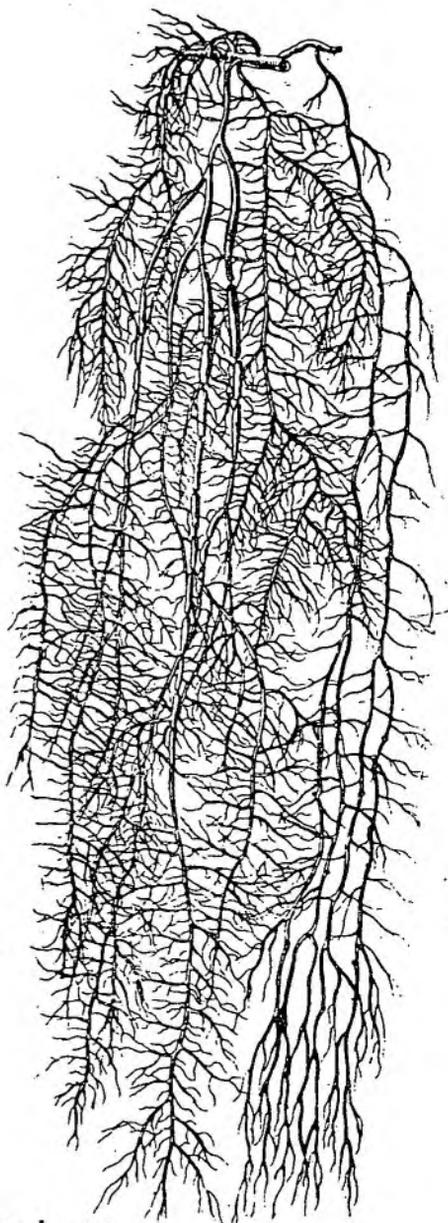


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**BRITISH
LICHEN
SOCIETY
BULLETIN**



OPEGRAPHA KEY

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Lichenology in China

Since 1980, the number of foreigners allowed to visit the People's Republic of China has increased dramatically as a result of the much friendlier relations that now exist between the present regime and most Western governments. It is now possible for Westerners to visit regions in China which have been completely closed for over 50 years and hitherto forbidden places are being developed for their tourist potential. However, travel away from major cities is on the whole still difficult for the ordinary tourist to arrange, but a number of mountaineering and scientific expeditions from Europe and America have recently taken advantage of this loosening of restrictions and have been given access to areas where no outsiders have been allowed since the early 1930's. Chris Bonnington's recent attempts on Mt Kongur and Everest and Roy Lancaster's various plant collecting expeditions are examples of this exercise in Anglo-Chinese friendship. For the first time since the days of Wilson and Farrer it is now possible for non-Chinese field workers to visit many of the country's most botanically interesting regions.

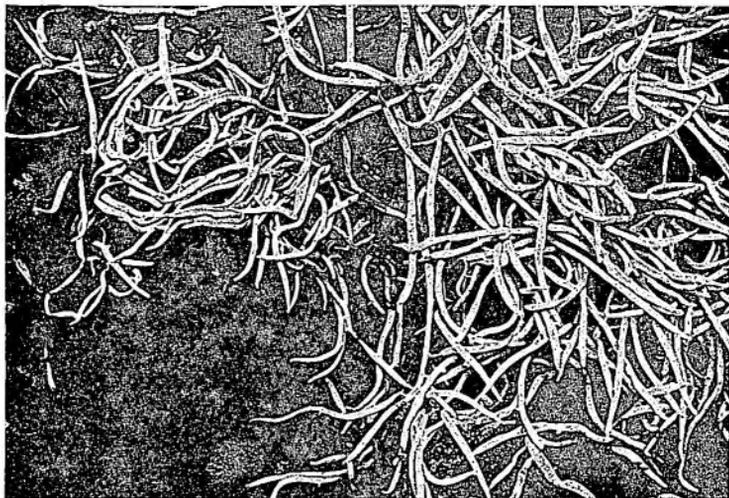
This new hospitality has also been extended to European lichenologists, and in 1980 Prof. H. Hertel was the first for many decades to be allowed to collect in China, where he visited the provinces of Jilin, Hainan, Yunnan and Hunan. A paper based on his work in Jilin province recently appeared (Lichenologist 14(2): 139-152 (1982)), the first paper on Chinese lichens to be published outside China since 1951.

In the summer of 1982 I was fortunate enough to spend six weeks with the British Sunyatsen Expedition in the Gongga Shan, a remote range of snow-capped mountains in Sichuan province dominated by the towering pyramid of Minya-Konka (7,700 m.). Although the main purpose of this expedition was to attempt an ascent of Mt Edgar (6,950 m.), I was able to collect lichens from a number of forest and montane habitats and even had time to indulge in a little quantitative and phytosociological work. This collection is still far from being fully determined, but a paper is currently in hand.

The richest and best preserved lichen habitats in the part of China I visited are those of the desert, montane and remote

forested areas, most of which are poorly understood. Highly populated rural areas are often extremely poor, even in the ubiquitous lichen communities we associate with agricultural areas in Britain, a phenomenon which may be caused by the intensive land usage of the past three or four thousand years, and more recently the wide use of pesticides may have had some effect. Industrial pollution is confined to a few of the large manufacturing cities and doesn't appear to be a serious problem.

In remote areas of thin population on the other hand, particularly the mountains of Western China, in such provinces as Yunnan and Sichuan, where despite extensive tree felling programmes, much primary forest persists, the epiphytic communities are spectacular and species-rich. Among the most exciting habitats I saw in the Gonga Shan, was a mixed conifer association occurring between 2,600 and 3,500 m., of Picea likiangensis, Abies ernostii and Larix potaninii, with a dense understorey of various Rhododendron spp.. Most phorophytes are sheathed with a varied and exotic Lobarion dominated by Lobaria isidiophora, L. retigera, L. meridionalis and L. pseudopulmonaria with many accompanying Sticta, Menegazzia, Cetrelia, Coccocarpia and Leptogium spp.. The old woodland species Dimerella lutea familiar to us in Britain is often dominant on bryophyte covered rhododendrons. Fallen trunks and branches rotting on the forest floor are covered with such old friends as Imadophila ericetorum, Parmeliopsis aleurites and Hypocenomyce scalaris. The structure of these communities and their general state of good health is reminiscent of the oceanic lichen assemblages of N.W. Scotland, though two more contrasting phytogeographical zones would be difficult to imagine. Although we tend to associate the Lobarion in Britain with sheltered, lowland woodlands with a fairly stable ecological history, its Asiatic equivalent occurs in this part of China up to an altitude of 3,800 metres where it grows on such acid barked trees as Picea spp., Betula szechuanica and even on rotting wood. Just below the tree line a species-rich Lobarion often occurs on the boles of trees, which in winter must be under considerable stress, since alpine indicators such as Thamnomia vermicularis and Arthrorrhaphis alpina occur on mossy boulders at the base of trees, in some cases actually spreading to the lower trunks.



Thamnolia vermicularis growing at the base of a tree;
Gonga Shan, China.



Rhododendron understorey hung with Usnea sp.; Gonga Shan,
China.

Despite the richness of the communities in these remote parts of the country, very few papers on Chinese lichens have been published and unfortunately of these, some of the earlier ones are based on collections that were far from perfect. Nylander and Crombie for instance, in a paper on a collection of lichens made by A.C. Maingay in the 1860s (Nylander, W. & Crombie, J.M. (1884) in Journal Linnean Society, 20:48-69) commented that much of the material had been jumbled together in an old sack and had become putrid as a result of dampness.

Chinese lichens are on the whole poorly represented in European herbaria as very few lichenologists visited the country before the political upheavals of the 1930s and the subsequent closing of borders. Most of the material which did find its way to Europe was collected by botanists who were understandably more interested in the obvious distractions of the higher plants and just collected the odd lichen and bryophyte as a sideline. There are a few notable exceptions to this and the excellent collections of Joseph Rock and Handel-Mazzetti are well known to European and American lichen taxonomists.

Native Chinese lichenologists are a comparatively recent phenomenon, but over the past 20 years there has been a growing interest in the group amongst Chinese botanists and an increasing number of papers are appearing in such journals as Acta Phytotaxonomica Sinica and the Bulletin of Botanical Research published by Academia Sinica in Peking.

The nerve centre of lichenological studies in China is the Herbarium of the Institute of Microbiology at Academia Sinica (HMAS) where its director Prof. Wei Jiang-Chun has been given the daunting task of co-ordinating material for a proposed Cryptogamic Flora of China. Prof. Wei is particularly interested in the lichens of Tibet and has collected extensively in the Chinese Himalayas, including an expedition to Everest in 1966. His check list of Tibetan lichens is under preparation and is shortly to be published. He specialises in Umbilicariaceae, Cladoniaceae, Peltigeraceae, and Cetrariaceae and in the last 15 years or so has described many new species. He has recently issued the first fascicle of the only Exsiccatum of Chinese lichens ever to have been released (Lichenes Sinenses Exsiccati Fasc.I; No. 1-50 July 1981) and is keen to exchange material with foreign lichenologists.

