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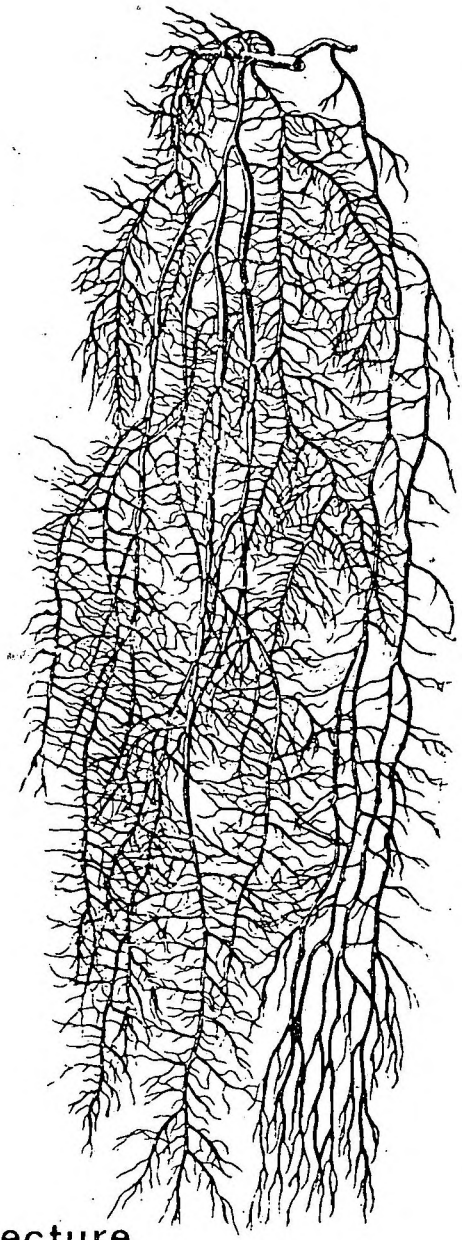
Silver Jubilee

# BRITISH LICHEN SOCIETY BULLETIN



PARMELIA KEY

Edited by O.L.Gilbert,
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## Editorial

Unless you are personally involved, anniversaries can seem remote if not irrelevant events. There is not likely to be dancing in the streets just because the British Lichen Society has survived for 25 years. We are still a small, friendly society and for this reason I hope most of you do feel, to some extent, personally involved in our Silver Jubilee. The Society is celebrating with two days of events in London early in the New Year and we do hope as many members as possible will come along. There will be a short symposium, a dinner, the A.G.M., a cake (baked by a past president), talks on some top British lichen sites and plenty of opportunity to meet others interested in lichens.

It is a special pleasure to include in this issue contributions by two of our best-loved founder members Ursula Duncan and Arthur Wade. I am also indebted to Peter James for providing the most comprehensive key to British *Parmelia* spp. ever compiled.

O.L.G.

# The tools of our trade

To study and collect lichens in the field requires equipment, the nature of which will reflect the diverse individual styles and interests of the lichenologist. A binary key to our species would at an early stage distinguish corticolous from saxicolous and at a later stage, alpine from lowland. The rarer terricolous species will readily be distinguishable by his wet knees, and he may regard a pair of waterproof overtrousers as his most essential item.

There is, however, a basic collecting kit for the general lichenologist, and the equipment he carries will be a compromise between utility and expedience. Below I offer suggestions and tips about some of these items based on my own experience in the field.

The hammer

The hammer should be heavy enough to provide a good solid impact to the rock and light enough not to be an embarrassment. The most useful variety is a Club Hammer (A), preferably with a fibre glass moulded handle which can often be obtained hollow. A recent version has a screw cap on the end of the handle, which can conveniently house a cold chisel. A popular weight is 2½lb and one is usually recommended to hold the handle half way along its length to attain maximum efficiency with the minimum effort. An alternative, lighter weight but strong hammer is the Ball Pein Hammer (B) used by metalworkers. It has a hardened steel face which is not easily damaged and is available in a range of weights from 4 oz. to 2½lb. A further variety is a 1lb steel shafted geologists hammer with a rubber grip. For the well-to-do lichenologist, with a less than perfect aim, a silversmiths hammer with a large diameter flat face is available, which in theory, allows you to keep your eye on the flying chip of rock.

