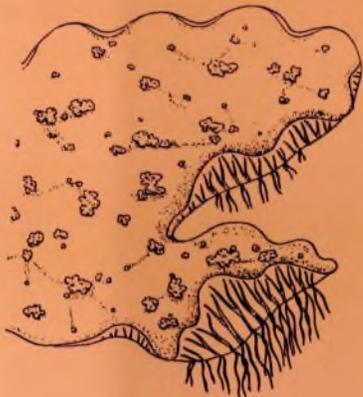


No. 60

Summer 1987

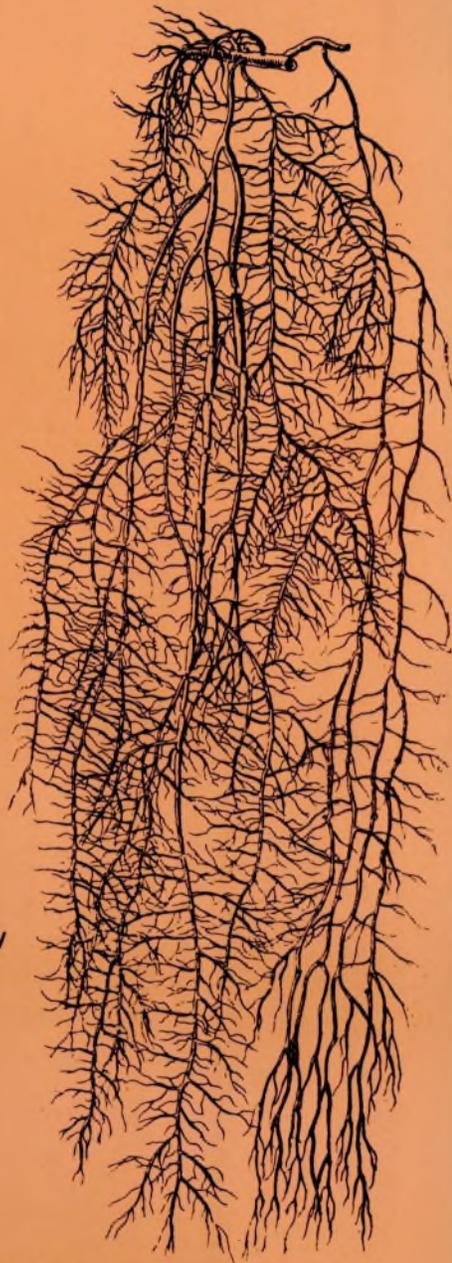
**BRITISH  
LICHEN  
SOCIETY  
BULLETIN**



*Nephroma*

*Peltigera*

chemistry



**Edited by Frank Brightman,  
South London Botanical Institute,  
323 Norwood Road, LONDON SE24 9AQ**

FORTHCOMING FIELD MEETINGS :-

Connemara and Sligo - Ireland (29 August - 12 September 1987.) Leaders: Professor D. Richardson and Dr M. R. D. Seaward.

Rye - Kent (23 - 25 October 1987.)

Leaders: Professor D. L. Hawksworth and Mr J. R. Laundon.

South Molton - North Devon (April 1988 - Lichen Flora of the British Isles Workshop: a joint meeting of the BLS and the Systematics Association).

Leader: Professor D. L. Hawksworth.

# Conservation

Lichenologists in this century have become increasingly aware of the threats that face the lichens that they study. By the next century some species will be extinct or on the verge of extinction, and many lichen habitats will inevitably have been destroyed. Hence the use of the much-abused word "Conservation" as a heading to this article.

The British Lichen Society has a good record in this matter. At an early stage we listed outstanding sites all over Britain and graded them as of international, national, and local importance. In recent years we have produced more detailed reports on important kinds of habitats, beginning with woodlands and lowland heathlands. At the same time we have reacted to threats to particular sites as these became known to us, making representations to the appropriate authorities and appearing at enquiries when necessary. We have also prepared and distributed leaflets on lichen conservation issues, on churchyards (in connection with which we are in favour of moderate conservation management measures) and on the use of lichens as dyes (to which we are opposed).

These results have been achieved by the efforts of a voluntary conservation officer (we have had four of them over the years) supported by a conservation committee, who have collaborated throughout with the Nature Conservancy Council and as far as possible with local organisations such as County Trusts. Two years ago we responded to an initiative of the Botanical Society of the British Isles and, together with six other national specialist botanical societies, became founder members of the Conservation Association of Botanical Studies. This organisation, at present funded largely by grants from the Nature Conservancy Council and the World Wildlife Fund (the financial input from the British Lichen Society and the other founder member societies is minimal), speaks for all botanical interests in conservation matters and is able to employ a salaried full-time conservation officer.

CABS is in some way an unfortunate acronym. The two young men at present working in the office have been heard to be referred to as "the jarveys" (Dictionary definition: "obsolete slang for cab driver"), and the initials CAB had been pre-empted by more than one longer established organisation, not least of course the CAB Mycological Institute at Kew. Be

that as it may, the advantages to conservation of having a full-time officer to back up the voluntary ones appointed by the constituent societies, who of course have to work in their spare time; are very great. In recent years there has been a great proliferation of government (both central and local) bodies, 'quangos' of various kinds, and more or less voluntary 'conservation' organisations with a wide range of axes to grind. They arrange meetings and symposia and circulate questionnaires that are often important and always time consuming. Also these bodies tend to carry out most of their activities during normal office hours. The CABS officer is able to respond to these developments to an extent that would be impossible for part-time volunteers. He also endeavours to make widely known the CABS slogan "plants are paramount" (no plants, no other wildlife), for as 'Cudbear' remarked in the winter issue of the BLS Bulletin "the conservation of plants has a very low priority with officials and the public; and as for lichens, most people don't even see them". One way in which CABS is trying to raise the level of public awareness of plants and their importance in the environment is by issuing a news-sheet entitled PLANT PRESS, No. 1 of which is enclosed with this Bulletin. Your comments on PLANT PRESS would be welcomed, and should be sent in to me. Do you wish to continue to receive it? Does it serve a useful purpose? Have you any suggestions for its improvement?

The existence of the new federal association does not diminish the need for a keen and active British Lichen Society conservation committee. At present I am temporarily acting as conservation officer, but we need a younger person for this voluntary post, so if you are interested, please let me know as soon as possible. A meeting of the new conservation committee will be arranged later in the summer, and is open to all interested members (a number of whom have already signified their interest to me). They will be informed of the date, time and place in due course. For a number of more or less obvious reasons, all meetings of the conservation committee so far have been held at the British Museum (Natural History). Consequently there are members living at a distance whose participation we would value but who find it difficult or impossible to attend. Such people could perform a valuable service by agreeing to act as local 'advisers'. Their role would be to keep their eyes and ears open for possible changes and developments in their local areas that might adversely affect lichen habitats and to give the conservation officer early warning of them. It should be possible to build up a network of advisers communicating by letter and telephone that

would perform a useful service to conservation without necessitating travelling long distances and attending meetings. A problem in this connection is that the membership of the society is far from uniformly distributed throughout the British Isles; we have few or no members in remoter parts where urgent conservation problems often arise. I would be glad to hear from members who will be holidaying in the highlands of Scotland this year and would be willing to look at certain sites and make preliminary assessments of their lichenological importance.

A man who over many years devoted more time than he could really afford to working as a conservationist was apt to reply when asked why he expended so much effort "Everyone needs a lost cause". If we collaborate with one another, it needn't be as bad as that.

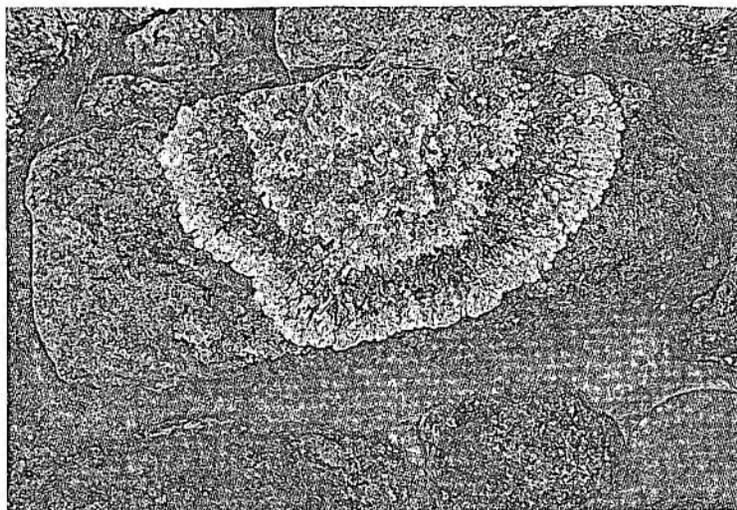
FRANK BRIGHTMAN

### APPROACHES TO LICHEN AESTHETICS I

Few Lichenologists would fail to assert the beauty of lichens. Yet the comments one encounters under this heading, verbal or printed, are little more than platitudes. Small attempt is made to explore the aesthetic qualities of lichens analytically or with any exactitude. This series will indicate some possible approaches, using examples from the range of lichen morphology. This first part will be mainly concerned with circular thalli.

#### 1. A Thomistic approach

Readers of Joyce's Portrait will recall the discussion there of the three conditions laid down by St. Thomas Aquinas as pre-requisites of beauty. These are (a) wholeness (integritas), (b) due proportion or harmony (consonantia), and (c) brightness or clarity (claritas). How do these three conditions apply in the case of the specimen of Parmelia saxatilis illustrated here?



a) Wholeness (integritas)

Foliose, placodioid or crustose plants of a discoid form immediately exhibit a quality of oneness which enables them to be readily differentiated from the background of their habitat, this separateness and unity of appearance inhering primarily, as seen in the illustration, in the circular or elliptical growth form of the thallus. The rotational or multi-axial symmetry shown by such cyclic thalli is highly unifying in effect. This roundness of form is the major factor in our apprehension of oneness/wholeness in such plants, although the role of colour, not so apparent in a black-and-white picture, should not be ignored.

b) Harmony of parts (consonantia)

Once the object has been apprehended as a thing separate, a oneness, the viewer perceives the relationship between its various main parts or sections. In the case of P. saxatilis we note the overall radial structure and orientation of the thallus emphasising and relating easily with the circularity already perceived, the light periphery of outer lobes, the darker area immediately within that, with another lighter circular region around the centre of the plant. A balanced relationship strikes the viewer.

c) Clarity or brightness (claritas)

The meaning and significance of St. Thomas' third condition, claritas, has been much debated. Here Joyce's interpretation of clarity as whatness, particularity (claritas = quidditas; cf Gerard Manley Hopkins' 'inscape') is accepted and followed. In our example of P. saxatilis, this quality consists in such specific attributes as the overall reticulate patterning, the formation with age of rodlike or coralloid isidia and consequent degree of darkening, later isidial regeneration leading to re-affirmation of 'roundness' in the shape of a second-generation light-edged thallus concentric inside the parent, and within this secondary thallus a region of competition between regenerative lobules ultimately resolved in a pattern of centrifugal growth. It is largely owing to detailed features apprehended at this stage that we become aware of the particular beauty we associate with the species, P. saxatilis and with this individual plant of that species, both genetically and environmentally induced.

Claire Dalby's notes in Bulletin 59 reveal the illustrator's need to analyse such features. Not unrelatedly, Dr. D. J. Hill's growth studies in Lichenologist (1984) 16, p.277, have shown how the different frequency of lobe engulfment manifested by different species may prove useful in taxonomic definition. For present purposes, it is noted here that such growth characteristics result in structural features which may be visibly and aesthetically registered and recognised as distinctive of particular species without engagement in the relevant mathematics.