When I visited Prof. Wei in Peking in July 1982 he showed me round the small but rapidly expanding herbarium at Academia Sinica where collections from Tibet, Yunnan, Shaanxi and Heilongjiang are very well represented. Ironically, Sichuan, the province I was to visit was hardly represented at all as few modern Chinese lichenologists have worked in the region. Unfortunately this is the case with a number of other provinces as there are very few lichenologists in China.

Among the curiosities of the Chinese lichen flora shown to me by Prof. Wei was a sorediate Thamnolia subuliformis from Tibet and Shaanxi and the fairly recently described Lasallia sinensis which is similar to the British L. pustulata in most characteristics, but has unusual econocentrical, multi-gyrate apothecia and most unusual of all for a member of the Umbilicariaceae is only known as an epiphyte (on Pinus densata in Yunnan).

Among Prof. Wei's colleagues at Academia Sinica are Mr. Chen Jian-Bin who also climbed Mt Everest in 1966 and shares his director's interest in Himalayan montane species. A third member of the group is Mr. Wang Xian-ye who is conducting research on the lichens of the Tian Shan in Xin-Jiang Autonomous Region.

As I have already said, Chinese lichenologists are thin on the ground and scattered throughout the provinces. A few known to me are Mr Wu Ji-nong, a lecturer at the Teachers' College of Nanjing who is working on Chinese Stictaceae; Ms Wu Jin-ling of the Institute of Botany in Wu-guang in Shaanxi province, who is involved in floristic studies of the lichens of N.W. China. Mr Li Hsing-ching has been active as a lichenologist at the Kunming Institute of Botany for the past 20 years, but since I have not corresponded with him I am not sure of his special interests. Mr Zhao Cong-fu, who was the co-author with H. Hertel of the recent paper on Lichens from Changbai Shan, is involved in a research programme on the lichens of N.E. China at the Institute of Forestry and Pedology, Academia Sinica, Shenyang, Liaoning Province. Unlike Britain there seems to be very little amateur interest in the group and there is no equivalent to the British Lichen Society.

Out of necessity, most papers by Chinese lichenologists are taxonomic in nature and as far as I am aware only limited work has been done in the areas of ecology, phytosociology, etc. The growing interest in the group among Chinese botanists however, may result one day in the eventual filling of a very serious phytogeographical gap.

IVAN DAY

Nominations for officers and council members

Nominations for officers for 1984 and three Council members for 1984 - 85 should be sent to the Secretary, Mr. J. R. Laundon, Department of Botany, British Museum (Natural History), Cromwell Road, London, SW7 5BD, before 24 December 1983. No person may be nominated without their consent. Mr. F. S. Dobson, Dr. D. J. Galloway, and Mr. T. H. Moxham retire from the Council and are not eligible for re-election as Council members.

Conversazione and book sale Friday 6 January 1984

This year we are trying a new venture, a Conversazione and book sale the evening before the AGM and a previewing of members' exhibits. It will be held between 6.00-8.30 pm in the Demonstration and Common Rooms, British Museum (Natural History). The admission fee of £5.00 covers a light buffet provided again by Clare Ferguson, and glass of wine (extra can be purchased).

Members are asked to bring books, reprints, illustrations, etc. of lichenological, botanical and natural history interest from the sale of which the Society will benefit on a 50/50 basis. Frank Brightman (c/o British Museum (Natural History), Cromwell Road, London SW7 5BD) will be available to give advice on suitable prices, if needed, and will be happy to receive items for sale from members unable to attend. Early numbers of the Lichenologist will be on sale, while the very scarce parts of Vols 1 and 2 will be auctioned by the president.

Persons wishing to attend should send a cheque for £5.00, made in favour of the British Lichen Society, to Joy Walker, British Museum (Natural History), Cromwell Road, London SW7 5BD by 1 January 1984. As numbers may have to be limited it is a case of first come first served. Unsold items will be available the next day at the AGM for members unable to attend the conversazione.

Annual General, Lecture and Exhibition Meeting Saturday 7 January 1984

The Annual General Meeting will be held at 10.30 on Saturday 7 January 1984 in the Demonstration Room in the Department of Palaeontology (ground floor) at the British Museum (Natural History), Cromwell Road, London SW7 5BD. The nearest LT Underground station is South Kensington, and Cromwell Place or the subway connects with the museum. Cars may be parked in the museum's front car park. It

is hoped that all members will endeavour to attend, and take advantage of the opportunity of meeting others with mutual interests.

Agenda

1. Apologies for absence.
2. Minutes of the last Annual General Meeting.
3. Matters arising.
4. Reports of the officers.
5. Meetings 1983 - 84.
6. Election of Auditor.
7. Election of three members of Council.
8. Election of Officers.
9. Election of Vice-president.
10. Election of President (Council's nomination: Mr. J.R. Laundon)
11. Any other business.

J. R. LAUNDON
Honorary Secretary

Following the Annual General Meeting there will be a slide show and exhibition meeting. Members may show up to five slides taken on 1983 field meetings. Persons are kindly requested to make a special effort to contribute exhibits of lichenological interest. Demonstrations should include a title and name of exhibitor. Exhibits may be set up for the Conversazione on the previous evening.

The lecture meeting will continue in the afternoon in the same room. The meeting is entitled LICHENS AND MAN. Non-members are welcome. Please display the enclosed poster. The full programme is as follows:

- | | |
|-------|---|
| 10.00 | Museum opens to the public |
| 10.30 | Annual General Meeting. |
| 11.30 | Slides of 1983 field meetings. |
| 12.00 | Exhibition meeting. |
| 12.30 | Lunch. Members are kindly requested to make their own arrangements. The restaurants Barino (1 Harrington Road) and Daquise (20 Thurloe Street) are recommended. |
| 14.00 | M.R.D. Seaward (University of Bradford): Introduction. |
| 14.15 | B.W. Fox (Christie Hospital, Manchester) Lichens in medicine. |
| 14.45 | F.S. Dobson (Richmond Publishing Co.): Lichens as food. |
| 15.15 | Tea interval. |
| 15.45 | T.H. Moxham (University of Bath): The commercial exploitation of lichens. |

16.15 M.R.D. Seaward : Discussion and summary.
17.00 Close.

Joint Bristol University (Dept. Extra-Mural Studies)/British
Lichen Society meeting 'Lichens on Limestone' 9-11 March 1983

A residential weekend course from Friday evening 9 March to
Sunday afternoon 11 March 1984, at Burwalls, Leigh Woods, Bristol.

Tutors: P W James

B J Coppins PhD

Fee: £37.00 (including residential accommodation)

Limestone supports a rich lichen flora, although it is frequently overlooked since identification of the species is considered to be less easy than species from other habitats. This course aims to help with identification in the field and at home using modern techniques. There will be field trips to various sites including the Mendips. Microscopes will be available but those wishing to bring their own may do so. Prior enrolment for this course is essential. Those wishing to enroll please inform Dr. D J Hill, Department Extra-Mural Studies, 32 Tyndalls Park Road, Bristol BS8 1HR.

Presidential field meeting in Wiltshire April 1984

The Presidential field meeting will be held in north Wiltshire centred on Marlborough. There is a wide variety of habitats and superb scenery which will be visited during the week. Of particular interest are the lichens of the sarsens, both natural and as prehistoric standing stones, woodland, old churchyards, chalk grassland and disused railway lines. Visits will be made to Avebury, Fyfield Down, West Kennett Long Barrow, East Kennett Long Barrow, Savernake Forest, Salisbury Plain, Marlborough railway (disused), and other places not so far explored. OS map 173 desirable. The field meeting precedes paper-reading meetings at Southampton and Bristol.

The meeting takes place from Monday evening 9 April until Saturday evening 14 April 1984. The Bear Hotel, Marlborough, is the headquarters, and the party will leave from here at 9.30 each morning. A room will be available in the hotel for the study of specimens in the evening. The hotel has 10 bedrooms holding 21 people and all the rooms are being reserved for the Society until

1 February, so participants are advised to book before this date. There is ample additional accommodation elsewhere in Marlborough. The joint leaders are Alexandra O'Dare, 13 Barrows Road, Cheddar, Somerset BS27 3AY (tel. 0934 743008), and Jack Laundon, Department of Botany, British Museum (Natural History), Cromwell Road, London SW7 5BD (01-589 6323 ext.552); please notify one of them of your intended participation. The hotels are as follows:

Bear Hotel, Marlborough (0672 52134) HEADQUARTERS. 10 rooms.