The cold chisel

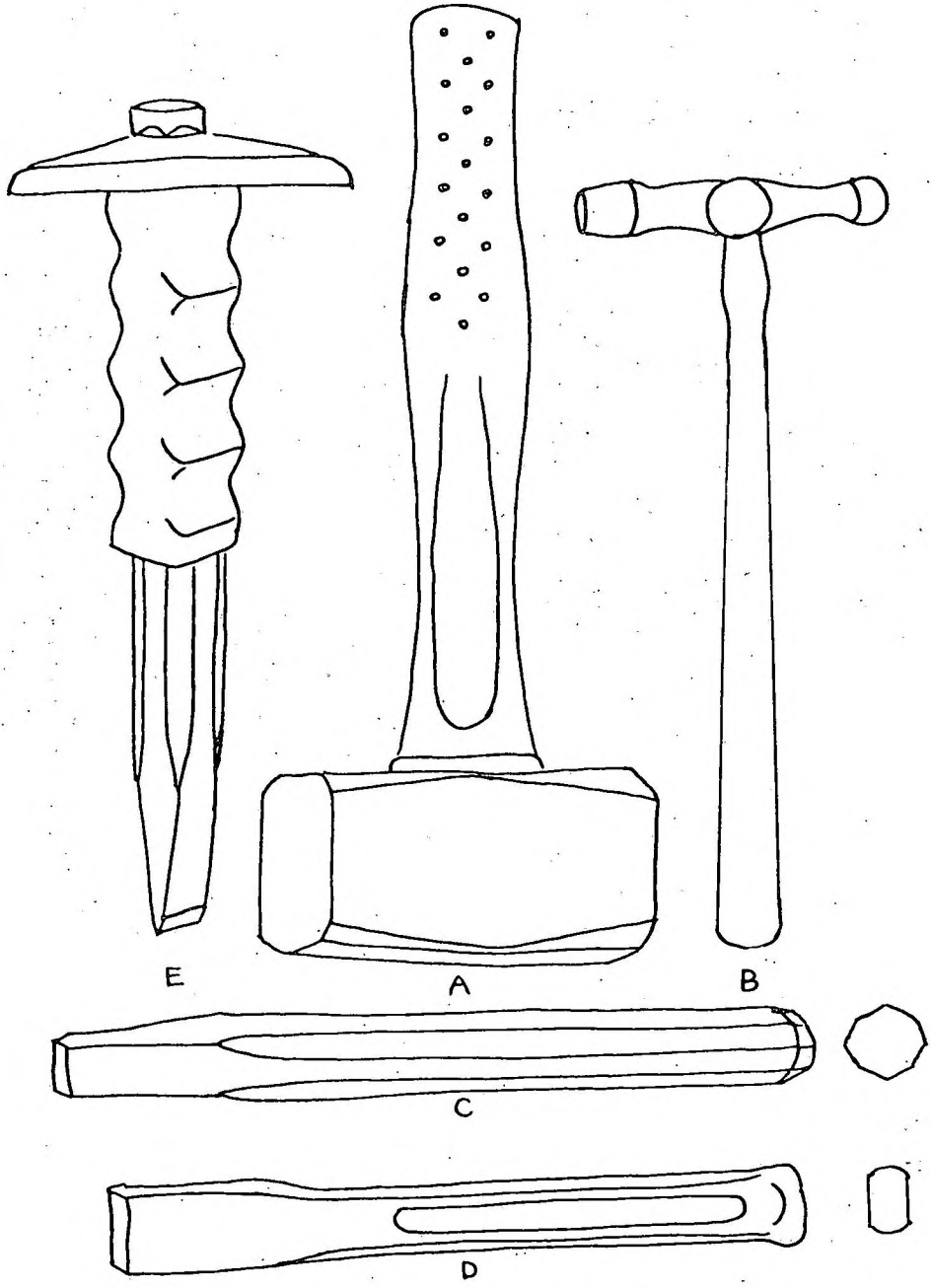
This chisel is so named because they are designed to cut metal in its cold state. They are made in a variety of different steels. The most common type is the tough carbon steel and this material will stand up to a lot of rough treatment. The degree of hardness is governed by the quantity of carbon present, but to retain its toughness and durability it needs to be sharpened, hardened and tempered occasionally, unlike the nickel alloys. The main body of a carbon steel chisel is hexagonal in cross-section (C), whereas the nickel alloy is usually rectangular(D). A third variety with a specially hardened tungsten steel tip is two to three times as expensive, but is increasingly used by monumental masons and other professional rock chippers.