Note

The Thomistic conditions are readily applied to such plane, discoid lichens as P. saxatilis. However, St. Thomas' three conditions are similarly applicable, mutatis mutandis, to semi-circular thalli (e.g. Caloplaca decipiens) or to annular thalli (e.g. Lecanora muralis plants with disintegrated central area), etc.; as, also, to subfruticose or fruticose thalli viewed from above. An instance of this last case would be a cushion of Cladonia portentosa, whose oneness, when account is taken of its three-dimensional nature, nears the perfection of the hemisphere rather than that of the circle.

A. HENDERSON

## HEAVY METAL-RICH RIVER GRAVEL

Oliver Gilbert in his Lichen Flora of Northumberland (Lichenologist 12, 357) draws attention to the interesting lichens of heavy metal-rich shingle beside the rivers of the North Pennines. His photo of the South Tyne reminded me of areas beside the River Ystwyth in Cardiganshire I had passed years ago which were then occupied by the unlikely teepees of the magic mushroom brigade, late of Stonehenge fame. A recent trip to Aberystwyth, a meeting finishing early and an unexpected request for any information on these gravels which had been discovered to be entomologically interesting, found me unexpectedly in my best trousers in a late afternoon snow shower, standing amid the best part of two miles of gravel in forestry near Llanafan.

Now the officionados of terricolous lichens will have recognised three drawbacks here. 1. The trousers - its a hands and knees job; 2. the snow - it's cold; 3. two miles - a long way on hands and knees. Lack of collecting packets was remedied by the temporary sacrifice of the morning's notes (a small price to pay), the knees and cold remedied by finding a fertilizer sack in a tree and stuffing it with Molinea leaves. Ignoring most of the site solved (for the time being) the distance problem.

Baeomyces roseus fruiting over acres and forests of Cladonias promised a site of some interest. The Baeomyces proved to be well infested with an Arthrorhaphis species. Not A. grisea which seems to confine its attentions to B. rufus, but A. fuscireagens, kindly identified by Brian Coppins. My joy at a second British record was somewhat marred when Brian reminded me I was present at its discovery. I can only recall it was the wettest, coldest day of my life when wearing every stitch of clothing I had including my pyjamas and a range of matching polythene accessories, we crawled over the summit ridge of Ben Dearg near Ullapool. Nothing could stop the wind and rain that day - or the Coppins. Was it the third or fourth new British record of the day? I forget. It was all a blur. But it was a good training ground and made the Ystwyth gravels seem bosky. It also limited the range of search since in Brian's company one learns quickly to ignore the bits that are obviously covered in lichens and search the apparently bare places.

Veizdaea species have become a bit of a passion with me, so I searched

the squidgy algal lawns that covered the bryophytes which appeared to have been overcome by a surfeit of lead. Grey translucent fruits focussed up in the x10 lens; a likely candidate. Close by the orange cup-like fruits of a possible Gyalecta appeared in view. Then down came the snow and the increasing distress of my trousers forced a retreat, stopping only for a pick 'n' mix session on the ghastly collection of Cladonias which stretched in every varying ranks as far as the snow would allow me to see.

So what had I found? Back home, the "Veizdaea" proved to be weird, with huge sickle shaped paraphyses. It defeated Brian, who as ever, refusing to give up without a fight, detected Veizdaea acicularis amongst it (see the Lichenologist for a description), a third world record. The "Gyalecta" with three septate lemon shaped spores "fell off" the end of all my keys to the genus. Brian, having seen it in Brittany, recognised Abscontitella trivialis, a genus I'd never heard of, but which with this specimen, lodged its fifth species in the British flora.

With still another 1.99 miles to search in this site, and others upstream, acres of gravel in the Rheidol and Twyi Valleys, heavy metal-rich shingle is clearly no longer a monopoly of the North Pennines. We must encourage these entomologists as well. Its not just old parklands we share an interest in; and what really were the magic mushroom brigade into? You surely can't scrape up that quantity of Veizdaea!

R. G. WOODS

#### WINTER FIELD MEETING AT MASHAM, N. YORKS

The joint meeting of the B.L.S. and the Yorkshire Naturalists' Union was initiated, organised and carried through by Mark Seaward in his dual capacity as Lichen Ambassador Extraordinary of the Society and President (now retired) of the Y.N.U. The accommodation that he arranged at Jervaulx Hall was spectacular; possibly the most luxurious ever provided for a lichen meet. The owner had opened up the hotel specially for us and was amused to be handed spot-on clues to our distinguishing features which enable him to key us out immediately.

After a quick recce of the Coverdale valley in winter sunshine on Saturday, we met up at the King's head with Brian Fox and Albert Henderson, who were welcome additions to our number, and then adjourned to the Town Hall after lunch for the



## A NEW LICHEN FLORA OF SOMERSET

In 1930, the late Dr. W. Watson's The Lichens of Somerset, a lichen Flora of the county, was published by the Somerset Archaeological and Natural History Society. This was a remarkable achievement at that bleak period of British lichenology, and according to the concepts of his time, he recorded 493 lichen species; many of these "species" are no longer recognised while others have been split. Fortunately, he built up an extensive herbarium of Somerset lichens; much of this is at Taunton Museum, while more of it is in the British Museum (Natural History).

Since 1969, I have been interested in the Somerset lichen flora, and much exploratory field work has taken place, both by other people and myself. The Bristol "Workshop" meetings have recorded many new species and locations, and in September 1985, the B.L.S. met at Dulverton and Taunton. A great many species not known to Watson in Somerset have been found, and a fuller picture of the distribution of the species has been obtained than was possible for Watson to achieve; much of his fieldwork was done on a bicycle. A total of 532 specific and sub-specific taxa is now recorded as currently present in Somerset, which is a large number for a southern county, that at present only appears to be exceeded in Devon.

Much, however, remains to be done before the New Somerset Lichen Flora can appear. The true identities and modern names for Watson's specimens are being sorted out by Peter James and this will take a little more time yet. The map shows the number of lichen taxa currently recorded for each 10 km. square in Somerset. The richly wooded areas on sandstones in the west can be seen to be now well recorded, and also much of the N.E. Mendip region. But a number of squares in the central, highly-farmed lowlands still have low totals. Any help that B.L.S. members can give, by way of records, particularly for the more deficient squares, would be welcomed by me, or by Mr. Jeff Carrington at Taunton Museum. The Somerset Archaeological and Natural History Society will probably publish the Flora in a year or so's time when, it is hoped, the manuscript will be ready.

F. ROSE

### ALICE BURNET REMEMBERED

It is with a real sense of loss that I write about Alice Burnet. She was born in 1909. She was educated at Oxford High School and at Somerville College, Oxford, graduating with a 1st Class Honours degree in Modern Languages (French being her speciality) in 1931; she took her M.A. and Dip.Ed. in 1935, followed by further studies in Paris in 1937. After several years as a lecturer and tutor at the University of Manchester 1938-45, she went to East Africa in 1954-1962 as Warden of Mary Stuart Hall at Makerere College, where I first met her while there as a visiting lecturer for several months in 1961. Her earlier natural history interest was in the birds of Uganda, but Dr. Edna Lind, who had invited me out to Makerere and was a mutual friend, got her interested in the plant life of that beautiful country. Later, she made valuable contributions to our knowledge of the lichens of Uganda, and C. W. Dodge named Leptogium burnetiae after her. I did not see much of Alice for some years after that, but from 1972 to 1985 I used to go to stay at her attractive bungalow at Ford, near Salisbury, sometimes with other lichenologists, including Peter James, Brian Coppins, Ted Wallace and Pauline Topham. She became deeply interested in lichens, especially those of Wiltshire, and laid the groundwork for the lichen flora of that county that Edward Elliott and I hope to produce within a year or two. This flora would never have been started without her careful and thorough ground work, especially in South Wiltshire, which proved to be such a rich area for a wholly inland and lowland county.

Alice was a delightful companion in the field. She was extremely kind, thoughtful and good-natured, with a quiet sense of humour, and never became

flustered in any situation. She suffered for years from asthma and from trouble with her neck vertebrae, but always made light of her personal health. She was a rather reserved person about herself, but took a great interest in all her friends, young and old, who enjoyed her warm hospitality at Ford. She took part in the BLS excursion to Brittany in 1970, where her knowledge of French and her tactful manner were as valuable to the party as her knowledge of and enthusiasm for the lichens we found.

She also studied lichens in Italy, where she found Parmeliella atlantica new to Italy near Siena, which I was later able to re-find in or close to her locality. She spent much time in the British Museum working through her collections after field trips. Her microscopes and books have been bequeathed to the B.L.S.

FRANCIS ROSE

#### E. C. WALLACE: An appreciation

With the recent death of E. C. (Ted) Wallace at the age of 77 the BLS lost one of its founder members and a leading amateur botanist of our time. His knowledge of flowering plants was immense, of bryophytes encyclopedic. It was matched by the detailed trouble he took to help inquirers and the generosity with which he imparted his knowledge to them. Endowed with an equable temperament, a natural friendliness, a quiet though decisive manner of speaking, and an unswerving dedication to botany, Ted enjoyed the friendship - and indeed the esteem - of professional as well as amateur botanists throughout the world. The Linnean Society awarded him the Bloomer Medal in 1965.

An only child, Ted was born on 12 February 1909 at Blackfriars, in London, and when he was 2 the family moved to Sutton, Surrey, where he remained for the rest of his life. Leaving Sutton County School at 16, he went into W. H. Smith's, the newsagents. Apart from war service in a technical capacity in the Royal Air Force (when he visited India and Burma) he remained in that firm till he retired at 65. He never married.

At the age of 5 Ted became interested in wild flowers, and when he was 10 he turned his attention to bryophytes. All his life he enjoyed strenuous walking, and he loved especially the Scottish Highlands, acquiring a detailed knowledge of their topography and flora. Though his knowledge of the vascular plants was remarkable, it was as a bryologist that Ted had an international reputation. But it was based, alas, almost entirely on the riches he poured out in letters to inquiring friends - the leading bryologists of the day - or by the loan to them of specimens he had collected. For Ted published little himself. As a co-author of the Census Catalogue of British Mosses he made an invaluable contribution to bryology; there were also a few shorter papers. On lichens he did not publish, but he attended a number of field meetings of the BLS as well as the inaugural meeting in 1958. In addition he often went on short field trips with lichenological friends. But lichens remained a subordinate interest to bryophytes. Even so he collected several thousand specimens, mostly macrolichens, and he bequeathed these to the Society.

For many years Ted cared for his ageing mother in Sutton, and his travels were restricted in consequence. After she died he got about more, and in his later years he travelled abroad a great deal, visiting Asia, Australasia, and America as well as many parts of Europe. He enjoyed the BLS meeting in Tenerife in 1978.

A day in the field with Ted was always a happy experience. He was unruffled by adversity (and generally by human perversity too), and he inspired his companions with an enthusiasm, based on profound knowledge, for long walks over hill and dale as well as long pauses with the handlens by a tree, a bridge, or a hedgebank. The inspiration of his life was contact with nature. He loved its diversity and its inter-relationships. The minute differences between one plant and another were all fitted together in his mind to form a living tapestry. The understanding of a pattern exhilarated him, and thereby he gained some insight into the meaning of life itself.

T. D. V. SWINSCOW

LICHEN SOCIETY GREETINGS CARD

Sphaerophorus globosus

There are still a few of these cards left. The unusual and attractive design is in black and white surrounded by a blue border. These cards are produced by Claire Dalby exclusively for the BLS, and are blank inside so that they may be used for any occasion. They are sold with envelopes in packets of 10 at £3.00 post free. Proceeds go to the British Lichen Society, to which cheques should be made payable. When ordering by post, send to Mrs A. M. D'Dare,  
13 Barrows Road, Cheddar, Somerset, BS27 3AY.