Bed & breakfast double £21, single £12 incl.VAT.Dinner from £2.50.

Ailesbury Arms, High Street, Marlborough (0672 53451) 30 rooms.

Bed & continental breakfast double £26, single £14 without bath incl.VAT, plus 10 per cent service. Dinner from £6.

RAC 2 star.

Castle & Ball, Marlborough (0672 52002) 28 rooms. Trust House Forte.

Bed double £32, single £27 without bath; continental breakfast £3.25. Dinner £8.25. Bar snacks available. AA 2 star.

Merlin, Marlborough (0672 52151) 8 rooms, Bed double £14, single

£9 incl. VAT. Continental breakfast £1.05; English breakfast £2.30. Dinner from £5.

Summer Field Meeting - Bettyhill, Sutherland; Saturday 25 August to Monday 3 September, 1984

Leaders, Brian Coppins and Tony Fletcher

This remote, northernmost tip of mainland Britain has seldom been visited by lichenologists but is known to be very rich. Preliminary excursions last summer revealed extensive maritime habitats (rocky shores, dunes, maritime heath), untouched and apparently native woodland (hazel, rowan, birch), limestone outcrops, peat moorland and 3000 foot mountains, at least one of which has rarities recorded from its ultrabasic rocks.

We intend to organise a 'mini-expedition' next summer. Accommodation has already been booked in the excellently equipped University of Aberdeen Field Centre (£2.50 per night). Dormitory type accommodation and self-catering facilities are available and we hope to arrange group discount for evening meals at one of the two nearby hotels.

A new departure for BLS field meetings will be the provision of

transport. One or more minibuses will be hired and a series of pick-up points established along the route. Hotel/Guest House accommodation will be arranged in Edinburgh for the overnight stopovers needed for the two day drive. Offers of help with the driving will be gratefully received. Further details will be given in the May Bulletin. In the meantime Tony Fletcher will provide early information and be pleased to accept early bookings, (c/o Leicestershire Museums Service, 96 New Walk, Leicester, LE1 6TD. Tel: 0533-554100).

Forthcoming meetings

New Forest, Saturday 24 March 1984. Meet Lyndhurst Road Station, 11.00 a.m. Bring lunch. A train (for Bournemouth) leaves Waterloo at 9.35 a.m. (change at Southampton), arriving at Lyndhurst Road at 10.59 a.m. Leader Francis Rose.

Fungi on lichenised fungi, 13-15 April 1984, Southampton. Run by the British Mycological Society and led by Dr. D L Hawksworth, this course provides a chance to use the leader's new key under his supervision. A field visit to the New Forest is included. Further details from Dr J Manners, Dept of Biology, The University, Southampton.

Lichen physiology, 16-18 April 1984, Bristol. This is a joint meeting between the University of Bristol and the BLS. Lectures will cover new data, techniques and approaches on fundamental aspects of photosynthesis, nitrogen metabolism, mineral nutrition and (probably) cell recognition. It is anticipated that the meeting will attract workers from many countries. Further details from Dr. D H Brown, Dept. of Botany, Woodland Road, Bristol, BS8 1US.

Kent wall Tour, 6 May 1984. This traditional meeting to study plants (including lichens) growing on walls in Kent will be held on the above date. Meet Tunbridge Wells Station, Kent, 11 am. Leaders Frank Brightman and Jack Laundon.

The Autumn Field Meeting of the British Lichen Society 1984. will probably be held in Northamptonshire; full details in the next Bulletin. There will be an opportunity to suggest alternative venues at the A.G.M.

Grapevine

Vicarious hours in the field must be among the finest blessings bestowed on members of the B.L.S. and fellow societies round the globe. Such was Grapevine's musing, seated at the microscope the other blustery, stormy Sunday, the window panes sluiced and rattling, all the cats in. Here I am, I thought, warm and cosy as a Dickensian Christmas dinner. I open a packet and around me are the limestone crags and boulders of the Yorkshire Dales; another, and they are metamorphosed into the low, sandy scrub of a Lincolnshire warren; yet another, and I am in an ancient woodland clearing, surrounded by galleon oaks. The matter of Britain is at my behest, and with each topographic illusion, spun by the flux of memory and pieces of bark, stone or earth, there comes the echo of opinions exchanged with friends, mutual excitement at unexpected finds, and all the exhilarations of "le temps retrouvé". Or, again, I settle down at a herbarium bench, deepening my acquaintance with one or other pioneering master of lichenology; and it is as if William Mudd, Walter Hebden or some other illustrious member of their genial, lofty company were standing by me, handing me the specimen he has just chipped or knived off. I can travel through space and time with the best of companions -- no umbrella, no anorak, no gumboots needed -- and I count myself fortunate. Fortunate, especially, in the proliferation and beauty of the group, Lichenes, instigator of all this richness, a beauty Elizabeth Bishop caught when she called lichens "the still explosions on the rocks", and which was captured superbly in the Northumbrian scenes of BBC 2's production, "The Auden Landscape", re-shown in October this year.

A while ago a friend passed to Grapevine a small volume which had turned up in her mother's antique shop. Published in 1845 by the Reverend H.N. Dudding and entitled "Wild Flowers and their Meanings", it is a portable exsiccata with the built-in moral uplift of its period. The last of its 38 mounted specimens is the only lichen to gain admission, two pressed thalli of "Hoary Evernia", accompanied by a laudatory ode to lichens by Bishop Mant, extolling "the wonders of the lichen race".

"Cold, but congenial to their kinds,
The wintry air pervades, unbinds
The tubercled and warty crust,
Which in the summer heat adust,
Now swoln with moisture spreads around
Its shapes fantastic; and the ground,
Stones, rocks and walls, and heathy waste,
And branching tree exhibits, cased
In spots with many a shining boss,
Or mingles with the verdant moss."

Mant's verses are supported by a reproving effusion by J.F. Smith, a smug conservationist, of Linnaean persuasion in his view of lichens,

"these rude, unlovely things
All cultureless that grow
And rank on woods and wilds and springs
Their vain luxuriance throw."

Grapevine would love to have J.F. whisked into the present day by Tardis and feed him the collection of lichen plates in the recent "Collins Guide to Ferns, Mosses and Lichens". Here we see "beauty more than we deserve", which teaches us to look slowly and to learn. As Frances Partridge said of Bloomsbury, "You can't enjoy a landscape at 100 mls per hr." W. H. Auden coined the right word for most lichenologists in the adjective, "stone-haunting". We haunt stones and trees because we are ourselves haunted by their inhabitants, plants of a beauty Linnaeus so stupidly dismissed. Try to forgive him --- after all, there really was an awful lot of taxonomy crying for his attention.

VINIFERA

Country diary - 6 : Suffolk

On one of my lichen recording days in Suffolk recently, I visited Preston churchyard. It was small and did not appear to be interesting from the outside, but was in fact rewarding. An old rotting fence along part of the boundary of the yard, had small colonies of Cyphelium inquinans on vertical posts, and on the rails amongst an abundance of Lecanora conizaeoides were found, Micarea denigrata, Lecidea aeruginosa and Lecanora expallens,

in fact a richer site than is often the case when this habitat is met.

The church was standing in a weed infested driveway and many of the tombs had gone except at the back of the yard where the grass was not cut. Observation of these showed the usual assemblage of lichens. One low border tomb of marble in the mown area, had no apparent lichens on. Marble is hard and usually only supports Physcia caesia and Xanthoria parietina. This tomb was nearly all covered with a black growth, probably algae. Amongst this there were small areas where nothing seemed to be growing and it occurred to me that this might be a site for Sarcopyrenia gibba. In these areas on closer observation, dispersed pyrenocarpous fruits were visible with a hand lens; later examination of fruits collected, showed that this suspicion was in fact correct.

Sarcopyrenia gibba was first seen by me at Alderton churchyard in 1981 on 'black limestone'. Material collected had no spores, or were there some in fact? Elongated propellor-shaped bodies were seen, drawings were made and these together with the material were sent to Brian Coppins who identified it for me. It is a lichen that I have now found nine times in the county, not always on marble however, or 'black limestone' used as great thick slabs on chest tombs. It also occurs on oolite and calciferous sandstone. There is never an apparent thallus and so the black fruits stand free, usually only a few per plant which is small in size. It is never abundant in any churchyard either. Several collections without spores have been made, which need microtoming, to see if the characteristic double wall of the fruit is present.

