packing £2.00 UK, £3.50 overseas.



Cat.26. BLS Postcards

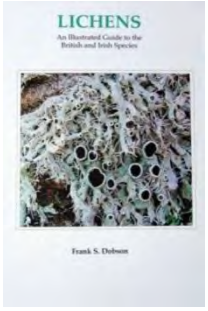
A set of 16 beautiful photographic postcards of British lichens.
£2.00 per set. Postage & Packing £1.50 UK, £3.00 overseas.

Cat.27. Woven ties with below-knot motif of BLS logo. Attractive ties with discreet BLS logo. Colours available: maroon, navy blue, brown, black and gold.
£7.00. Postage & Packing £1.50 UK, £3.00 overseas.

Cat. 28. Car sticker, diam. 12cm. peels off easily. Recognise fellow members in the car park!
£1.00. Postage & Packing £1.00 UK, £2.50 Europe, £3.00 rest of world.

Cat. 29. Enamel badge, diam. 2.5cm, pin fixing, matt finish. A well -made attractive badge.
£1.50. Postage & Packing £1.50 UK, £2.50 Europe, £3.00 rest of world.

Cat. 30. Fabric badge, diam. 6cm. Ideal for sewing onto a cap or rucksack.
£1.00. Postage & Packing £1.00 UK, £2.50 Europe, £3.00 rest of world.



Cat. 31. Lichens – An Illustrated Guide to the British and Irish Species 6th Edition (2011)

This latest enlarged edition (496pp) of this popular book provides an invaluable guide to identifying the British and Irish species, both for the beginner and the more advanced lichenologist. With detailed air pollution references and distribution maps, it offers the environmentalist and ecologist a concise work of reference, compact enough to be used in the field. The 6th edition has been revised to conform with the nomenclature of 'The Lichens of Great Britain and Ireland' ed. Smith, C.W. et al. (2009) and more recent changes. Over 160 additional species to the previous edition have been added so over 1,000 species are now treated.

Entries usually consist of a description of each species, a photograph, notes on habitat, chemical tests, line drawings to clarify the description and a distribution map giving three date separations. There is an enlarged generic key and a much extended section on sterile species. A generic synopsis is included to assist the more experienced lichenologist.
Paperback £35.00, hardback £50.00. Postage & packing £7.00 UK, overseas £10.00.

NEW MEMBERS since publication of the 2014 Summer Bulletin

Welcome to the following new members of the British Lichen Society …

Dr J. Allinson, 6 Willow Wood, Langcliffe, Settle, North Yorkshire, BD24 9NT, UK
Ms T. Canny, 3430 W Parker Ave, Apt #2, Chicago IL 60647, USA
Mrs J. Doering, #210-88 Eric Street, Winnipeg, MANITOBA R2M 4A7, CANADA
Mr B.A. Gale, 6 Roker Way, Fair Oak, Eastleigh,Hampshire, SO50 7LD, UK
Mr A.W.G. John, Brook Cottage, Sampford Spiney, Yelverton, Devon, PL20 7QX, UK
Miss A. Lewis-Bolton, Brook Farm, PlattLane, Whixall, Shropshire, SY13 2NY, UK
Mr M. Nadel, 520 24th Avenue, San Francisco CA 94121, USA
Mr N. Padley, 17 Neville Road, Scunthorpe, Lincolnshire, DN16 1TN, UK
Dr J. Stratford, 34, Middleton Street, Beeston, NOTTINGHAM, Nottinghamshire, NG9 1BB, UK
Mrs D. Wallace, 80 Kerscott Road, Northern Moor, MANCHESTER, M23 0FN, UK
Prof. J.C. Wei, Institute Microbiol., Chinese Acad. Sci., No 3, Park 1, West Beichen Road, Chaoyang District, Beijing 100101, P.R. CHINA

THANK YOU
for kindly supporting the British Lichen Society with a donation:
Dr. C.A.J. Brightman, Mr. C. Hawthorn and Dr. C. Scheidegger.