THE CORRECT NAME FOR *Parmelia perlata*  
Or should we have kept our mouths shut?

In Bulletin 59: 14 (1986) Cudbear referred to the name change from *Parmelia perlata* to *Parmotrema chinense* by Mason Hale and me in Taxon 35: 133 (1986). He remarked that we avoided making the corresponding combination in *Parmelia*.

Apart from the fact that it is illegitimate to combine an epithet with two genera in the same paper, there are other reasons for this. The oldest specific epithet available for this species published in the original name *Lichen chinensis* Osbeck 1757 cannot be legitimately combined with *Parmelia* because there is already *Parmelia sinensis* Hue 1899. According to Art. 64.2, Ex. 8 of the International Code of Botanical Nomenclature "chinensis" and "sinensis" are considered to be orthographic variants of the same word, and the application of chinensis under *Parmelia* would create an illegitimate later homonym.

Instead, when placing this species in the genus *Parmelia* we have to adopt *Parmelia coniocarpa* Laurer 1827. This name was applied to a species described from Australia, but according to Hale in *Brittonia* 13: 366 (1961) it is conspecific with *Parmelia perlata*, which is commonly reported there. I myself have collected this lichen in Australia, and I believe it is the same as the species in Europe.

I am one of the first to regret such name changes. The old name published by Osbeck was actually detected by the bryologist Pekka Isoviita, and I have certainly wondered whether I should have applied the method adopted by some other lichenologists: keep your mouth shut and hope that nobody else will ever come across such an obscure name - or that the rules of nomenclature may change, so that no new name is required!

TEUVO AHTI (agreed with MASON HALE)

LIBRARY CATALOGUE

Enclosed with this Bulletin are two microfiches of the B.L.S. Library Catalogue. These can be read on any suitable microfiche reader (your local Library probably has one) or with a hand lens. Each entry is in the form:- Author Name(s)/Reference/Title.

B.L.S. members can borrow most items held in the Library, although some rare items can only be consulted in Bristol. Members pay the cost of postage in both directions.

It is important to remember that the B.L.S. Library is not comprehensive. It still relies on donations from authors and any further additions will be gratefully received by the Librarian (Dr. D. H. Brown, Department of Botany, The University, Bristol, BS8 1UG). The Library does, however, contain a number of collections, such as those donated by F. A. Sower, E. C. Wallace, T. D. V. Swinscow (on East Africa) and a substantial proportion of items listed in the first 20 parts of the "Literature on air pollution and lichens" series. (Note that the latter collection will be regularly added to by Mr. A. Henderson. He has asked that, as far as possible, members should only approach him for current items under exceptional circumstances; please try the Librarian first.)

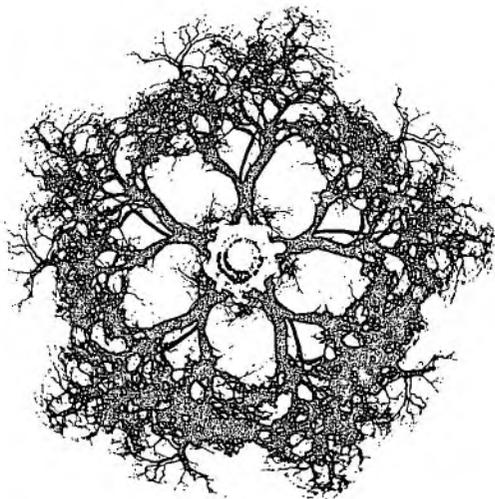
The B.L.S. Library Catalogue is stored on a main-frame computer. Each entry also has an accession number and a very limited series of classificatory categories. A list of the categories can be supplied to anyone interested. In the future it will be possible for B.L.S. members to update their catalogues by photocopies of the annual accession list. It is also possible for members to request searches of the Library catalogue by (a) author, (b) reference (e.g. journal) or (c) words in the title (e.g. Cladonia, sulphur dioxide, Azores). Any additional print-outs from the catalogue will be supplied at cost.

The B.L.S. Library receives The Bryologist (from Vol. 61, 1958), Cryptogamie, Bryologie-Lichenologie (from Revue Bryologique et Lichenologique Vol.27, 1958), Annales Botanici Fennici (from Vol. 12, 1975), Wildenowia (from Vol. 9, 1979) and the International Lichenological Newsletter of the I.A.L. (from Vol. 1, 1967). In the past current issues were circulated within the Reading Circle, until it was realised that postage costs made this an unrealistic service to members. Any member can now request that photocopies of the title pages of these Journals be sent to them as soon as issues are received by the Librarian. The cost of this service is currently 18p. per issue (to cover postage and photocopying charges). Members can then either request that photocopies of specific articles be made for their personal use (usually at 5p. for 2 pages and postage) or borrow the complete issue (paying postage in both directions). If you wish to make use of this service please contact the Librarian, indicating which Journals you are interested in, and open an account to cover future charges. Cheques should be made payable to D. H. Brown and not the B.L.S.

DENNIS BROWN

## LICHENOLOGIA

Up in the dales of north Yorkshire a joint field meeting with local naturalists based on Jervaulx Hall (I understand it will be more fully reported elsewhere in this Bulletin) proved to be the lichenological highlight of the latter part of 1986. One member was heard to refer to it as "a quiet bye"; it may not have been strenuous, but it was certainly rewarding, with twenty or so new records for the 10 km<sup>2</sup> square. Anaptychia ciliaris, growing on a ledge in a stone wall, was an interesting find. Later, when I saw the illustration (reproduced here) on the back of this year's Findhorn Calendar I wondered whether it was a new Anaptychia species; or perhaps a Sphaerophorus, or even an Umbilicaria. On closer inspection it turned out to be a trick photograph of an oak tree.



(Reproduced by permission of the Findhorn Foundation)

A hundred years ago de Bary coined the term "symbiosis" to refer to the condition found in lichens. Since then the word has been very widely applied (and misapplied), so nowadays we prefer the term "mutualism" (as defined by David Smith), though not all examples of this are what most people would call a lichen. It is well-known that all wild plants of the Atlantic seaweed Pelvetia canaliculata contain the fungus Mycosphaerella ascophylli (though plants of the very similar

Pacific Pelvetia fastigiata never do). Kingham and Evans recently carried out extensive experiments, but were unable to demonstrate any movement of mannitol (such as occurs in lichens) between the hyphae of the two organisms. It is possible that the fungus utilises the alginates in the seaweed thallus. In the opening lecture of the February symposium David Hawksworth reviewed the many forms of mutualism that involve ascomycete fungi and considered their evolution and the implications for taxonomy. He pointed out amongst other things that frequently mutualism involves more than two bionts and sometimes up to at least four. He did not however coin names for the different kinds of "polybiont" associations !

As the study of lichen substances (often called "chemistry") becomes increasingly important for lichenologists so the real chemistry of them as investigated by chemists becomes more complex. Many lichen acids are depsidones and consist of two chemical ring structures (orcinol units) linked together in a characteristic way. Recently Gunzinger and Tabacchi of the University of Neuchatel isolated a new depsidone from Pseudevernia furfuracea (which they call "mousse d'arbre" presumably by analogy with "mousse de chêne" for Evernia prunastri). They have named it furfuric acid; it has three orcinol units, and as they say "Une telle structure n'a, jusqu'ici, jamais été décrite". Later they synthesised another new depsidone, a derivative of furfuric acid, starting from orcinol units. This enabled them to give their paper a title that must be a record: it includes the chemical name of the new substance set out in full, and occupies three whole lines of type (the name consists of 117 characters, excluding hyphens, parentheses, brackets and commas).

The Cosmetics Industry Association has issued a statement to the effect that paradiphenylenediamine is not carcinogenic. A spokesman said "The dye has been widely tested to see if it might cause cancer and it has come out clean". The occasion for this remark was the death from kidney failure of two women in Belfast who had been dyeing their hair with Pd for many years. These are the first deaths from this cause to be reported, although Pd has been widely used as a hair dye for more than a century. However, it is known that a small percentage of people are hypersensitive and may suffer from dermatitis or asthma after coming in contact with it. Lichenologists use Pd intermittently and in very small quantities and don't usually let it touch the skin, so the risk involved in employing this useful test reagent would appear to be negligible.

The Bulletin of the British Mycological Society, which used to appear in a format very similar to that of the British Lichen Society, has now blossomed forth into a fifty page pocket magazine printed in full colour with a new title (The

Mycologist) and a cover price of £1.50. Innovations in the first issue include providing photographic vignettes of distinguished persons attending forays (for a recent Scottish foray these include Bruce Ing, one of the more long-standing members of the Lichen Society), a gastronomy column (with a First Century Roman recipe for cooking toadstools) and "Profiles of Fungi" in which descriptions are given of unusual species with ecological notes and illustrations in colour. I am sure we all wish this new venture every success, and hope that eventually our Society may be able to produce something similar for lichens.

CUDBEAR

KEY TO THE IDENTIFICATION OF SOME COMMON EXTANT BRITISH (sensu lato)  
LICHENOLOGISTS (incomplete)

1. Gender male	.....	2
1. Gender female	.....	15
2. Physiognomy hirsuite	.....	3
2. Physiognomy shaven, depilated, hairless or bare	.....	8
3. Distribution not confined to British Isles, now found in North American Continent	.....	4
3. Still found in British museums	.....	5
4. Found in University approx. Lat. 39°N, Long 77°W	.....	A
4. Found in University approx. Lat. 43°N, Long.80°W	.....	B
5. Distribution English	.....	6
5. Distribution Scottish	.....	7
6. Beard black, hairline on capitus receding more or less advanced, occasionally found in Southern Hemispheres	.....	C
6. Beard gingery to grey, occasionally absent	.....	D
7. Beard pendulous, shrubby, hairs less than 20mm	.....	E
7. Beard pendulous, shrubby, hairs greater than 20mm	.....	F
8. Found in British Universities	.....	9
8. Not found in British Universities (or occasionally only)	.....	14
9. Physiologically or ecologically orientated	.....	10
9. Taxonomically orientated	.....	14

10. Distribution confined to Bristol	.....	11
10. Found elsewhere	.....	12
11. Saxicolous (i.e. Extra-Mural)	.....	G
11. Terricolous (i.e. down-to-earth Botanist)	.....	H
12. Found in England north of Lat. 53°	.....	13
12. Found in S. Ireland north of Lat. 53°	.....	I
13. Hairs on head sparce, confined to edges and usually sideways erect, greyish	.....	J.
13. Capital hairs dark (still), chin receded; inside of cranial cavity not yet entirely replaced by computer	.....	K
14. Pate smooth, shiny, peripheral hair dark, found in famous fungal Institute	.....	L
14. Pate mainly bare, peripheral hair greyish, found in famous London museum	.....	M
15. Distribution in or around London	.....	16
15. Distribution westerly	.....	17
15. Distribution Scotland. Often in Horticultural Research Unit.	.....	N
16. This taxon requires microchemical tests to identify, and has recently undergone (1985) nomenclature changes.	.....	O
16. This accented genus is an editor of <u>The Lichenologist</u> .	.....	P
17. Found at the bottom of a famous west-country gorge	.....	Q
17. Found further west on the western edge of the M5 at exit exit 28	.....	R

A = A. Fletcher, B = K. A. Kershaw, C = D. J. Galloway, D = P. W. James,  
E = B. J. Coppins, F = R. K. Brinklow, G = D. J. Hill, H = D. H. Brown,  
I = D. H. S. Richardson, J = O. L. Gilbert, K = M. R. D. Seaward,  
L = D. L. Hawksworth, M = J. R. Laundon, N = P. B. Topham, O = F. J. White,  
P = P. M. McManus, Q = A. M. O'Dare, R = B. Benfield.