Moving on to an oolite tomb, Diploicia canescens and Lepraria membranacea are on the east face, with Caloplaca heppiana, Lecidella stigmataea etc. on the west side, but on the top is another pyrenocarp. Frequently Verrucaria muralis agg. is seen here, however, this plant is different, it has a mottled pepper and salt look, is not areolate, the fruits are innate, flat with a prominent white band round the edge, very noticeable in the dry state and a whitish ostiole, characters of Thelidium. It was in fact T. incavatum. T. decipiens does occur, but is much rarer.

It is a useful exercise also, to look at recent tombs, as on hard limestone an early coloniser appears. This is Lecania erysibe

f. sorediata. It is nearly always fertile and looks something like a dirty polluted greenish form of Caloplaca citrina. The granules are buff coloured and the fruits surrounded by soredia are dark brown.

Another interesting lichen seen in this churchyard, was the sorediate form of Verrucaria nigrescens. It is similar to the species in being blackish and minutely cracked, but has dust-like, ginger coloured soredia which become abundant, where the areolation is coarse. Verrucaria nigrescens f. sorediata is probably an ecotype that may be overlooked as it is very difficult to see the concolorous soredia in the dry state.

It was surprising that the church and churchyard were able to support a flora under gigantic beech trees along the southern boundary. Fifty-five species were seen altogether, which is rather poor for the area and reflects the lack of substrate diversification and shading by the trees.

C.J.B. HITCH

Local Authorities start to grow lichens

An article in the Surveyor 20/27 December 1974 by William Green, a senior local government officer, reveals that for at least the last 10 years certain local authorities have been taking very seriously the old country practice of spreading manure on concrete to make lichens grow faster thus obscuring the concrete's rather stark effect on rural surroundings.

In 1971 Mr. Green's Planning and Development Committee set up a working party to submit proposals for promoting the growth of lichen on bus shelters so they would blend with the colour of the road surface. It was immediately apparent to the working party that while the promotion of lichens of any random type and colour was a relatively simple matter, the promotion of those lichens having a specific range of colours while at the same time inhibiting the growth of others was going to be difficult. It was therefore decided to select arbitrarily a number of lichens for each class of road and to then concentrate research on their propagation.

"The selection of the lichens was the cause of much heated and sometimes acrimonious discussion with each member of the working party championing his own selection with the vehemence of a young bride choosing a bedroom wall-paper." However, the following lichens were eventually selected:-

Main traffic routes: Lecanora conizaeoides, L. polytropa,
Candelariella vitellina.

Other roads: Lecanora campestris, Haematomma ventosum,
Cetraria islandica

It was decided that Caloplaca ferruginea would be suitable for either class of road, particularly if they were close to the sea.

By strict control of the pH values of the various manures (acid peat/horse manure for Cetraria islandica), together with the use of certain hormones, considerable success in selective propagation was achieved. Whilst the results have so far been obtained largely under controlled conditions, some field tests have been carried out and the results are encouraging. However, further field tests are unfortunately held up due to an industrial dispute. The authority's sewermen consider that they have the strongest claim for carrying out this programme having had unrivalled experience in all aspects of the propagating agent, whilst the painters have put forward their own claim in view of the method of application by spray gun. It is hoped in due course to have the operations work-studied and bonused.

(Richard Bailey is thanked for drawing my attention to the original article - Ed.)



A new commercial use for lichens

This summer, several members have written to say they have observed lichens for sale in garden centres and shops specialising in interior furnishings. The lichens Cladonia (Cladina subgenus) are used to decorate displays of 'air plants' (Bromeliaceae). Groups of 'air plants' are often secured on a framework of wood

or coral to which the lichen is applied especially round the base of the plant to soften its junction with the frame and hide the means of attachment. If extra decoration is required very small packets of the lichen can be bought separately for 25p. The source of the Cladina is not known.

Robin Hood, Little John and lichens

" Beside the A47 road just west of Peterborough are the Robin Hood and Little John standing stones. According to legend they are connected with an archery display by these notable bowmen which took place in Alwalton churchyard, 1½ miles to the south. The stones mark the spot where their arrows fell. Each stone is covered with a golden lichen which it is said also grows on Peterborough Cathedral."

After hearing this legend I made a short detour off the A1(M) to visit the historic site and to my satisfaction the marker stones were still in position each carrying a golden cap of Candelariella medians. The stones have been hewn from a local limestone (Barnack stone) which was also used in the construction of Peterborough Cathedral. Inquiry at Alwalton post office revealed that none of the locals knew anything about the legend.



As a young Lecturer at Birkbeck College in the early 1950s it was desirable to be something of a jack-of-all trades. Among my duties was to assist with field courses at Port Erin, Isle of Man (Marine Botany) and Studland, Dorset (Dune Ecology). As lichens were prominent components of the vegetation in both areas, I took it upon myself to be able to identify at least the commoner species. With only Lorrain Smith's Handbook plus occasional visits to the B.M. herbarium to help it was difficult to have complete confidence in identifications. Specimens were occasionally sent to des Abbayes or to Sowter for verification. I was encouraged that at least some of my tentative names turned out to be correct! Taking part in the beginners' course on lichens at Malham Tarn Field Centre run by Arthur Wade in 1955 was a truly valuable experience. (Frank Brightman was one of the other participants on that course).

On moving to Imperial College in 1959, the year after the B.L.S. was born, it was a joy to find a new colleague with an interest in lichens; this was Ken Kershaw. In the early 1960s we approached Frederick Warne & Co. to see if they would be interested in an Observers Book of Lichens. They were and the first edition (paintings by K.A.K., text and photographs by K.L.A.) appeared in 1963.

K.L. ALVIN

(This brings the series to a close unless I am sent further contributions. Ed.)

A vivid account of wood-pasture

'Kilvert's Diary' the minor classic which paints a unique picture of country life in mid-Victorian times contains a vivid account of the appearance and feel of wood-pasture in Moccas Park, Herefordshire. This habitat is now appreciated as a major refuge for epiphytic lichens and bears a close resemblance to the scarce post-climax stage of deciduous woodland. The diary entry for 22 April 1876 reads:-

" As we came down the lower slopes of the wooded hillside into the glades of the park the herds of deer were moving under the brown oaks and the brilliant green hawthorns, and we came upon the tallest largest stateliest ash I ever saw and what seemed at first in the dusk to be a great ruined grey tower, but which proved to be the vast

ruin of the king oak of Moccas Park, hollow and broken but still alive and vigorous in parts and actually pushing out new shoots and branches. I fear those grey old men of Moccas, those grey, gnarled, low-browed, knock-kneed, bowed, bent, huge, strange, long-armed, deformed, hunchbacked, misshapen oak men that stand waiting and watching century after century . . .

No human hand set those oaks. They are 'the trees which the Lord hath planted'. They look as if they had been at the beginning and making of the world, and they will probably see its end."

FRANCIS KILVERT



..... misshapen oakmen. The Old Park, Chatsworth,
Derbyshire.

Soil binder for lichens

In 1972 I wrote to Lennig Chemicals Ltd and obtained a free sample of Primal AC 55 which did sterling service as a soil binder for terricolous lichens over the next 10 years. In 1982 when I no longer had any left I looked in the telephone directory and discovered that Lennig Chemicals had become Rohm and Haas (UK) Ltd., i.e. a subsidiary of the parent company at the same address, so I wrote to them. They were most helpful and sent me a free sample of Primal B.60A. It smells different and is a more liquid milky

fluid, producing condensation on the lid, but I am still here to tell the tale. It seems to work very well producing when it is dry a transparent flexible film which binds even the crumbliest soil together. Dilution of 1 Primal B.60A to 4 water appears optimal. The solution is applied to the bare soil on the underneath and sides of the specimen either with a brush or by dipping the lower part of the soil block into the mixture for a few seconds to allow it to penetrate the soil pores. The specimens are then left upside down to dry for twenty-four hours. The address of the company is Lennig House, 2 Mason's Avenue, Croydon, England, CR9 3NB.

C.J.B. HITCH

Richard Ashby

Members will be saddened to learn that Richard Ashby died on 17 September 1983 while on holiday in Yorkshire. He died peacefully. For many years Richard acted as honorary auditor to the BLS. He was a delightful, kind, gentle person who particularly enjoyed field meetings, always arriving in a Renault 4. For a period he served as an artillery officer in India, reaching the rank of Major. I shall always remember a meal at an Indian restaurant during the Lancaster Field Meeting (1976) with him skilfully translating the menu so everybody got dishes to their taste. After that I lured him into Indian restaurants at every opportunity. He was one of the personalities of the Society and will be badly missed.

Advertising circulars included with the Bulletin

The last two numbers of the Bulletin have included advertising material which it was thought would be of interest to members. Firms pay quite well for this privilege so the practice can be looked on as symbiotic. As editor I would like to assure members that only material relevant to lichenology will be considered for circulation. Also, only a few firms will be allowed to participate as I believe the value of the Bulletin might be reduced if it regularly arrives half-hidden in a wedge of advertising leaflets.