Sharpening cold chisels is a skilled process. The procedure is roughly as follows. Any burr produced by the mushrooming of the metal on the striking end is first ground away on a carborundum wheel. Then place the sharp end of the chisel on the rest of the grinding wheel and gently move the chisel towards the wheel at an angle of about $60^{\circ}$. A straight cutting edge is usually best for rock sampling. Unless the tool is to be hardened and tempered, the grinding process should be gentle enough to keep the metal cool. Frequent plunging in cold water will ensure this. It costs 40p to get a chisel sharpened; how often would I gladly have paid this to have an intact specimen rather than a handful of splinters!

Nickel alloys are usually sharpened with a file alone, and this fact is sometimes indicated on the chisel itself. Make sure that hammers and chisels match in size.. a big hammer needs a big chisel. A kilogram club hammer is best served by an 8" x ¾" chisel. For the more hesitant lichenologist, there is a cold chisel with a fibre glass collar (E) to prevent impact with a misplaced thumb and the consequent need for a latinised invective.

The knife

The tools of the terricolous and corticolous lichenologists differ somewhat from that of the saxicolous variety. The principal weapon in this case is the knife. A penknife is a hazard, as it has an unhappy knack of folding when least expected. The sheath knife, on the other hand , lends a certain explorer/hunter charm to the corticolous lichenologist. It is best protected in its belt sheath. A loop holder can be bought from mountaineering shops so the hammer can be carried on the belt too.


E
A
B
C
D

The bag

To carry the tools of his profession, the lichenologist needs a bag which accommodates not only the hammer and chisel, but also the four chemicals. A spare chisel, duplicate pencils and an additional handlens can avoid the embarrassment of constant borrowing from a friend, when one of these important items is presumed lost.

A very convenient canvas bag was commissioned by the Ministry of Defence in two styles, Haversacks, OR's (other ranks) and Haversacks, Officers. Both are made of canvas, the former has a square flap in front with two fastening straps and the latter has a triangular shaped flap with a single strap fastener. The latter is the better variety for lichenologists, as there is a hand carrying strap as well as the shoulder strap, and just inside the bag there are two internal pockets, most useful for accommodating the chemicals. The OR's variety does not possess these additional refinements, the interior being separated only by loose cloth partitions. A hard core of lichenologists swear by ex-army gas-mask cases. Real Army and Navy stores may yet be able to find you some of these items, otherwise you could try fishermen's bags sold by angling shops.

The chemical containers

The traditional four reagents normally consist of potassium hydroxide solution (K), calcium hypochlorite(C), iodine solution in potassium iodide (I) and para-phenylenediamine as fresh alcoholic solution or as Steiners (P). The detailed preparation and properties of these have been described by F.J. Walker and P.W. James in 1980 Bulletin 46 (supplement). Small ( approx 10 ml) brown eye-dropper bottles, especially those with a hexagonal cross section and several fluted faces(used to indicate a poison), are strong and not easily broken. The usual eyedropper has a bulbous end and makes rather a large drop. A careful bit of glass blowing can modify this to a pointed tube or rod which supplies a smaller drop for testing.

Whatever method of carrying chemicals is employed, care should be taken to keep the volumes low so if the bag is dropped, the breakage of a bottle is not disastrous to the other contents, or more particularly to the bag itself. Any of these chemicals can

spell disaster to notebooks and carefully packaged and recorded lichens. It is for this reason that they are best carried in a separate pocket from the rest of the equipment, preferably in a plastic bag which at least temporarily will prevent the spread of spilled chemical.

The basic equipment I have described are suggestions only. Choice of hand lens and the actual collection, recording and storage of specimens presents a number of different alternatives and must be the subject of a future article.

BRIAN FOX

Silver Jubilee

The events to mark the Society's Silver Jubilee will be held on 7 - 8 January 1983. The actual formation of the British Lichen Society took place at a meeting held at the British Museum (Natural History), London, on 1 February 1958. It is therefore appropriate that the Jubilee meetings should be held in the same building. The events consist of a symposium, a dinner, the AGM, and a lecture and exhibition meeting.