- ANON

## GENERAL MEETING: FEBRUARY 1987

A three-day meeting was held on 19-21 February 1987. The bicentenary of the Linnean Society of London falls in 1988, and as part of the celebrations of this event a joint symposium was organised by the two societies on the first day. It was entitled Horizons in Lichenology and took place in the rooms of the Linnean Society. The papers that were presented will be published in the Botanical Journal of the Linnean Society. On the second day, the Lichen Society organised another symposium entitled Variations in Lichens which also took place in the rooms of the Linnean Society. On the third day the Annual General Meeting of our Society was held at the British Museum (Natural History). It was followed by a display of exhibits mounted by members of the society, and a Workshop Meeting on the new Flora of the Lichens of Great Britain and Ireland.

### Horizons in Lichenology

Prof. Hawksworth spoke about mutualistic associations between fungi and algae and/or cyanobacteria. He pointed out that as well as 'two-biont' systems, 'three-biont' and even 'four-biont' systems exist. He went on to show that in some fungus groups mutual adaptation in these kinds of association is evolving in the direction of greater complexity, while in others the bionts are becoming more independent and mutualism is being lost. These observations lead to a better understanding of evolutionary relationships in the ascomycetes.

Prof. Dr. Jahns described observations on the early growth and development of lichen thalli, in the field and in culture. The early stages have a low degree of organisation, which shows considerable variations. Development does not follow a uniform course, but is considerably affected by environmental conditions. When several very young plants grow close together, fusion between them and the formation of chimaera-like thalli is common.

Prof. Richardson reviewed the ways in which lichens are used to monitor atmospheric pollution, and pointed out the problems of interpretation of the effects observed. A deeper understanding of the effects of pollution on lichens is required.

Dr. Galloway used the Lobariaceae and Pannariaceae to demonstrate the spectacular speciation that has occurred in these families in the southern hemisphere. Plate tectonics can be used to explain the distribution patterns that are observed.

Mrs. Winchester explained how lichenometry had been used in dating two neolithic stone circles. In spite of growth variations in different microhabitats, promising results had been obtained.

Dr. Serusiaux said that foliicolous lichens are especially common in tropical and subtropical primaeval lowland rainforest, but also have a relict distribution in Europe. Six ecologicla groups of these lichens can be recognised.

Dr. Rose showed on a basis of surveys in forests from Norway to the Pyrenees and northern Italy that although Lobarion communities are still widespread in montane regions, they are restricted to the Atlantic coastal zone in the lowlands. He attributed this to forest management practices and air pollution.

Dr. Seaward gave an historical account of the study of the lichen flora of the British Isles, leading up to a description of the network recording programme in progress at present. He assessed its strengths and weakness, and speculated on the consequences to be expected from improvements in computer database techniques.

Unfortunately Prof. W. L. Culberson was unable to be present to deliver his paper on Developments in understanding chemical variation in lichens with reference to recent cultural studies.

General discussion at the end of the Symposium was conducted by Mr. P. W. James. In the evening a Symposium Dinner was held at Imperial College.

FRANK BRIGHTMAN

### Variations in Lichens

Dr. Dalby set the scene as it were by showing some superb colour slides illustrating variation in a number of species. He remarked that to state that Haematomma ventosum is sometimes yellow and sometimes white is "a naive observation". He then attempted to provide possible explanations for variations in half a dozen or so species and came to the conclusion that attributing these to ecological factors was "another naive explanation". Such naiveties are useful at society meetings as a stimulus to more critical observation!

Dr. Coppins discussed colour variation in lichen ascocarps. He began by saying that he had never seen a black hypothecium or a black epithecium; many very dark colours, yes, but black, no. He stressed the importance of examining very thin sections, using scrupulously clean glassware, and deionised water. In many cases considerable colour changes (such as from green to pink) occurred with changes in pH; in others changes were less marked, and might take as long as an hour. He went into considerable detail, and it is to be hoped that his observations will appear in print (perhaps in the Bulletin) in the not too distant future.

Dr. Pentecost spoke about variation in yellow species of Rhizocarpon. A large number of taxa have been described, often on a basis of small differences. For instance, R. lecanorinum is distinguished from R. geographicum by having thicker, more convex and less angular apothecia. The study of variation within species is only just beginning, and may ultimately lead to the recognition of a smaller number of species.

Mr. Limbsch gave a scholarly account of the genus Diploschistes in Europe. He provided a key to the species that he recognises, which though requiring the observation of considerable detail, seemed to be workable. I look forward to reading his definitive paper, the publication of which I hope will not be long delayed.

Dr. Gilbert described first, the progress of colonisation over a period of nine years of a wall-top by Parmelia saxatilis from isidiate non-fertile transplants. Colonisation ceased after some years, but recommenced when the second generation plants became isidiate. His second contribution concerned the life cycle of the fungus Lichenocodium erodans, which is a parasite on Lecanora conizaeoides. It appears that its growth is highly seasonal, beginning in December and ceasing in March. Dr. Gilbert's contributions

gave rise to much animated discussion!

Dr. Fletcher said that he had listed 55 species of lichen on Bardsey Island, and he presented distribution maps of selected examples of them. He then demonstrated how these distributions could be analysed statistically in various ways, but admitted that it was difficult to draw firm conclusions about causal influences from them.

Dr. Brown discussed the effects of heavy metals on Peltigera species, and demonstrated that the degree of tolerance shown by some populations was affected by their previous history (for instance, exposure to cadmium induces resistance to zinc). However, perfusion with potassium ions appears to remove such effects. It is doubtful whether heavy metal tolerant populations really exist.

In the evening there was a buffet supper, followed by a book sale.

JOY FILDES

#### The Exhibition

David Hawksworth: "Systema Ascomycetum"

An elegant, but very complex, diagram illustrating a new concept in the development of ascomycete classification.

Claire Dalby: "Lichens of Rocky Seashores"

A late proof of the new wall chart, now available from the Publication Section of the British Museum (Natural History).

Jack Laundon: "Works of reference for the study of British lichens"

A comprehensive bibliography (extending to two sides of A4 paper).

Tom Chester: "Lichens in churchyards"

A series of photographs of lichens on grave stones.

Barbara Benfield: Chaffinch nest with Parmelia perlata.

The Secretary: Results of the logo competition (13 entries, and some late ones by Claire Dalby).

#### Flora Workshop

After a brief introduction about how the Lichen Flora is progressing William Purvis outlined some of the problems facing him and the Flora Committee and how they are trying to deal with them. He discussed the

programme of work as planned at present and outlined the sequence of events leading to the completion of the Flora in 1990. A number of preliminary keys to the species of various genera were available, and the meeting took the opportunity of trying them out, and offering comments on them.

### THE BOOK SALE

Achieved by Frank and Mark, the sell anything to anyone, expert team. These are some of their delightful comments written down while I was lying down on the back bench suffering from hiccups ... No - I was not drunk.

"Here is a real collector's piece, unmarked by Pd and K."

"Can't we get the National Trust to bid for this item, because at the moment its going abroad."

"No, you sell that one, because you can pronounce it."

"Oh good, we've got £19.00 from David. Isn't it lovely to nail the president" David - "It's late and I want to go home."

"This was first published in 1935, its a real antique."

"What did you decide (price) about that volume?" "It's in german."

"Here is a really archival piece. It is 40p. with the cover, 50p. without the cover and 60p. with P. James signature.

And I have Peter James permission to tell you that this team managed to sell him the Warne Pocket book of lichens ....

Thank you Frank and Mark for achieving a record sales income for the society and making a free gift of a most entertaining evening.

JOY FILDES

### FORTHCOMING MEETINGS: PRELIMINARY NOTICE

The next meeting of the Council of the British Lichen Society will be on Friday 25 September 1987, and the one after that will be on Friday 8 January 1988. If you have any items you would like to be included on the agenda paper, please inform the Secretary.

The next Annual General Meeting of the Society will be held at 10 am on Saturday 9 January 1988 in the rooms of the Royal Entomological Society, 41 Queen's Gate, SW7. It will be followed by an exhibition and lecture meeting; the theme will be lichen identification. On the previous evening (Friday 8 January) there will be a buffet supper followed by a book sale, also at the Royal Entomological Society.

## SECRETARY'S REPORT FOR 1986

It is the first time since 1961 that the Secretary has not been based at the British Museum (Natural History), but Joy White has made the transition as smooth as possible, still forwards all Society mail addressed to the Museum, deals with the bookings and is always willing (and usually able) to help over any queries.

There has been a steady stream of correspondence, much of it from school children, young students, teachers or student teachers usually asking for information on lichens and air pollution. Usually I direct them to the relevant literature, put them in touch with a local lichenologist and wish them well. A couple of local enquirers that I have spoken with have completed a little project, so your turn might come to gain a protegee!

The year started with a reasonably well attended A.G.M. and lecture meeting. The Conservazione the evening before saw 38 people socialising around an excellent buffet, and bidding for a variety of books which again raised funds for the Society.

35 new members joined the Society during 1986 and the current membership stands at 527. Several members have died recently and we particularly remember Alice Burnet and Ted Wallace who have bequeathed their lichenological collections to the Society; these included books, reprints, slides, ephemera, herbarium, microscopes and a slide projector. The collections were sorted by the Librarian and Archivist and the Curator. Reprints, some books and archival material were added to the Society's collections at Bristol and the other books and two long runs of The Lichenologist were sold at the book auction. The money raised from this is to be earmarked for lichenological projects, and application can be made via the Council. It was Alice Burnet's intention that her microscopes should be housed in the Botany Department of the British Museum (Natural History) for use by Society members and it has been agreed to engrave them and make them available for use, on a short term basis, for field trips, workshops and so on.

Both the Lichen Flora project, which is assisted by the Society, and the Acid Rain project, which is not officially sponsored by the Society, have benefited much from the expertise within the Society and are both going well. A report on the Society's activities was submitted to a House of Lords Select Committee and appears in Volume 3 of its Report. The Society is represented on the Biological Council and the Conservation Association of Botanical Societies.

The year has been somewhat longer than usual as the A.G.M. was moved from the first week-end in January to 21st February so as to follow the joint meeting with the Linnean Society of London which is celebrating its bicentenary. Our thanks are extended to Dr. D. H. Dalby for his part in the organisation of the 'Horizons in Lichenology' and 'Variations in Lichens' meetings. The A.G.M. will be on Saturday 9th January.

TIM MOXHAM

#### TREASURER'S REPORT FOR 1986

It will be seen from the accounts presented here that the cost of printing and circulating the Lichenologist shows a substantial increase of approximately £2,700. This is the result of publishing it quarterly instead of three times a year. In spite of this increase members' subscriptions give a margin of around £700 over the cost of the Lichenologist which together with Bank interest enables me to show a modest surplus of £648. The printing of a Supplement to the Bulletin "A New Guide to Microchemical Techniques for the Identification of Lichen Substances" at a cost of £925 is an exceptional item of expenditure and consequently has reduced the surplus for the year by that amount. It really is a Net Revenue item.