Lichen Flora of Wiltshire

Work is proceeding intensively on the preparation of a Lichen Flora of Wiltshire, on a 10km square basis, under the auspices of the Wiltshire Archaeological & Natural History Society. Excellent coverage has already been achieved for many parts of the county, but there is far more field work needed in certain less well-known

and supposedly less interesting parts.

Miss Alice Burnet, who has acted as lichen Recorder for many years, is handing over to Mr. Edward Elliott, of Watergate Cottage, Wardour Lane, Donhead St. Andrew, Shaftesbury, Dorset SP7 9EQ. If any member of BLS, or indeed others with interest in lichens, have any records for Wiltshire (or for areas formerly in Wiltshire) or can help with recording in the county please contact Mr. Elliott. The location of herbarium material would also be invaluable. It is hoped to be able to publish in two or three years time, but this depends very much on how rapidly the ill-worked grid squares are covered.

Alice Burnet

Dictionary of the Fungi (Seventh Edition)

The seventh edition of this handbook for mycologists and lichenologists was published in August 1983. It substantially updates the sixth edition (1971). Each of the c.500 (+ c.750 syn.) lichen genera are listed together with the date of publication, status, systematic position, number of accepted species, distribution and references to key publications. In addition there are explanations of terms used in mycology and lichenology. The dictionary also includes short, authoritative accounts of the following aspects of lichenology:- air pollution, antibiotics, ecology, edible lichens, fossil lichens, geographical distribution, history, literature, medical and veterinary mycology, nomenclature, phylogeny, phytosociology, pigments, dispersal, symbiosis and ultrastructure - important literature is invariably cited. The number of accepted lichen species is now in the order of 18,000.

Ainsworth and Bisby's Dictionary of the Fungi (Seventh Edition) by D.L. Hawksworth, B.C. Sutton and G.C. Ainsworth. 210 x 148 mm, casebound, dust jacket, 457 pp (August 1983) ISBN 0 85198 515 7. Price, postage included £8.50 (U.S. \$17.85) Introductory offer. £12.50 (U.S. \$26.25) from 1 January 1984.

Obtainable from Commonwealth Agricultural Bureaux, Farnham House, Farnham Royal, Slough, SL2 3BN, UK. (Cheques payable to Commonwealth Agricultural Bureaux.)

New, rare or interesting British lichen records

Bacidia incompta A large quantity of this species together with B. rubella and Arthonia impolita has been collected from dead elms in Suffolk. Anyone requiring material please write to Chris Hitch.

Cladonia convoluta V.C.6, N. Somerset: in turf over limestone, Parn Hill, Bleadon, 1983. F. Rose.

C. mediterranea V.C. 1, W. Cornwall: heathland behind Kynance Cove, August 1983. This appears to be the main site for this species in Britain. O.L. Gilbert.

Cryptolechia carneolutea V.C.11, Hants: New Forest (Wood Crates). Surprisingly abundant and codominant with Catinaria grossa on beech. First record from the forest. V. Giavarini.

Leprocaulon microscopicum V.C. 13, West Sussex: among mosses in glades, Ebernase Common, 1983; wall, Fittleworth, 1978; new to south-east England. F. Rose.

Parmeliella plumbea V.C. 11, South Hants: fertile on Fraxinus with abundant Sticta limbata, Royden Woods Nature Reserve, Brockenhurst, 1983. First record for the New Forest since 1912. F. Rose.

Pertusaria excludens V.C. 1, W. Cornwall: on rock outcrops, Crousa Downs, Lizard, together with Parmelia mougeotii and Lasallia pustulata, 1983. O.L. Gilbert.

Pyrenula nitida V.C. 11, Hants: New Forest, Wood Crates, on Fagus. Det. P.W. James. A species over which there has been much confusion, possibly the first record this century. V. Giavarini.

Schismatomma niveum V.C. H2, North Kerry; Eagles Nest, Killarney, on Ilex 1982; new to Ireland. F. Rose, P.W. James & P.M. Jorgensen.

Veizdaea aestivalis V.C. 59, S. Lancs; common among Ainsdale Sand Dunes National Nature Reserve together with Cladonia cariosa, C.pityrea and Peltigera neckerii 1983. O.L. Gilbert & B. Fox.

STOP PRESS

Lecanora handelii Steiner First British Record: 30 October 1983. B.L.S. Autumn field Meeting, Coniston Mines above youth hostel, CONISTON, LAKE DISTRICT.

Species abundant, forming patches up to 18" across on copper bearing rocks of mine spoil heaps and mine buildings. Thallus areolate grey-green to grey, areoles convex bearing marginal soredia. Contains usnic acid and zeorin. L. handelii is close to L. subaurea but this species has a yellow thallus containing pannarin, rhizocarpic acids and zeorin. Associated species: Lecanora epanora and Acarospora sinopica. Distribution: hitherto infrequently recorded from Central Europe and Scandinavia on metalliferous rocks, has been designated a character species of the Lecanoretum epanorae by Wirth.

Col. & det. O. W. PURVIS.

New Members

The following new members joined the Society between April and September, 1983.

JA = Junior Associate.

- Mr. J. H. Ashton, 2 Rose Cottage, Lanasa, HOLYWELL, Clwyd.
- Mr. M. J. Collof, Dept. Zoology, University of Glasgow, GLASGOW G12 8QQ
- Mr. L. A. Cram, Rose Wood Cottage, Bridgewater Road, WINSCOME,
Avon, BS25 1NP
- Mr. N. J. Donnithorne, Little Homestead, Hackenden Lane, EAST GRINSTEAD,
Sussex, RH19 3DT.
- Dr. A. A. El-Oqlah, Dept. Biology, Faculty of Science, Yarmouk University
IRBID. Jordan.
- Dr. M. Fenner, Dept. Biology, The University, SOUTHAMPTON, SO9 5NH
- Mr. A. Fryday, 4 Broadbent Street, Brotton, SALTBURN by the SEA,
Cleveland, TS15 2TF
- Mrs. S. M. Gans, 3792 Happy Valley Road, LAFAYETTE, California 94549
U.S.A.
- Ms. K. Glew, 5016 26th Avenue South, SEATTLE, WA 98108, U.S.A.
- Mr. A. Gonzalez Bueno, Depto. Botanica, Fac. Farmacia, Univ. Complutense,
MADRID-3, Spain.
- Mr. H. Harada, Bot. Inst., Fac. Sci., Hiroshima University, 1-1-89
Higashisenda-Machi, HIROSHIMA 730, Japan.
- Mr. K. Hill, 93 Elmhurst Drive, HORNBURCH, Essex, RM11 1NZ.
- Dr. I. Kärnefelt, Botanical Museum, S-22361 LUND, Sweden.
- Mr. D. Kell, 19 Normansfield, GREAT DUNMOW, Essex, CM6 6XA.
- Mr. D. A. Newman, Merton College, OXFORD.
- Mr. C. Nicholls, 5 Centre Drive, NEWMARKET, Suffolk, CB8 8AN
- Mr. B. O. Olsson, Spannlandsgatan 9, 414 79 GOTHENBURG, Sweden
- Mr. A. M. Pratt, 17 Freehold Road, Needham Market, IPSWICH, Suffolk
IP6 8DU
- Mr. K. Tamas, Szombathely, Majokovszkij Ter 6, 9700 Hungary.
- Mr. B. C. Walker, 14 Caddington Road, CRICKLEWOOD, London, NW2 1RS. (JA)
- Mrs. V. Winchester, 23 Warnborough Road, OXFORD, OXL 6JA
- Miss J. K. Yates, 16 Whitehouse Lane, ENFIELD, Middlesex, EN2 ONG.

BRITISH LICHEN SOCIETY

Statement of Expenditure & Income for the Year ended 31st December 1982

<u>1981</u>	<u>Expenditure</u>	<u>1982</u>	<u>1981</u>	<u>Income</u>	<u>1982</u>
£		£	£		£
	Cost of producing, posting etc., The Lichenologist	4354	4800	Members' subscriptions	5103
3960			-	Life Members (1/5th)	80
	Subscriptions paid:-			Woodland Survey-balance	165
4	CoEnCo	4	-	Reading Circle	14
15	Biological Council	17	3	Sale of publications	3
20	Bryol et Lichenologie	26	168	Sale of Checklist	74
9	American Bryol & Lich.	19		Academic Press-Grant to Editorial expenses	210
20	Int.Assoc.for Lich.	12	78	Royalties:-	
329	The Bulletin - less receipts	875		Dr.U.K.Duncan's book	131
232	Stationery etc.	104		Symposium	67
194	Postage	155		Donations	6
50	Insurance	50		Interest received:-	
52	Sundry items	44		Girobank	37
		5660		Nat.West.Bank	758
				Canadian Imp.Bank	108
1375	Excess of Income over Expenditure	1296		Transfer from Reserve Fund	6756
		£ 6956			200
					£ 6956

BALANCE SHEET AS AT 31ST DECEMBER 1982

<u>Liabilities</u>	<u>1982</u>	<u>Assets</u>	<u>1982</u>
Subscriptions in Advance	221	Balance at Banks:-	
Life Membership - carried forward	320	National Westminster	6277
B.P. International - Grant	350	Canadian Imperial	1153
General Fund at 31/12/81	6675	Girobank	658
Add surplus for year	1296	Stocks:-	
	7971	Checklist	722
		Pd	52
	£ 8862		£ 8862

Audited and in my opinion a correct record of the Accounts of the British Lichen Society.