The one-day symposium titled Lichenology today will be held on Friday 7 January 1983 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. The museum car park will be full on Friday but there will be spaces available on Saturday. It is hoped that all members will endeavour to attend. Non-members are welcome, and the symposium and lecture-meeting are free. The programme is as follows:

| | |
|---|---|
| 10.00 | Museum opens to the public. |
| 10.30 | Coffee. |
| 11.15 | Ecophysiology<br>Chairman: Professor B.W. Fox<br>Speakers: R.P. Beckett, P.A.Beetham, O.W.Purvis. |
| 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. |

| | |
|---|---|
| 14.15 | Ecology |
| | Chairman: Dr. A. Fletcher |
| | Speakers: Anna Currall, P.M. McCarthy. |
| 15.30 | Tea interval. |
| 16.00 | Lichenology in the southern hemisphere |
| | Chairman: Professor D.H.S.Richardson. |
| | Speakers: R.B. Filson, D.J. Galloway, R.W.Rogers. |
| 17.00 | Close. |

In the evening there will be a special dinner for members and their guests. This will be held in the Conversazione Room ( ground floor) of the museum from 18.30 - 20.45. The room will be open from 18.00. The cost of the Cordon Bleu Buffet Dinner (including wine) is £9, and a £5 deposit per person must be sent to Dr D.J. Galloway. Department of Botany, British Museum (Natural History), Cromwell Road, London SW7 5BD, before 18 December 1982. Some distinguished speakers will be attending the dinner and reflecting on the history of the society.

On Saturday 8 January 1983 the Annual General Meeting will be held in the museum's Demonstration Room starting at 10.30.

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 Honorary Member: Dr. T.D.V. Swinscow.
7. Election of Auditor.
8. Election of three members of Council.
9. Election of Officers.
10. Any other business.

J. R. LAUNDON
Honorary Secretary.

Following the Annual General Meeting there will be an exhibition meeting from 11.30 until 12.30. Members are kindly requested to make a special effort to contribute exhibits of lichenological interest. Demonstrations should include a title and name of exhibitor.

The lecture meeting will continue in the afternoon in the same room. It is entitled FAVOURITE LICHEN SITES - A PERSONAL SELECTION. Non-members are welcome. Please display the enclosed poster. The programme is as follows:

| | |
|---|---|
| 14.00 | Chairman: Dr. M.R.D. Seaward (University of Bradford): Introduction. |
| 14.05 | O.L. GILBERT (University of Sheffield): The Cairngorm Plateau. |
| 14.30 | J.R. LAUNDON (British Museum (Natural History)): Dungeness: beach of conflict. |
| 15.00 | Tea interval. Cake to be cut. |
| 15.30 | P.W. LAMBLEY (Norwich Castle Museum): In Breckland wilds. |
| 16.00 | P.W. JAMES (British Museum (Natural History)): Lichen flora of the Isles of Scilly. |
| 16.30 | A. FLETCHER (Leicestershire Museums): Summary. |
| 17.00 | Close. |

Spring Field Meeting to COLL AND TIREE, Inner Hebrides; Saturday 9 - Tuesday 19 April, 1983.

The object of this meeting will be to explore the lichen vegetation of these small islands spending 4½ days on each. They are almost unknown lichenologically, in fact no lichen has ever been recorded from Tiree. Both islands are composed predominantly of acid Lewisian Gneiss relieved locally by dykes of basalt and small outcrops of marble. They offer marvellous examples of machair ( see p. 19 ) which will be studied in detail. Other habitats it should be worth paying particular attention to are the margins of lochans, and the coast with its fine sandy beaches and rocky headlands. Woodland is absent. Though rainfall is low and Tiree holds the record sunshine figures for the U.K. good weather cannot be guaranteed. The terrain is likely to be rugged.

Logistics Members should cross to Tiree on Saturday 9 April either by MacBraynes steamer which leaves Oban at 7.00am arriving 11.30 a.m. or on the 10.45 a.m. flight from Glasgow. Accommodation will be in the Tiree Lodge Hotel, Isle of Tiree, Argyllshire (Scarinish 368). In addition to offering full board the hotel includes four self-catering flats. We shall be leaving Tiree by the midday ferry on Thursday 14 April and arriving on Coll at 1.30 pm. Accommodation here is rather scarce but the Tigh-na-Mara guest house is due to open in March and it is hoped to make this our headquarters; as

alternatives there is an expensive hotel or self-catering flats. The leader will arrange accommodation on Coll if you state your preference.