I have made a few alterations to the format in an effort to make the figures less burdensome and possibly more interesting to members. For instance, I have shown the result of the Book Auction separately which in the past has been amalgamated with the Annual General Meeting expenditure, the same applies to 'Cash in Hand' at banks. The Balance Sheet item under the heading of 'Cash in Transit' represents a cheque drawn by the Assistant Treasurer in Canada forwarding the subscriptions collected by him during 1986 did not arrive in the Society's bank in England until January 1987, although posted on 18th December 1986. Christmas postal delays operate in Canada as well as the U.K. apparently.

May I conclude by voicing my personal thanks to Frank Dobson and John Sheard, the two Assistant Treasurers, for the conscientious way they have helped and to Dr. T. D. V. Swinscow who manages to find time, in a very busy life to perform the important task of Auditor.

S. N. TALLOWIN

Statement of Expenditure and Income for the Year 1986

<u>1985</u>	<u>Expenditure</u>	<u>£</u>	<u>Income</u>	<u>£</u>	<u>1985</u>
<u>£</u>					<u>£</u>
5423	Cost of Lichenologist	8150	Subscriptions	6279	7014
1748	Less Profit sharing	<u>2643</u>	Life members (1/5)	80	80
	Subscriptions paid:-		Reading Circle	8	6
5	CoEnCo	5	Checklist (Profit on		
15	Biological Council	15	Sales)	28	17
26	Cryptogamie Bryol.	30	Atlas - Sales	26	6
24	American Bryol-Lichen.	29	Royalties:-		
20	Inter. Mycol. Assoc.	<u>19</u>	Dr.U.K.Duncan's Book	129	61
		98	Dr.D.H.Brown's Lichen	43	38
			-ology		
785	Bulletin less receipts	1274	Book Auction(A.G.M.)	269	
39	Postage	123	Interest received:-		
	Stationary	50	Banks	971	987
	Christmas Cards	187	National Savings		
61	Less sales	<u>125</u>	Bond	1083	1048
50	Insurance	50	Sundry Receipts	3	
	Filing Cabinet (Pt cost)	75			
	Annual General Meeting (Net)	85			
	Guide to Microchemical				
	Techniques (Cost)	925			
	Sundry small payments	22			
4573	Excess of Income over				
	Expenditure	<u>648</u>			
		<u>8919</u>		<u>8919</u>	

Balance Sheet as at 31.12.1986

<u>Liabilities</u>		<u>Assets</u>	
Subscriptions paid in advance	42	Cash in Transit	997
Conservation Fund	432	Cash at banks	6107
Grants:-		National Savings	
B.P. International	400	Bonds	10744
Royal Society	500	Stocks:-	
General Fund	16623	Checklists	550
Add surplus for year	<u>648</u>	Keys	222
	17271	Pd	25
	<u>£18645</u>		<u>£18645</u>

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

T.D.V.Swincow  
Honorary Auditor

18th April 1987

S.N.Tallowin  
Honorary Treasurer

## ANNUAL GENERAL MEETING 1987

The Annual General Meeting on the final day of the three days of meetings was attended by 42 members. The Officers' reports took some time as the Society's activities had been many and varied throughout the year. Membership numbers were stable, the accounts were in a healthy state and the Treasurer suggested awarding small grants towards travel and expenses involved in field work.

The Lichenologist was published in four parts, and the 1987 volume will be larger than usual, since a grant has been received from the Royal Society to cover the costs of publication of a long paper on the lichen flora of Gwynedd. The Bulletin maintained its usual high standard and thanks were expressed to Oliver Gilbert for all the work he has put into this. He is taking a year off and Frank Brightman has kindly agreed to take on the task of editing the Bulletin. The Mapping Recorder asked that cards filled in during field meetings should be sent to him to update his records; the Librarian promised a catalogue of the library on microfiche, reminding members of the 35mm slide collection and made his usual plea for archival material. It was suggested that the Curator should produce boxes of selected lichens from particular habitats which could be useful to new or experienced members, and at field meetings. Field meetings had been well attended and the news sheet which accompanies each Bulletin is now getting so large that it may spread on to two sheets.

The topic which took the lion's share of time was the Conservation Officer's report. Vince Giavarini had resigned his position and Frank Brightman was now the Acting Conservation Officer. Frank stressed the importance of getting the right person for the job and getting the Conservation Committee back on its feet.

Frank Brightman was elected as Acting Conservation Officer and Bulletin Editor; the other officers were elected nem. con. and, after a ballot, Peter James, John-Henry Looney and Sandy O'Dare were elected on to Council.

The President recorded the Society's thanks to Kery Dalby and Tim Moxham for organising the successful three days' meetings, and expressed our thanks to David and Trish Galloway for their excellent buffet the previous evening. Thanks, too, went to Frank Brightman and Mark Seaward for organising the book-sale which raised some £270 for the Society.

After the A.G.M. several members showed slides of recent field meetings and Tony Fletcher, over from the U.S.A., showed a series of transparencies of habitats around where he now works and tried to persuade the B.L.S. to organise a joint field meeting over there!

ETYMOLOGICAL NOTES ON LICHEN NAMES - PART 3

16. Calicium viride Green, and with tiny goblets.  
Derivation: calix (Latin) = cup, drinking-vessel.  
-ium (Greek diminutive suffix) = little.  
viridis (Latin) = green.
17. Candelariella aurella A small candle-holder, with minute golden flames.  
Derivation: candela (Latin) = a tallow-candle, wax-light.  
-arium (Latin noun suffix) = a container.  
-ellus (Latin diminutive suffix) = little.  
aureus (Latin) = gold.
18. Cetraria cucullata Like a Spanish shield, and adorned with hoods.  
Derivation: cetra (Latin) = a short Spanish-style shield  
(more usually caetra).  
-arius (Latin suffix) = a related to, connected with.  
cucullus (Latin) = a cowl, cap on a cloak.
19. Lecanora conizaeoides With fruits like plates, and as if dust-laden.  
Derivation: lekos (Greek) = dish, pot, plate or pan.  
-anus (Latin suffix) = associated with.  
-orus (Latin suffix) = belonging to.  
Konis (Greek) = dust (NB the verb, konio = I cover  
in dust, has an aorist form in ekonisa).  
-oides (Greek suffix) = like.
20. Melaspilea displasiospora Black-spotted, large-spored.  
Derivation: melas (Greek) = swart, black.  
spilos (Greek) = a spot, stain, blemish.  
diplasios (Greek) = twice as many, twice as  
large as.  
spora (Latin) = spore, seed.
21. Ochrolechia tartarea A pale marriage-bed, with rough and crumbly surface.  
Derivation: ochros (Greek) = wan, sallow.  
lechos (Greek) = a couch, marriage-bed.  
tartareus (Latin) = crumbly and rough on the surface.

22. Phaeophyscia endophoenicea Dusky grey, with inflations and purple  
-red inside.

Derivation: phaios (Greek) = dun, grey.  
physke (Greek) = sausage (derived from physao =  
I inflate: note the reminiscence of the thallus-  
form in some Physcia species).  
endon (Greek) = within  
phoinikeos (Greek) = purplish-red.

23. Sticta limbata Punctured and bordered.

Derivation: stiktos (Greek) = spotted, dappled, pierced  
(derived from stixo = I prick, pierce with a  
pointed instrument).  
limbatus (Latin) = clearly bordered, with one  
colour edged by another.

24. Thamnomia vermicularis Of shrubby growth, resembling worms.

Derivation: thamnos (Greek) = a bush, shrub.  
vermicularis (Latin) = wormlike, almost  
cylindrical and bent, bending.

A. HENDERSON

#### PRELIMINARY NOTICE OF INTERNATIONAL MEETING

The next AETFAT (Association for the Taxonomic Study of the Flora of Tropical Africa) Congress will be held at the University of Hamburg, Hamburg, West Germany, during September 1988. The provisional dates are 4 - 10 September 1988. One of the concurrent symposia to be held during the congress will be on African lichens. Lichenologists interested in attending or contributing towards the programme are invited to contact : Dirk Wessels, Department of Botany, University of the North, Private Bag X1106, Sowenga, Republic of South Africa, 0727. Non-taxonomic contributions will also be appreciated.

## A SUBSTITUTE FOR P-PHENYLENE DIAMINE

p-Phenylene diamine (P or Pd) is widely used as a test reagent in lichen chemotaxonomy, although it can cause allergic reactions if absorbed through the skin. Santesson proposed the use of o-dianisidine (OD); this compound however, is a possible carcinogen. P is a developing agent for black and white photography and derivatives of P are used as colour developing agents. The allergenic reaction associated with P are reported to be reduced by the presence of certain substituent groups in these derivatives. This suggested the testing of available colour developing agents as possible replacements for P.

The reagents were prepared in solutions containing sodium sulphite, which acts both as an alkaline buffer and as an anti-oxidant as in the widely used Steiner's P. solution.

The results obtained with Colour Developer 4 (0.62 g of CD4 and 2 g of anhydrous sodium sulphite dissolved in 20 ml of water), supplied by Merck and Kodak were:

	CD4	P
fumarprotocetraric acid ( <u>Cladonia ochrochlora</u> Floerke)	red	red
thamnolic acid ( <u>C. pertricosa</u> Krempelh.)	red	yellow
psoromic acid ( <u>C. subpityrea</u> Sandst.)	orange	yellow
norstictic acid ( <u>Baeomyces heteromorphus</u> Nyl)	orange	yellow
baeomycesic acid ( <u>B. fungoides</u> (Sw.) Ach.)	orange-red	yellow
phyciosporin ( <u>Pseudocyphellaria phyciospora</u> (Hook.) Mont.)	orange	orange
pannarin ( <u>Pannaria fulvescens</u> (Mont.) Nyl.)	orange-red	orange

The other CD compounds examined gave similar colours ranging from orange to red, whereas the P reagent gave distinct yellow, orange or red. The Steiner's solution was brown when prepared and gradually turned dark brown and gave a brown deposit.

The CD4 reagent has remained colourless for three months and is suggested as a colourless, more stable and possibly less allergenic alternative to p-phenylene-diamine (P).

CD4 is readily available from:

Rayco (UK) Limited  
Blackwater Way, Ash Road,  
Aldershot, Hampshire.

Hogg Laboratory Supplies  
Sloane Street,  
Birmingham B1 3BW

A. W. ARCHER

#### LICHENS IN SUBURBAN MANCHESTER

A large, old ash tree, covered in Lecanora conizaeoides, caught my eye when I visited Broad Oak Primary School in Didsbury, some 5 miles (8 km) south of the city centre of Manchester recently. It was standing in the boundary hedge of the school, and had been lopped at some stage, for it had several trunks of roughly equal size spreading from about three feet from the base. A horizontal branch at this level held Hypogymnia physodes, Parmelia sulcata, and extensive sheet of Physcia tenella and several plants each of P. ascendens and P. orbicularis. A small plant of Evernia prunastri was found growing towards the bottom of a sloping branch up which scattered plants of H. physodes and Parmelia spp. could be seen to a height of at least 10 feet. A tiny clump of Usnea (presumably U. subfloridana) a centimetre in diameter, was growing at eye-level on another trunk.

This site is the closest to the centre of Manchester that I have seen with an Usnea sp., although I know sites in Bramhall (12.5 km SSE of centre) and Torkington (14 km. SE). I have a record of a tiny fragment of Evernia prunastri on Norway Maple (Acer platanoides) in Rusholme 5.5 km. SE of centre.

Trees in suburbia now often appear richer in lichens than exposed trees on the Cheshire Plain. Do modern, smokeless housing estates have a sheltering effect similar to that found in the centre of a wood?

JONATHAN P. GUEST

#### NOTE FROM THE MAPPING RECORDER

When "New, rare or interesting British lichen records" was introduced into the Bulletin some years ago, most members found it a valuable innovation. Such records are, of course, important for the mapping scheme.