R.T. Ashby Hon. Auditor
26th May, 1983

S.N. Tallowin
Hon. Treasurer
3rd May, 1983.

Literature on lichens - 41

Lichenologist 15(2) was published on 29 July 1983.

AHTI, T. 1983. Taxonomic notes on some American species of the lichen genus Cladonia. Annls bot. fenn. 20: 1 - 7. [Notes on five species. The name C. cervicornis subsp. pulvinata (Sandst.) Ahti is introduced for the European C. "rappii".]

AHTI, T. 1983. Lichens. In SOUTH, G. R. (Editor) Biogeography and Ecology of the Island of Newfoundland: 319 - 360. [Account of the lichen vegetation of Newfoundland, including introduced species. Distribution maps.]

ARVIDSSON, L. & JØRGENSEN, P. M. 1983. Gunnar Degelius. A birthday tribute. Lichenologist 15: 105 - 107. [An excellent appreciation of Professor Degelius on his 80th birthday.]

COPPINS, B. J. 1983. A taxonomic study of the lichen genus Micarea in Europe. Bull. Br. Mus. nat. Hist. (Bot.) 11: 17 - 214. [Monograph of 45 spp., incl. several new combinations. Three species have three conidial states and 16 two conidium types.]

CULBERSON, C. F., CULBERSON, W. L. & JOHNSON, A. 1983. Genetic and environmental effects on growth and production of secondary compounds in Cladonia cristatella. Biochem. Syst. Ecol. 11: 77 - 84. [First chemical study of lichen cultures; two biogenetic pathways were demonstrated.]

DAVIES, F. B. M. 1981. The Common Lichens of Bedfordshire. Bedfordshire Natural History Society, Luton. [Guide to the identification of common species in the county, with tetrad distribution maps. £1.50 plus £0.17 postage.]

ERIKSSON, O. 1983. Outline of the Ascomycetes - 1983. Systema Ascomycetum 2: 1 - 38. [Revision of 1982 outline. 226 families in 44 orders. "The outline will be revised annually."]

GALLOWAY, D. J., JAMES, P. W. & WILKINS, A. L. 1983. Further nomenclatural and chemical notes on Pseudocyphellaria in New Zealand. Lichenologist 15: 135 - 145. [Nine new species and notes on five others; chemistry of the genus.]

HAFELLNER, J. 1983 ["1982"]. Monographie der Flechtengattung Letrouitia (Lecanorales, Teloschistineae). Nova Hedwigia 35: 645 - 729. [Monograph of 15 species formerly referred to Bombyliospora.]

HALE, M. E. 1983. The Biology of Lichens. Ed. 3. Arnold, London. [Rewritten edition of this standard text. £8.95.]

HALE, M. E. 1983. Cortical structure in Physcia and Phaeophyscia. Lichenologist 15: 157 - 160. ["Physcia and Phaeophyscia are amply distinguished."]

HAWKSWORTH, D. L. 1983. The nomenclature of the beech bark fungus: a solution to the complex case of Ascodichaena, Dichaena and Polymorphum. Taxon 32: 212 - 217. [Includes several names at one time referred to lichens.]

HAWKSWORTH, D. L. & JAMES, P. W. 1983. Bouly de Lesdain and Vouaux material in the National Herbarium of New South Wales, Sydney (NSW). Crypt. Bryol. Lichen. 4: 169 - 173. [122 packets, including some types.]

HAWKSWORTH, D. L., SUTTON, B. C. & AINSWORTH, G. C. 1983. Ainsworth & Bisby's Dictionary of the Fungi. Ed. 7. Commonwealth Mycological Institute, Kew. [Extensive revision and new format. Lists terms used in lichenology (and mycology) and all lichen genera, with their systematic position, chief references, etc. £8.50; £12.50 from 1 January 1984.]

HENNINGS, C. J. 1983. The Cladonia chlorophaea - C. fimbriata complex in western Washington. Bryologist 86: 64 - 73. [Eight chemotypes in two or more morphological groupings.]

HUOVINEN, K. & AHTI, T. 1983. Biosequential patterns for the formation of depsides, depsidones and dibenzofurans in the genus Cladonia (lichen-forming ascomycetes). Annls bot. fenn. 19: 225 - 234. ["A new preliminary infrageneric division of Cladonia is outlined in the light of the biogenetic groups."]

JAHNS, H. M. 1983. Collins Guide to the Ferns Mosses and Lichens of Britain and North and Central Europe. Collins, London. [Identification guide with colour photographs. Lichens translated and revised by J. R. & R. J. Laundon. £8.95.]

JØRGENSEN, P. M. & COPPINS, B. J. 1983. The nomenclature of Xanthoria lobulata (Flörke) B. de Lesd. (lichens). Taxon 32: 462 - 464. [X. lobulata is lectotypified and X. boulyi rejected.]

JØRGENSEN, P. M. & JAMES, P. W. 1983. Studies on some Leptogium species of western Europe. Lichenologist 15: 109 - 125. [Chiefly a revision of the Leptogium azureum group. L. britannicum P. Jørg. & P. James is described, and L. cochleatum (Dickson) P. Jørg. & P. James is a new combination. L. juressianum Tavares is reported from Ireland.]

KERSHAW, K. A. 1983. The thermal operating-environment of a lichen. Lichenologist 15: 191 - 207. [Thallus temperatures often differ considerably from air temperatures; discussion.]

LAUNDON, J. R. 1983. Lichens in our churchyards. Living Countryside 11(126): 2501 - 2503. [Review; colour photographs and drawings.]

MOBERG, R. 1983. Studies on Physciaceae (lichens) II. The genus Pyxine in Europe. Lichenologist 15: 161 - 167. [Taxonomic account. Two species with restricted distribution.]

SAYRE, G. 1983. A Thomas Taylor bibliography. J. Bryol. 12: 461 - 470.

SEAWARD, M. R. D. 1983. Lichen herbarium in the Botany School, University of Cambridge (CGE). Lichenologist 15: 101 - 102. [Notes on the remaining lichen collections.]

TEHLER, A. 1983. The genera Dirina and Roccellina (Roccellaceae). Op. bot. 70. [Monograph of 30 species, many new. Cladograms showing relationships. "Species pairs" are regarded as states of a single species. Dirina massiliensis Durieu & Mont. is the correct name for D. repanda auct. D. massiliensis f. sorediata (Müll.Arg.) Tehler is the name used for D. stenhammarii.]

TIMDAL, E. 1983. The genus Squamarina in Scandinavia. Lichenologist 15: 169 - 179. [Account of six species. Key.]

WETMORE, C. M. 1983. Lichen survival in a burned oak savanna. Mich. Bot. 22: 47 - 52.

J. R. LAUNDON

KEY TO OPEGRAPHA IN GREAT BRITAIN

This key to the British species is based mainly upon material in the British Museum and Edinburgh. Of the 34 species included in the 1980 Checklist, only 24 are included here. Additional species are O. cf. rubefacta and O. multipuncta Coppins and P. James in ed. O. rubefacta Räsänen was originally described from New Caledonia but appears to be very similar to the single British collection. Further material will be required before a more confident decision can be made.

Ten species are considered here as synonyms: O. actophila Nyl = O. areniseda; O. dubia Leighton ex Arnold = O. niveoatra; O. hysteriiformis Nyl. = ; O. cesareensis; O. protuberans Zahlbr. is probably O. herbarum (type missing); O. atrula Nyl, O. calcarea Turner ex Sm., O. chevallieri Leighton, O. conferta Anzi = O. saxatilis; O. rimalis Ach., O. diaphora (Ach.) Ach. = O. varia.

The name O. vulgata has been shown to refer to the non-lichenized genus Ascodichaena Butin (see Hawksworth in Taxon 32: 212-217, 1983) and O. cinerea appears to be the correct name for this species. With the exception of O. parasitica, which is not always clearly lichenicolous, the lichenicolous species are not included in the key and the reader is referred to the key by Hawksworth, Lichenologist 15 : 1-44, 1983.