Membership Matters – from the Membership Secretary

Renewal of Membership for 2015: Subscriptions are due on or before 1st January 2015. Subscription rates remain the same as they have been in the current year. Please be aware that members who do not renew their subscription will be removed from our mailing lists in spring 2015.

Reminder - Information you will find in the top left corner (below the 'return address') on the envelopes in which you receive the Bulletin:

1. Membership number. This is a four digit number only.

2. Expiring year. This will show any credit you may still have for following years.

Please, keep us up to date when your contact details change! Please, also remember to inform the membership secretary when your email address changes.

Members only content on our web site. This has not yet been rolled out - you will be contacted by us with your account details once this is available.

Publication of the Summer 2015 Bulletin

Copy for the Summer 2015 Bulletin should reach the editor (contact details on the inside front cover) by 1 May 2015

BRITISH LICHEN SOCIETY - 2015 MEMBERSHIP DETAILS

Applications for membership should be made to The Membership Secretary, The British Lichen Society: Dr Heidi Döring, Mycology Section, Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AB, email *membership@britishlichensociety.org.uk*, or through the Society's website: *http://www.britishlichensociety.org.uk*. **Queries on membership matters and subscription payments** and **Changes of address** should be sent to the Membership Secretary.

CATEGORIES OF MEMBERSHIP AND SUBSCRIPTION RATES

Renewal of annual subscriptions is due on or before 1st January.

Ordinary Membership for individuals (not available to institutions) who have signed the Application Form and paid the subscription. Ordinary Members are entitled to all publications and facilities of the Society. Rate for 2015: **£35 / $70**
Electronic Membership, as Ordinary Members but access to 'The Lichenologist' online only (no hard copy). Rate for 2015: **£30 / $60**
Life Membership is available to persons over 65 years of age at **£350 / $700**. Life Members have the same entitlement as Ordinary Members.

All three categories of **Associate Member** listed below are entitled to all the facilities of the Society, including the *Bulletin*, but excluding *The Lichenologist*.
Associate Membership. Rate for 2015: **£25 / $50**
Senior Associate Membership, for persons over 65 years of age. Rate for 2015: **£10 / $20**
Student Associate Membership, for those under 18 years or full-time students. Rate for 2015: **£10 / $20**
Family Membership is for persons living in the same household as a Member. They are entitled to all the Society facilities, but receive no publications and have no voting rights. Rate for 2015: **£5 / $10**
Bulletin only subscriptions are available to institutions. Rate for 2015: **£25 / $50**

PAYMENT OF SUBSCRIPTIONS *Members may pay their subscriptions, as follows:*
Sterling cheques, drawn on a UK bank, or on a bank with a UK branch or agent, should be made payable to *The British Lichen Society*. Payment by **Standing Order** is especially welcome; the Membership Secretary can supply a draft mandate, which is also available at our website: *http://www.britishlichensociety.org.uk*. Note that direct debit is not currently available as a payment option.

Internet (credit card) payments using PayPal: Please see the Society's website for full details.
US dollar payments. Cheques should be made payable to *The British Lichen Society,* and sent to: **Dr James W. Hinds, 254 Forest Ave., Orono, ME 04473-3202, USA.** If a US-denominated check or money order is not possible then payment may be made to Dr Hinds via Western Union.
Overseas members may also pay by direct transfer into the Society's UK bank account. However, please contact the Assistant Treasurer if you wish to pay in this way, ***and before you make any payment***. Her contact details are given above.

Reminder - Information you will find in the top left corner (below the 'return address') on the envelopes in which you receive the Bulletin:

1. Membership number. This is a four digit number only.
2. Expiring year. If you don't know whether you may still have a credit, check the envelope – the year your membership expires will be printed below your membership number.

Please keep us up to date when your contact details change! Please also update or provide the Membership Secretary with your current email address.

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