However, when I checked the 12 issues of the Bulletin in which this column has appeared for additional records for the computer files, the task proved unexpectedly difficult since most localities were not supported by grid references; furthermore, more than half the locations without grid references could not be traced in standard ordnance survey gazetteers, occasionally due to incorrect spelling, or because there were two similarly named sites, but more often due to the citation of local woodlands, etc. not named on ordnance survey maps. Of course, it is essential that such records are accurately cited and precisely located (to 10 km x 10 km grid square level only in the case of certain rarities, for obvious reasons), so that not only the mapping recorder but the many others relying on information based on these columns can more conveniently make use of the data.

It would be greatly appreciated if members submitting such records to the Bulletin would always give a grid reference, or at least indicate the 10 km square, and also send a copy of the record to the mapping recorder.

M. R. D. SEAWARD

#### A BLS LOGO

Thanks are due to a number of people who sent in entries for the Logo competition. The drawings were on display at the Annual General Meeting for members' comments, but Council was rather cool to the ideas put forward. If you have any strong ideas either for or against a Logo, please write to the secretary and express your view; if no-one has any strong feelings either way, the idea may have to be dropped altogether. Quite a lot of correspondence passes between the Society and other individuals and institutions and it is good to portray a strong image of what the Society stands for - a Logo helps to impress this on peoples' minds. A suitable Logo on our note-paper would not only be attractive but representative of the Society's activities.

Please send your comments, ideas and designs to the secretary.

#### NOTE ON Arthopyrenia areniseda

A. areniseda is common on Braunton Burrows in dune slacks 300-400m from the sea, in depressions which are subject to inundation by rain water during the wettest months. It grows on bare damp areas, consolidating the sand to a hard grey white crust. No other lichens were seen in these depressions but Nostoc was growing on all the A. areniseda thalli examined.

Associated plants are Salix repens, Carex arenaria, Equisetum variegatum, Festuca rubra spp. arenaria, and Hypochaeris radicata.

A. areniseda also grows in damp wheel tracks on Penhayle Sands, Cornwall. W. Watson catalogues four other V.C. records.

Due to lack of fresh material A. areniseda was listed in the 1980 check list as a non lichenised fungus. Despite this it seems to be lichenised with a somewhat yellowish blue-green photobiont, misidentified as Trentepohlia by Miss A. L. Smith. A. areniseda belongs to a group of Arthopyrenia (sens. lat) with blue-green photobionts that includes A. caesia, A. halodytes, A. monensis, A. strontianensis, and A. subareniseda.

A. areniseda and A. subareniseda both grow in lime rich dune slacks but can be separated by the sizes of their ascospores, which are:  
26-37  $\mu$  x 9-10  $\mu$  and 15-19  $\mu$  x 6-7.5  $\mu$  respectively.

Dr. B. J. Coppins kindly identified the specimens and gave me information on the systematic relationship and the photobionts.

BARBARA BENFIELD

#### NEW BRITISH MUSEUM (NATURAL HISTORY) WALL CHARTS

The British Museum (Natural History), Cromwell Road, SW7, has just published two new wall charts illustrating cryptogams. One is on mosses, the other on lichens of rocky shores.

The lichen wall chart is the second in a series by Claire Dalby, and is a worthy successor to the first one on corticolous species. If you did not see the proof of the Lichens of Rocky Shores chart at the Annual General Meeting and would like to refresh your memory of the excellence of Claire Dalby's work, look at the reproduction of the design on the BLS greetings card on page 13.

The price of the new wall charts is £2 each. If you are ordering by post, add 20% post and packing charge. The price for the BLS greetings card is £3 for a pack of ten, with envelopes, and post free (see page 13).

NEW, RARE AND INTERESTING BRITISH LICHEN RECORDS

(Contributions to this section are always welcome. Please submit entries in the form species: habitat: locality: vice county (V.C.): grid reference (G.R.): date: comments: recorder. Grid references may be abridged in the interests of conservation; they will be omitted when the record has been published elsewhere).

Acarospora umbilicata: An overlooked species on sandstone or brick subject to calcareous runoff from mortar, etc. Records for VC 26, W. Suffolk (1985), VC 88, Mid Perth (1985), VC 62, N-east York (1986), VC 64, Mid-W. York (1986), and earlier records, in The Naturalist 111, 139-144 (1986).

A. Henderson

Allantoparmelia alpicola: Summit rocks of Cairn Table S of Muirkirk on the boundary between VC 75, Ayr, and VC 77, Lanark. Alt. 590m. GR26/724243. (1986) The only station in southern Scotland known so far.

R. W. M. Corner

Arthrothelium ilicinum: A local species of west Ireland, south west England and west Scotland. Cape Clear Island, VC H3, W. Cork (1979, previously reported as A. spectabile), in Cape Clear Bird Observatory Report 18, 71-75 (1985).

M. R. D. Seaward et al.

Baeomyces rufus: On compacted gravel of a disused railway line amongst Calluna, Fritton Warren, Suffolk. VC 25, E. Suffolk. GR 63/40-18- (1987). One thallus 15 cm. in diameter was abundantly fertile, with other thalli nearby.

P. Cayton and C.J.B. Hitch

Lempholemma chalazenellum: A rare species, known in Somerset, new to Ireland. VC H9, Clare (1983), in Irish Naturalists' Journal 22, 205 (1987).

P. M. McCarthy

Lempholemma chalazenooides: An uncommon species known from western England and Yorkshire, new to Ireland. VC H9, Clare (1985), in Irish Naturalists' Journal 22, 205 (1987).

P. M. McCarthy

Micarea misella: On softwood on decorticate trunk of Alnus glutinosa in marshy area at N. end of Cannop Ponds, Cinderford, Gloucester. VC 34, W. Gloucs. GR 32/610113. (1986). A southward extension of the range of this species in Britain.  
A. Orange

Micarea sp. (very close to M. ternaria: det. B. J. Coppins). On Lewisian gneiss pebble in damp peaty moorland, Maevag, Harris. VC 110, Outer Hebrides. GR 18/15-96-. (1986). Also known from Fair Isle and Western Ireland.

P. Cayton and C.J.B. Hitch

Parmelia endochlora: In Armeria heath on N. facing sea cliffs E. of Hurlstone Point, Porlock. VC 5, S. Somerset. GR 21/901493. (1985). New to Somerset. (With P. taylorensis, Heterodermia obscurata (c.fr.), Teloschistes flavicans).

V. Giavarini and F. Rose

Parmelia soledians: On sandstone memorials in churchyards at Icklesham (VC 14, E. Sussex, GR 51/881165) and Dymchurch (VC 15, E. Kent, GR 61/103298) (1986).

K. Palmer

Parmelia soledians: Crom Castle on the shore of Upper Loch Erne, VC H33, Fermanagh. GR 23/357242. (1986). First Irish record outside the south west peninsula; next nearest station 200 km away, VC 52, Anglesey.

A. Fryday

Parmelia stygia: On east facing acid Silurian shale outcrop at 550 m on Treheslog Bank, Llansantffraed Cymdeuddwr, VC 43, Radnor, GR 22/940690. (1986). There appear to be doubts whether this sp. has ever been previously recorded in Wales. Known from the E. Highlands of Scotland and formally the E. Pennines. This adds to the growing number of lichens with an E. Welsh and E. Scottish distribution.

R. G. Woods

Platismatia norvegica: On rock, Mattesdale, VC 70, Cumberland. Alt. 520m. GR 35/3--2---. (1987). New to England.

R.W.M. Corner

Polyblastia wheldonii: On peaty soil amongst machair, with Solorina spongiosa, Luskentyre Banks, Harris. VC 110, Outer Hebrides. GR 18/07-99-. (1986).

C.J.B. Hitch

Polysporina dubia: A parasitic species, usually on Acarospora sp. Records for VC 85, Fife with Kinross (1986), VC 62, N-east York (1986) and an earlier record, in The Naturalist 111, 139-144 (1986).

A Henderson

Porina byssophila: A continental European species, new to Ireland. VC H9, Clare (1985), in Nova Hedwigia 43, 367-372 (1986).

P. M. McCarthy

Solorina crocea: At side of stalkers' path on N. side of Creagan a' Chaouruin, Invershoran, Strath Conon. VC 106, East Ross. Alt. 380m., 100m. lower than the record in Bulletin 59. GR 28/265496. (1972).

R.W.M. Corner

Staurothele bacilligera: A continental European species, known also from the Pennines (VC 64, Mid-W. York), new to Ireland. VC H9, Clare (1982), in Nova Hedwigia 43, 367-372 (1986).

P. M. McCarthy

Staurothele guestphalica: A western European species, also recorded from Scotland (VC 108, W. Sutherland), new to Ireland. VC H9, Clare (1982), in Nova Hedwigia, 43, 367-372 (1986).

P. M. McCarthy

Thelocarpon lichenicola: On this algal scum on shaded dolomite pebbles in woodland, Taff's Well, Garth Wood, Glamorgan. VC 41, Glam. GR 32/610113. (1986). Also on sandstone embedded in a woodland bank, Allt y Rhiw, Blackmill, Glamorgan. VC 41, Glam. GR 21/936861. (1987).

A. Orange

Tonina kolax: Parasitic on Placynthium nigrum. New to Ireland (previously known only from Bavaria). VC H9, Clare (1984), in Nova Hedwigia 43, 367-372 (1986).

P. M. McCarthy

Trapeliopsis percrenata: On peaty soil below a decaying stump by Afon Hirnant, Ty Mawr Mill. Llanfihangel Brynpabuan, VC 42, Brecknock, GR 22/990570 (1986). Probably the first record south of the Scottish Highlands.

R. G. Woods

Wadeana dendrographa: On Fraxinus, in wood by seashore, Rubha Guail, Skye. VC 104, N. Ebudes. GR 18/7--1---. (1985). A new northern limit for this species, hitherto known only N. to Mull and Morvern. (This sheltered SE facing coastal wood must be an optimum habitat for many lichens, as all the following, rarely seen fertile, were fruiting well: Lobaria scrobiculata, Sticta fuliginosa, Peltigera collina, Leptogium cochleatum, Parmelia atlantica, Pannaria conoplea).

F. Rose

#### NEW MEMBERS

The following members joined the society between November 1986 and February 1987. (J.M.) = Junior Member.

If you have recently changed your address, please let the Assistant Treasurer know so that the mailing list can be altered, and you will continue to receive Society Literature uninterruptedly. We hope to issue a new membership list with the next issue of the Bulletin, and please ensure that we have correct details by August 1st '87.

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Mr. Vince GIAVARINI, (change of address) 10, Woodend Road, Winton, BOURNEMOUTH, Dorset, BH9 2JQ.

Mr. Mike GOSLING, (change of address), 170, Normoss Road, Staining, BLACKPOOL.

Dr. (Mrs.) KALYANI SEN, Dept. of Microbiology, Bose Institute, 93/1 A.P.C. Road, CALCUTTA 700 009, India.

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Mr. David PARK, 41 Gordon Square, LONDON WC1H 0PA

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Mr. Javier E. SALAZAR, Paulino Caballero 40-5°- dchz, PAMPLONA (NAVARRE), Spain.

Mr. Burkhard SCHROETER, Bluckerstrasse 7, D-2300 KIEL, F.R. Germany.

Miss Mary E. SCRUBY, The National Trust, Spitalgate Lane, CIRENCESTER, Gloucester, GL7 2DE.

Dr. R. Nigel STRINGER, 20 Cleviston Park, Llangennech, LLANELLI, Dyfed, SA14 9UW.