Opegrapha is closely related to the genus Lecanactis from which it is separated by the rounded, approximately lecideine pseudothecia, but there are several species which occupy an intermediate position, notably Lecanactis abscondita, L. grumulosa, L. lyncea, L. nothiza and Opegrapha zonata. There are similar problems with Schismatomma where there is a close similarity between some forms of O. rufescens and S. graphidioides. Clearly, some more satisfactory arrangement will be necessary some time in the future.

Notes on some characters used in the key

1. Pseudothecia (Ps) are usually abundant and their shape is variable in some species (e.g. O. varia, O. saxatilis) but fairly constant in others (O. rufescens, O. viridis, O. saxigena). The extent to which the disc is exposed can be useful in O. lichenoides and O. atra among others. The exciple and/or disc is pruinose in several species, especially in young ps. but not always constant. Pruina are whitish or pale green in O. herbarum, O. lichenoides, O. mougeotii and O. varia and reddish or orange (K+) in O. ochrocheila and O. cf. rubefacta.

2. Exciple and epithecium. When examined in squash preparations these tissues may be brown (e.g. O. herbarum, O. saxicola) or greenish (O. atra, O. saxatilis) although in O. cinerea the tissues are olivaceous and in O. rufescens the exciple is olive and the epithecium reddish-brown. A blue filter placed over any artificial light source is recommended for this work.

3. Ascospores. Septation, size and shape are important characters and the thickness and ornamentation of the episore (if present) can be a useful character. Spore measurements were made in 10% KOH and exclude the episore. Although the spores may become brownish with age, care should be taken to distinguish these forms from the non-lichenized genus Hysterium.

4. Thallus. Colour and thickness are variable in most species but is fairly constant in O. atra, O. saxigena and O. zonata. A few species are delimited by a dark prothallus, e.g. O. saxigena, O. zonata. Soralia occur in four species and the colours given refer to fresh material. A key to sterile lichens with Trentepohlia phycobiont by James and Coppins is in the Lichenologist 11 : 253-262, 1979. The hyphae of O. saxatilis and O. mougeotii are sometimes associated with oil bodies. The soralia of O. gyrocarpa and O. sorediifera are C+ red (often fleeting) due to gyrophoric acid. O. zonata appears to contain confluent acid (see James and Coppins, op. cit.)

5. Pycnidia and conidia. The pycnidia are dark brown to black and usually below 0.1 mm wide. The two exceptions are O. vermicellifera with white-pruinose pycnidia and a rare form (distinct taxon) of O. saxatilis with large black pycnidia to 0,3 mm diameter. Species with abundant pseudothecia are often without pycnidia and vice versa. The size and shape of the conidia are an important taxonomic character in this genus. The conidia are hyaline and eseptate except in O. ochrocheila. They are usually rod-shaped, but allantoid in O. niveoatra and O. rufescens and sickle-shaped in O. cinerea and some forms of O. lithyrqa (and possibly O. viridis). We have found two types of conidia in five species, O. cinerea, O. lithyrqa, O. mougeotii, O. niveoatra and O. saxatilis and it is likely that this is also the case in O. lichenoides, O. varia and O. viridis. Measurements should be made under oil immersion (x1000) in 10% KOH. Some collections of O. niveoatra and O. herbarum will be found to contain brown conidia measuring 3-4 x 1.5-2 μm belonging to the parasite Laeviomycetes opegraphae D. Hawksw.

This key is the result of an extensive study carried out by both authors and includes detailed statistical analyses, particularly in the saxicolous species with 4-celled spores. However, much remains to be done, and further work will be necessary at some stage. For example, there is still some doubt over the inclusion of O. lichenoides which may be connected with O. varia by growth forms - but, on the other hand, we have some preliminary findings that suggest the O. varia agg. (corticolous material) is represented in Britain by at least three species; much more critical work (including type studies) is required on this group. In addition, a careful reappraisal should be made of the entities here subsumed under O. saxatilis; the enormous variation (esp. arrangement and degree of elongation of pseudothecia, and thallus development) appears to be environmentally controlled, but some of the entities may prove to be deserving of taxonomic recognition - if only at infraspecific rank.

- | | | |
|--------|--|----|
| 1a. | Thallus without soredia | 2 |
| 1b | Thallus sorediate | 23 |
| 2a(1a) | Spores 4-celled | 3 |
| 2b | Spores 5-16 celled | 11 |
| 3a(2a) | On bark or wood | 4 |
| 3b | On rock or soil | 7 |
| 4a(3a) | Exciple with reddish orange pruina, K+ crimson.
Ps. variable, 0.5-1.2 (1.8) x 0.25-0.4 mm, Spores
12-18 x 3-4.5 μ m, Conidia 12-20 x 1-1.7 μ m, rod-
shaped, often 3-celled. Thallus dull greenish to
grey. Widespread but local on wood or deeply
shaded bark, rarely on shaded rocks. | |
| | <u>O. ochrocheila</u> Nyl. | |
| 4b | Exciple K-, without reddish orange pruina | 5 |
| 5a(4b) | Spores 5-7(8) μ m wide with rounded ends and a
distinct episore, 0.5-1.2 μ m thick usually present.
Ps. short, scattered, 0.5-1(1.6) x 0.15-0.3 mm,
sometimes green pruinose; disc often exposed.
Exciple and epithecium red-brown in K (no green
tinge). Spores (16) 18-24(26) μ m long. Conidia 3-6 x
1-2 μ m bacilliform. Thallus dull olive or brownish.
Usually on smooth, shaded bark, frequent, rarely
on shaded rock. <u>O. herbarum</u> Mont. | |

- 5b Spores 3-4(5) μm wide, epispore normally absent; ps. epruinose, exciple with a greenish tinge in K. 6
- 6a(5b) Ps. innate, irregular, 0.3-0.5(1) x 0.1-0.4mm, sometimes with a white, spurious 'thalline margin'; exciple irregular, thin with an olive tinge in K, but epithecium remaining brown in K. Spores 17-27 μm long. Conidia curved, 5-8 x 1-2 μm . Thallus dull olive to brown. Usually on smooth bark (ash, hazel) uncommon (decreasing ?) O. rufescens Pers. (NB. If lateral exciple absent and sp. 24-36 (40) μm , check for Schismatomma graphidioides)
- 6b Ps. sessile, elongate, often becoming crowded and confluent (0.3) 0.7-1.5(2) x 0.09-0.16(0.3) mm; exciple and epithecium distinctly greenish in K. Spores 13-18 (20) μm long. Conidia 4-5 x 0.7-1 μm , bacilliform. Thallus creamy-white to greenish. Usually on smooth bark and mostly in open situations, common and variable. O. atra Pers.
- 7a(3b) Thallus dull or chocolate-brown, smooth and epilithic, with a dark prothallus and sometimes mosaic forming. Ps. short, scattered, 0.6-1.2 x 0.15-0.35 mm; disc. a slit; exciple greenish in K. Spores (15) 16-20(22) x 4-5(6) μm . Conidia 4-7 x 0.5-0.8 μm , bacilliform. Local on sheltered acid rocks in the west, often with O. zonata and O. gyrocarpa; but rare on limestone and very shaded smooth bark. O. saxigena Taylor
- 7b Thallus pale cream, yellowish or red-brown, prothallus absent. On calcareous rocks or rocks near the sea. 8.
- 8a(7b) Disc widely-exposed, densely grey-pruinose; ps. sessile, 0.5-1.5(3) x 0.25-0.4 mm, simple and serpentine or clustered. Spores 16-23 x 6-7 μm . Conidia 4-6 x 1 μm . Thallus pale cream or endolithic. On ⁺ basic slate rocks and old mortar near the coast; very rare in the south-west and Channel Islands. O. subelevata Nyl.
- 8b Disc epruinose, rarely exposed. 9.