Mr. Richard TYLER, 47 Atherley Road, Shirley, SOUTHAMPTON SO1 5DT.

Mr. John S. WARD, 3 Dale View, Ocker Hill, Randwick, STROUD, Gloucester GL6 6HX.

Literature pertaining to British lichens - 2

Lichenologist 18(4) was published on 12 November 1986, 19(1) on 3 February 1987, and 19(2) on 10 April 1987. This date of publication is the precise date the part was first received by members or subscribers living in the London area.

AHTI, T. & ISOVIITA, P. 1987. The typification of the generic name Parmeliopsis (lichenized fungi). Taxon 36: 105 - 108. [A further instalment of the Parmeliopsis saga. The authors argue that P. ambigua is the valid lectotype, and Imshaugia S. Meyer a separate genus.]

BROWN, D. H. (Editor) 1985. Lichen Physiology and Cell Biology. Plenum Press, New York. [Chapters by different contributors.]

CHESTER, T. W. & HITCH, C. J. B. 1987. Field meeting in Northamptonshire. Lichenologist 19: 77 - 92. [225 taxa.]

CHINERY, M. & TEAGLE, W. G. 1985. Wildlife in Towns and Cities Gardens, Parks and Waterways. Country Life Books, Feltham. [£5.95. Useful review and field guide, marred by some errors. Includes chapter on lichens and air pollution by F. Rose and industrial melanism by M. Tweedie.]

CHRISTENSEN, S. N. 1987. Morphological and chemical variation in the Cladonia macilenta/bacillaris aggregate in Denmark. Lichenologist 19: 61 - 69. [Cladonia bacillaris and C. macilenta are shown to be con-specific under the name C. macilenta Hoffm.]

COPPINS, B. J. 1987. The genus Veizdaea in the British Isles. Lichenologist 19: 167 - 176. [Veizdaea acicularis Coppins is described from the British Isles; a key and notes on other species are included.]

COPPINS, B. J., JAMES, P. W. & HAWKSWORTH, D. L. 1987. The generic name Placynthiella Elenkin, Saccomorpha Elenkin and Placynthiella Gyelnik. Lichenologist 19: 93 - 95. [The generic name Placynthiella is retained for the Lecidea uliginosa group, but with a different author citation.]

COPPINS, B. J. & PURVIS, O. W. 1987. A review of Psilolechia. Lichenologist 19: 29 - 42. [Monograph of four species, three of which are British. Two photobiont forms of P. lucida are described, one with Stichococcus, the other with cf. Trebouxia. The lichen P. leprosa Coppins & Purvis is described from copper-rich rocks; it should be noted that the type specimen was collected on 17 April 1986 and not "17 May 1986" as given in the original circumscription.]

CULBERSON, C. F. 1986. Biogenetic relationships of the lichen substances in the framework of systematics. Bryologist 89: 91 - 98. [Chemical variation in the Cladonia chlorophaea complex; cladogram.]

CULBERSON, W. L. 1986. Chemistry and sibling speciation in the lichen-forming fungi: ecological and biological considerations. Bryologist 89: 123 - 131. [Includes discussion of the Ramalina siliquosa complex.]

DALBY, C. 1987. Lichens on Rocky Seashores. British Museum (Natural History), London. [Wallchart of 49 maritime lichens in zones. £2 each, plus £0.35 per chart postage, from Publications Sales, British Museum (Natural History), Cromwell Road, London SW7 5BD.]

DAVIES, F. B. M. 1986. The long-term changes in fluoride content of Xanthoria parietina growing in the vicinity of the Bedfordshire brickfields. Envir. Poll. A, 42: 201 - 207. [Changes in brick production are reflected in fluoride content of Xanthoria.]

ELIASSON, U. & GILERT, E. 1982. A SEM-study of Listerella paradoxa (Myxomycetes). Nordic J. Bot. 2: 249 - 255. [Includes study of Licea pusilla Schrader as a lichenicolous myxomycete on Cladonia portentosa from Kent.]

FRIEDL, T. 1987. Thallus development and phycobionts of the parasitic lichen Diploschistes muscorum. Lichenologist 19: 183 - 191. [Trebouxia irregularis is the photobiont in young plants, but T. showmanii takes over in mature thalli.]

GIAVARINI, V. J. 1986. Field meeting on Arran. Lichenologist 18: 371 - 381. [Account of lichens found, with full list of lichens recorded on Arran at all times.]

GRIERSON, S. 1986. The Colour Cauldron. Grierson, Perth. (£10.50. Dyeing in Scotland, including the use of lichens.)

HAWKSWORTH, D. L. 1986. The natural history of Slapton Ley Nature Reserve. XVII. Additions to and changes in the fungi (including lichens). Eld Stud. 6: 365 - 382. [1476 species have been recorded. Nine per cent decline in the lichen flora.]

HAWKSWORTH, D. L. 1986. Notes on British lichenicolous fungi: V. Notes R. bot. Gdn Edinb. 43: 497 - 519. [A new genus Weddellomyces D. Hawksw. is described, with W. epicallopismum (Weddell) D. Hawksw. (Phaeospora epicallopisma) as the type species. Decampia rufescentis (Vouaux) D. Hawksw., comb. nov., Epicladonia stenospora (Harm.) D. Hawksw., Lecidea inquinans (Tul.) Nyl., and Polycoccum epicrassum (H. Olivier) R. Sant. are new to Britain. Pyrenidium betairizans (Leighton) D. Hawksw. is a new combination for Phaeospora betairizans.]

HENDERSON, A. 1986. Two interesting British lichens: Acarospora umbilicata Bagl., new to Yorkshire, and Polysporina dubia (H. Magn.) Vězda, new to England. Naturalist. Hull 111: 139 - 144. [Detailed account of Acarospora umbilicata and discussion of the role of calcium oxalate in lichens.]

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

LOWEN, R., BRADY, B. L., HAWKSWORTH, D. L. & PATERSON, R. R. M. 1986. Two new lichenicolous species of Hobsonia. Mycologia 78: 842 - 846. [Hobsonia christiansenii Brady & D. Hawksw. sp. nov., a parasite, reported from the British Isles.]

LOWEN, R. & HAWKSWORTH, D. L. 1986. Nectriella santessonii, a new lichenicolous pyrenomycete with an Acremonium anamorph. Lichenologist 18: 321 - 328. [Nectriella santessonii Lowen & D. Hawksw., sp. nov., a parasite on Anaptychia runcinata, described from the British Isles.]

McCARTHY, P. M. 1986. Some interesting additions to the lichen flora of Ireland. Nova Hedwigia 43: 367 - 372. [Remarks on four lichens. Porina byssophila (Körber ex Hepp) Zahlbr., Staurothele guestphalica (Lahm ex Körber) Arnold, and Toninia kolax Poelt are new to Britain.]

McCARTHY, P. M. 1987. Further additions to the lichen flora of the Burren and the Aran Islands (H9). Ir. Nat. J. 22: 205. [Eight species. Lempholemma chalazanellum and L. chalazanodes new to Ireland.]

PENTECCOST, A. 1987. The lichen flora of Gwynedd. Lichenologist 19: 97 - 166. [Habitats and flora.]

FURVIS, O. W., ELIX, J. A., BROOMHEAD, J. A. & JONES, G. C. 1987. The occurrence of copper-norstictic acid in lichens from cupriferous substrata. Lichenologist 19: 193 - 203. [Evidence for the formation of metal - lichen acid complexes. Colour plate.]

SCHWAB, A. J. 1986. Rostfarbene Arten der Sammelgattung Lecidea (Lecanorales). Revision der Arten Mittel- und Nordeuropas. Mitt. bot. StSamml. Münch. 22: 221 - 476. [Taxonomic revision of rust-coloured Lecidea spp. s.lat. They belong to Lecidea, Porpidia, and Tremolecia.]

J. R. LAUNDON

A CHEMICAL CHECKLIST OF BRITISH LICHENS: Part 2.

by F. Joy White and P.W. James

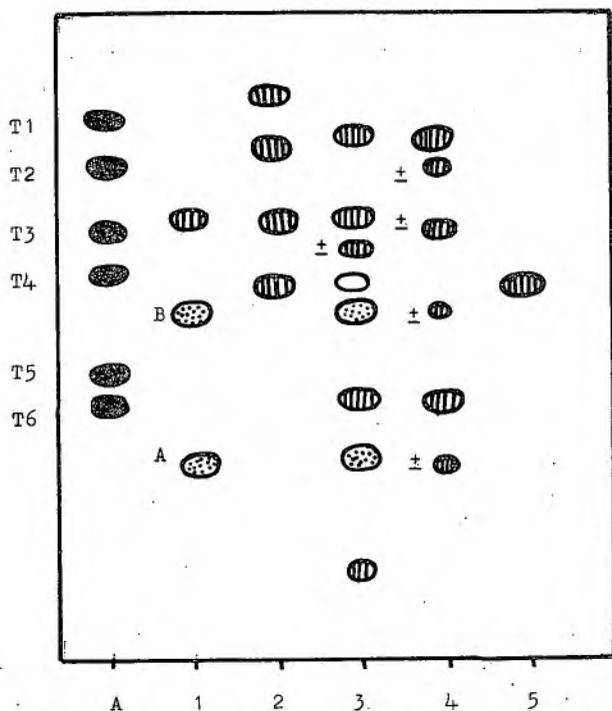
Introduction

The first part of this series (Parmelia) was published in Bulletin 58 following our 'Guide to Microchemical Techniques', published in Bulletin 57 (suppl.), which should be consulted for thin-layer chromatography (TLC) methods used.

The genera Nephroma and Peltigera have very similar chemistries, sharing a series of six major hopane triterpenoids (T1 to T6 below), whilst species of both genera with strongly tomentose upper surfaces lack lichen substances. The results of our chemical studies on Nephroma, as presented here, come from a detailed study of the genus which will shortly be published in The Lichenologist 19(3); this information is included for completeness since misidentifications between the species of the two genera are not infrequent. and may more readily be corrected if TLC analysis is undertaken.

A complete account of the chemistry of British Peltigera species has not previously been published. An example, describing the P. polydactyla species group, was illustrated by us in Bulletin 57 (suppl.):Fig.2. Similarly, Tønsberg and Holtan-Hartwig (Nord.J.Bot. 3: 681-688 (1983)) illustrated the various races occurring in the P. apthosa group. The latter work introduced the new solvent system EHF (diethyl ether : hexane : formic acid; 300:100:3) for separating hopane triterpenoids and related substances. This system was not used by us since we thought it would be more useful to provide characteristics of diagnostic substances, listed in descending order, in solvent system G, a more stable and reliable solvent system. EH or "HEF" (White & James 1985, 1986) together with standard systems (TA, TDA, HEF) should be used for more critical analyses since some substances may have similar Rf values and be masked or misinterpreted if run in G alone. Further, two-dimensional TLC is required to detect traces of substances related to tenuiorin that often occur in Peltigera (e.g. methyl evernate, methyl lecanorate,

TLC patterns of unidentified terpenoids in selected British  
Peltigera species in solvent EH.



Legend: A is a control of hopane triterpenoids T1-T6 (=solid circles). 1. P. britannica, 2. P. leucophlebia, 3. P. venosa, 4. P. scabrosa, 5. P. malacea. open circles= uvc+blue unknown, circles + vertical lines = unidentified terpenoids, circles + stippling = phlebic acids A & B.

and evernic, gyrophoric and lecanoric acids. Acetone extracts should, in all instances, be heavily loaded onto the TLC plates using a hot plate to concentrate the spots.