- 9a(8b) Spores (12) 14-18 (22) μ m long. 10
- 9b Spores (20) 22-26(31) μ m long, with an episporé.
Ps. short and scattered, sessile to semi-immersed,
0.5-1.0 x 0.2-0.3 mm. Exciple brown in K. Conidia
4-6 x 0.7-1 μ m, bacilliform. Thallus pale to
brownish, epi- or endolithic. Uncommon but widespread.
O. saxicola Ach.
- 10a(9a) Spores 4-5 μ m wide, episporé absent or indistinct. Ps.
0.6-1.2(2) x 0.15-0.3 mm, sessile to semi-immersed,
scattered to confluent. Exciple green in K. Conidia
bacilliform, 5-7 x 0.7 μ m, produced in immersed
pycnidia, rarely ellipsoid, 4-5 x 1.2-1.7 μ m in
large pycnidia to 0.3 mm diameter. Thallus variable,
whitish to rusty brown, often endolithic. Common.
O. saxatilis DC.
- 10b Spores 5-7 μ m wide, with rounded apices and a
distinct episporé, becoming brown and warted when
old. Ps. short and rounded, 0.2-0.6 x 0.15-0.3 mm;
exciple brown in K. Lichenicolous, especially upon
foveolate Verrucariaceae on hard limestones. Also
on Caloplaca cirrochroa and Xanthoria parietina,
widespread but local.
O. parasitica (Massal) Vězda
- 11a(2b) Spores 5-8 (9) celled, episporé distinct or not. 12
- 11b Spores (9) 10-16 celled, episporé distinct
(corticolous). 22
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- 13a(12a) Spores (5) 6-9 μ m wide, with rounded ends; ps \pm
sessile. 14
- 13b Spores 2.5-3.5 (4.5) μ m wide, clavate, with rather
pointed ends; ps. sessile or semi-immersed. 15
- 14a(13a) Ps. short and rounded with an exposed disc, 0.5-2 x
0.4-0.6 mm, sometimes greenish-yellow pruinose.
Spores 18-30 μ m long. Thallus dull to pale greenish.
Occasional on old bark or wood.
O. lichenoides Pers.

- 14b Ps. elongate, often branched or confluent, 0.8-2.5 (3.5) x 0.1-0.5 mm.; disc almost covered by the exciple. Spores 20-37 μ m long. Thallus grey to evanescent. Common on neutral to basic bark.
O. varia. Pers.
(Possibly an aggregate of 3, or more, species).
- 15a(13b) Thallus dotted with prominent greyish pruinose pycnidia, 0.1-0.25 mm wide. Ps usually semi-immersed, elongate, and often serpentine 0.6-1.5 x 0.09-0.3 mm. Spores 16-22(29) x 3-4 μ m. Conidia 3-3.5 x 1 μ m. Thallus ash-grey. Common on neutral to basic bark of old trees, esp. elm and sycamore.
O. vermicellifera (Kunze) Laundon
- 15b Pycnidia black or absent. 16.
- 16a(15b) Exciple with orange pruina, K+ crimson. Ps. short, 0.5-1.0 x 0.2-0.4 mm, sessile. Spores 16-26 x 4-6 μ m. Thallus pale green to evanescent. On decorticated wood in N. Wales, rare.
O. cf. rubefacta Räs.
- 16b Exciple and disc epruinose, never K+ crimson 17
(N.B. If white pruinose and ps. rounded or + ellipsoid and 0.2-0.4 mm wide, check for Lecanactis lyncea).
- 17a(16b) Conidia short and curved, of two types: 4-7 x 1-1.5 μ m or 7-9 x 0.7 μ m. Ps. semi-immersed, 0.3-0.7 x 0.05-0.2 mm. Spores 16-30 x 2.5-4 μ m. Thallus dull grey to olive. Frequent on neutral to basic bark.
O. niveoatra (Borrer) Laundon
- 17b Conidia sickle-shaped, of two types: 9-15 x 1-1.3 μ m or 9-14 (17) x 0.5-0.7 μ m. Ps. sessile to semi-immersed, elongate and often serpentine (0.5) 0.8-2.5(3) x 0.15-0.25 mm. Spores (15) 20-30 x 2.5-4 (4.5) μ m. Thallus pale grey to dull olive or brownish. On shaded trees, probably the commonest British sp.
O. cinerea Chev.
(used to be called O. vulgata)

- 18a(12b) Species of sheltered, sandy soil. Ps. 1-2 x 0.15-0.3 mm, elongate, sessile. Spores (15) 20-30(40) x 5-6 μ m, often with an episore, 5-9 celled. Conidia 3-5 x 0.5 μ m, bacilliform. Southern coasts, rare. O. areniseda Nyl.
- 18b On rock 19
- 19a(18b) Spores 3-4 μ m wide 20
- 19b Spores 5-8(9) μ m wide 21
- 20a(19a) Spores 6-8 celled, 20-35 μ m long with tapered ends. Ps. elongate, often serpentine sessile, 0.5-1.5(2) x 0.08-0.25 mm. Conidia of two types: curved, 10-14 x 0.5-0.7 μ m or bacilliform, 3-5 x 1-1.2 μ m. Thallus pale grey to deep olive. On very shaded non-calcareous rocks, often with Enterographa hutchinsiae; local but widespread and mainly in the west. O. lithyrqa Ach.
- 20b Spores (4) 5-6 celled, 15-22 μ m long with $\frac{+}{-}$ rounded ends. Ps. short, stout and straight, 0.3-1.0 x 0.15-0.3 mm. Conidia bacilliform, 6-7.5 x 0.7 μ m. Thallus pale-grey to violet-grey. Local and confined to sheltered acid coastal rocks in the west and north. O. cesareensis Nyl.
- 21a(19b) Thallus greenish-yellow, scurfy or evanescent. Spores 5-6 celled and second or third cell (respectively) enlarged, apices $\frac{+}{-}$ rounded, 21-26 x 5-8 (9) μ m. Ps. scattered, semi-immersed, 0.3-0.5 (0.7) x 0.2-0.3 mm. Conidia 5-7 x 0.5-0.7 μ m, bacilliform. Calcareous or basic rocks. W. Ireland, N.E. Scotland rare. O. paraxanthodes Nyl.
- 21b Thallus pale buff to cream. Spores 6-8(9) celled, with an enlarged central (usually fourth) cell, 25-33 x 5-8 μ m. Ps. variable, scattered to confluent, 0.6-1.5(2) x 0.3-0.5 mm. Conidia of two types: 5-7 x 0.7-1 μ m, bacilliform or 3-5 x 1.5 μ m, ellipsoidal. On calcareous rocks, widespread but local. O. mougeotii Massal.

- 22a(11b) Ps. short, 0.5-1(1.5) x 0.2-0.4 mm. Spores (10) 12-16 celled, 25-60 x (3) 6-9 μ m. Conidia 3.5-5 (6) x 0.5-0.8 μ m, straight or slightly curved, also(?) 15-18 x 1 μ m. Thallus obscure or dull olive. On holly or other smooth bark, mainly in south and west, scarce. O. viridis (Ach.) Nyl.
- 22b Ps. prominent, elongate, 1.5-2.5 x 0.2-0.3 mm, Spores 10-14 celled, 50-80 x 6-8 μ m. Conidia 4-6 x 0.7 μ m. Thallus dull olive to cream. On smooth and rough bark on dry sides of old trees, especially oak and yew, local in the south. O. prosodea Ach.
- 23a(1b) Soredia C+red, sometimes fleeting (gyrophoric acid) 24
- 23b Soredia C-, usually sterile 25
- 24a(23a) Soralia yellow-grey, often confluent, 0.4-1 mm wide, on a dark brown thallus. Dark prothallus often present. Ps. gyrose, to 2mm wide. Spores 4-celled, 19-25(30) x 4-6 μ m. Conidia 3.8-6 x 0.7 μ m, bacilliform, T.L.C.: gyrophoric and schizopeltic acids. On sheltered rocks (often with O. zonata) and occasionally trees, common in the west. O. gyrocarpa Flotow
- 24b Soralia pale yellow to buff, small and ⁺ discrete, to 1.2 mm wide on an olive to grey-brown thallus. Dark prothallus sometimes present. Ps. to 2 mm long. Spores 11-14 celled, 30-40 (58) x 4-5 μ m. Conidia 4-6 x c. 1 μ m. T.L.C.: gyrophoric acid. On smooth bark in sheltered situations, mainly in the west, frequent. O. sorediifera P.James
- 25a(23b) Thallus dark brown, often tinged mauve and delimited by a dark prothallus; soralia small, delimited, brownish to lilac, 0.2-0.5 mm wide. T.L.C: confluent acid. On sheltered rocks, rarely on trees and mainly in the west, common. O. zonata Körber

25b Thallus pale greenish, grey or brownish, without
 a mauve tinge, prothallus indistinct or absent,
 corticolous; T.L.C. - ve 26

26a(25b) Soralia pale fawn to ochraceous, at first 0.2-0.7 mm
 wide, becoming confluent and to 2-3 mm wide.
 Frequent on old trees in open and woodland
 situations, local in the W and SW.

O.corticola Coppins and P.James

26b Soralia bright orange (quickly fading in the
 herbarium), numerous, minute and punctiform, 0.1-0.3 mm
 wide at first, sometimes becoming confluent. Thallus
 thin, grey-brown. On exposed twigs and branches of
 trees and shrubs in boggy or humid places in Scilly
 Isles and in N and W Scotland, probably common in
 the west but overlooked.

O. multipuncta Coppins and P.James
 in ed.

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