The Peltigera results presented here are based on those contained in an unpublished project by Mrs. R. Roberts (née Tucker), whilst an undergraduate at London University, together with analysis of recent additions to the British Flora and taxonomic and nomenclatural changes. Since the publication of a key to the British species by Vitikainen (Bulletin 50) Peltigera britannica has been recognised (Tónsberg and Holtan-Hartwig loc. cit.) as a distinct species from P. aphthosa. Material from the British Isles, previously called P. aphthosa, belongs to P. britannica and it seems likely that P. aphthosa sens. str. does not occur in the British Isles. P. britannica differs chemically from P. leucophlebia and may further be distinguished by the indistinct venation on the lower surface and peltate, button-like, easily removable cephalodia on the upper surface.

#### LEGEND

underlining indicates predominating substances

+ before substance = sometimes present, sometimes absent

+ to +++ after substance indicates quantity of substance (arbitrary by visual definition only)

(+) or (++) variability of amount from specimen to specimen

tr+ trace to small quantity of substance

uv+ a positive UV fluorescence before charring

uvc+ a positive UV fluorescence after charring

a = acid

p = purple

q = quenching (under UV light)

Hopane triterpenoids

T1	7 $\beta$ -acetoxyhopan-22-ol
T2	15 $\alpha$ -acetoxyhopan-22-ol
T3	hopane-6 $\alpha$ ,22-diol (zeorin)
T4	hopane-7 $\beta$ ,22-diol
T5	hopane-15 $\alpha$ ,22-diol
T6	hopane-6 $\alpha$ ,7 $\beta$ ,22-triol

NEPHROMA

- arcticum nephroarctin +(+) , usnic a tr, phenarctin +++ (overlying usnic acid in G), T3 +++,  $\pm$  methyl gyrophorate (rare). Best separation in "HEF" or a two way assay of this solvent with solvent G.
- helveticum unknown straw uv+q uvc+ vivid citrine accessory tr-,  $\pm$  T1, unknown dull blue-green (fading to beige) uv- uvc+ pink-brown accessory tr-, T4 +++. Apparently now extinct.
- laevigatum T6 +(++) , a complex series of anthraquinones (9 or more) uv+ orange-red +++(+) (rarely absent),  $\pm$  2 unknown mauve to colourless uv+ blue-grey uvc- accessories. Medulla K+p.
- parile T2+, unknown dull emerald green (beige on storage) uv- uvc+ dull yellow-green accessory (+), T3 +++, T5 ++,  $\pm$  2 unknown mauve to colourless uv+ blue-grey uvc- accessories.
- resupinatum No lichen substances detected. Apparently now extinct (only known from 18th and 19th century collections from Aberdeenshire and Devon in the BM).
- tangeriense  $\pm$  T2, T3 +++,  $\pm$  T4, T6 +++, a complex series of anthraquinones (9 or more) uv+ orange-red +++(+). Medulla K+p.

PELTIGERA

aphthosa )  
britannica )

tenuiorin +++, methyl gyrophorate ++, unidentified terpenoid ++ (occupying same Rf as T2 in G, separating from T2 in EH), ± gyrophoric a tr, phlebic acids A & B ++ (uvc +++ deep olive-green, then rapidly uvc ++ purple-brown; appearing as a single spot in G, separating in EH).

canina

No lichen substances detected.

collina

tenuiorin +++, methyl gyrophorate +(++), ± T1 tr+, ± gyrophoric a tr, T3 +++, ± T6 tr, ± up to 4 unidentified terpenoids tr.

degenii

No lichen substances detected.

didactyla

No lichen substances detected.

elizabethae

tenuiorin +++, methyl gyrophorate ++, ± unidentified terpenoid tr-, ± T2 tr, ± gyrophoric a tr, T3 ++, ± T4 tr, ± traces of 2 or more unidentified terpenoids, unidentified terpenoid (Rf 1) tr-+ (as in P. horizontalis).

horizontalis

tenuiorin +++, methyl gyrophorate ++, ± gyrophoric a tr, T3 ++, ± T4 tr+, unidentified terpenoid (Rf 1) tr-+ (resolved into 3 spots above tenuiorin in EH).

lactucifolia

tenuiorin +++, methyl gyrophorate ++, T1 ++, T2 ++, ± gyrophoric a tr, T3 tr-, ± T4 tr.

lepidophora

No lichen substances detected.

leucophlebia

tenuiorin +++, methyl gyrophorate ++, unidentified terpenoid tr-, unidentified terpenoid ++ (as in P. britannica), ± gyrophoric a tr, unidentified terpenoid uvc ++ deep pink +++ (between T4 & T5 and slightly lower than phlebic acids A & B in G).

malacea

tenuiorin +++, methyl gyrophorate ++, ± gyrophoric a tr, unidentified terpenoid +++ (same as in P. leucophlebia; Rf as T4 in G but below in EH). Only Scandinavian material examined.

- neckeri                    tenuiorin +++, methyl gyrophorate tr-, T2 +( ),  
 + gyrophoric a tr, T3 +( ), T4 +( ), unidentified  
terpenoid +( ) (between T4 & T5 in G), unidentified  
terpenoid +( ) (same Rf as T6 in G) [both these  
 terpenoids were misidentified as T5 & T6 in White &  
 James 1985], 2 unidentified terpenoids (Rf 2-3), +  
 unidentified terpenoid (Rf 1) tr- (as in P. horizontalis).
- polydactyla            tenuiorin +++, methyl gyrophorate +( ), + T1 tr-+,  
T2 +++, + gyrophoric a tr, T3 ++( ), + T5 tr, + T6 tr,  
 + unidentified terpenoid (below T6 in G). Superficially  
 similar to P. lactucifolia.
- praetextata            No lichen substances.
- rufescens                No lichen substances.
- scabrosa                tenuiorin +++, methyl gyrophorate ++, unidentified  
terpenoid ++ (as in P. venosa), gyrophoric a +,  
unidentified terpenoid + (Rf same as T6, as in P. venosa),  
 + traces of unidentified terpenoids. Only Scandinavian  
 material available for study.
- venosa                    tenuiorin +++, methyl gyrophorate ++, unidentified  
terpenoid + (as in P. scabrosa), unidentified terpenoid ++  
 (as in P. britannica) & unknown uvc + blue substance,  
 + gyrophoric a tr, phlebic acids A & B +++, unidentified  
terpenoid ++ (as in P. scabrosa), + 2 or 3 unidentified  
 terpenoids tr. (the uvc + blue substance and phlebic acids  
 A & B separate in EH).

#### REFERENCES

- White, F.J. & James, P.W. 1985. A new guide to microchemical techniques for the  
 identification of lichen substances. Bull.Br.Lichen Soc. 57 (suppl.):1-41.
- White, F.J. & James, P.W. 1986. A chemical checklist of British Lichens: Part 1.  
Bull.Br.Lichen Soc. 58:40-48.

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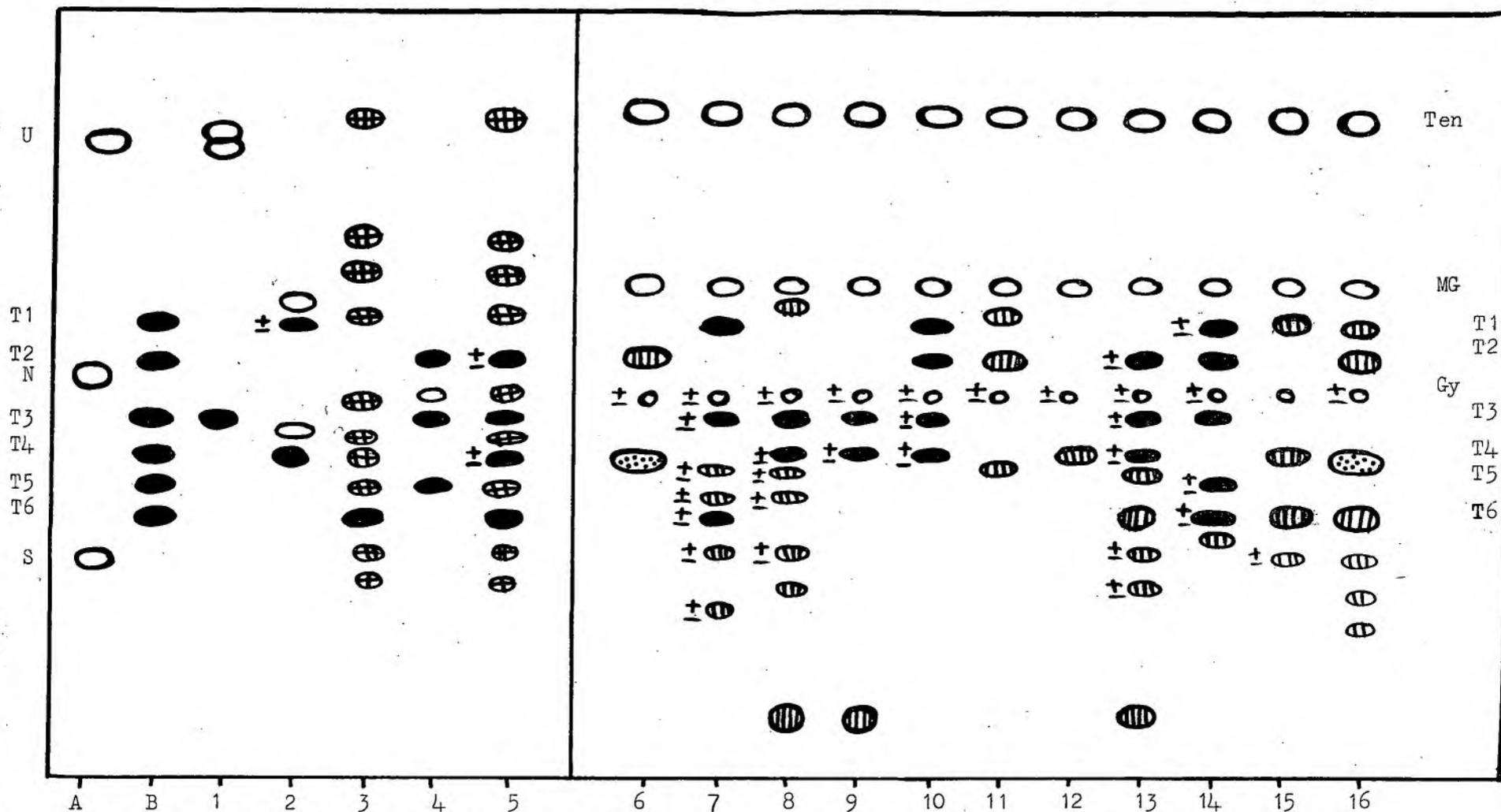
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Lichen Atlas by M.R.D. Seaward and C.B.J. Hitch (1982)  
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TLC patterns of British species of Nephroma and Peltigera in solvent G.



**Legend:** Ten = tenuiorin, MG = methyl gyrophorate, Gy = gyrophoric acid. A & B are controls: U=usnic a, S=salazinic a, N=norstictic a, T1 - T6 = hopane triterpenoids. 1.N.arcticum, 2.N.helveticum, 3.N.laevigatum, 4.N.parile, 5.N.tangeriense, 6.P.britannica, 7.P.collina, 8.P.elizabethae, 9.P.horizontalis, 10.P.lactucifolia, 11.P.leucophlebia, 12.P.malacea, 13.P.neckeri, 14.P.polydactyla, 15.P.scabrosa, 16.P.venosa. solid circles=T1-T6, open circles=depsides,depsidones, pigments, circles + vertical lines =unidentified terpenoids, circles + cross-hatching = anthraquinones, circles + stippling = phlebic acids.

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