Approx. costs

Ferries are subsidised and very cheap. Oban - Tiree - Coll - Oban £10.00.

Flight: Glasgow - Tiree return £57.00.

Tiree Lodge Hotel - Full board £13/day.

Self-catering flat - to sleep 4/5 - £60/week.

Coll Hotel - Full board £28/day.

Coll - self catering flats to sleep 6/7 £70/week.

It is expensive to bring cars over on the ferry so we will use what transport there is; minibus, taxis, bicycles, legs, etc. to get about the islands. This should not be too expensive.

Members intending to participate in this meeting should write to the leader for a sheet of additional information before making their bookings. There is some flexibility in the arrangements, for example, it would be possible to fly up for just a part of the meeting.

OLIVER GILBERT.

Summer Field Meeting, EXETER, 6 - 13 August 1983

The Summer Field Meeting has been provisionally booked for 6 - 13 August 1983 at Exeter University, using halls of residence for accommodation. Costs are still being negotiated. The objective of the meeting is to explore East Devon, in particular the gravel bed SSSI's, Haldon Forest and coastal locations. Full details in the May Bulletin.

NOEL TALLOWIN
Lakeham Farm,
Higher Aston, Exeter EX6 7RB.

Joint Bristol University (Dept. Extra-Mural Studies)/British Lichen Society Workshop on the 'Identification of Sterile Crusts'.

A residential week-end from Friday evening to Sunday afternoon 11-13 March 1983, at Burwalls, Leigh Woods, Bristol.

Tutors: D.L.Hawksworth, P.W. James, D.J.Hill

Fee: £35.15.

This course is designed to help lichenologists identify sterile crusts and other difficult specimens. It will include tuition in TLC. Prior enrolment is essential. Those wishing to take part please inform Dr. D.J. Hill, Dept. Extra-Mural Studies, The University of Bristol, 32 Tydall's Park Road, Bristol, BS8 1HR.

Courses involving lichens run by the Field Studies Council

| | |
|---|---|
| Nettlecombe Court, Williton, Taunton, Somerset | 16-23 March 1983. |
| Juniper Hall Field Centre, Dorking, Surrey. | 17-19 June 1983. |
| Slapton Ley Field Centre, Slapton, Devon. | 3-8 August 1983 |
| Orielton Field Centre, Pembroke, Dyfed | 24-31 August 1983. |

Wardens at the field centres will be pleased to send you details.

ACTION ACTION ACTION ACTION ACTION ACTION ACTION ACTION

IMPORTANT: SUBSCRIPTIONS RAISED

Due to increasing costs, primarily associated with the publication of The Lichenologist subscriptions from 1st January 1983 will be raised to:

| | |
|---|---|
| Ordinary Member (sterling) | £12.50 (up £2.50) |
| Ordinary Member (dollar) | $25.00 (no change) |
| Junior Associate Member | £4.00 (up £3.00) |
| Family Member | £0.25 (no change) |

Junior associate members are persons under 21, or under 25 if receiving full time education; they only receive the Bulletin. Life membership is available for members 60 years old and over, at ten times the current rate with family membership included free.

It is necessary for all members who pay their subscription in sterling by means of a Bankers Order to complete the blue form enclosed with this Bulletin and send it to their bank now. If you do not comply this causes endless work for our membership treasurer as banks like a months notice of alterations to Bankers Orders. Note, there is no need for any action if you pay in dollars.

NOEL TALLOWIN

ACT NOW ACT NOW ACT NOW ACT NOW ACT NOW ACT NOW ACT NOW

Nominations for officers and council members

Nominations for officers for 1983 and three Council members for 1983-84 should be sent to the Secretary before 26 December 1982. No person may be nominated without their consent. Professor Fox, Mr. James, and Professor Richardson retire from the Council and are not eligible for re-election as Council members.

Grapevine

Anniversaries are times when a measure of self-congratulation is considered excusable, even desirable, and Grapevine intends to use to the full the licence provided by this Jubilee Bulletin. Our Society can be proud of its achievements so far, several of them finely epitomised in the excellent Jubilee issue of the Lichenologist, impressive in range and quality of papers and offering something for all lichenological palates. Only editorship of the highest order attracts such papers as Professor Ahti's on cladoniiform morphology, which left Grapevine convinced that (to adapt a remark of Archbishop Makarios) "One does not embark on taxonomic-morphological debate unless one is prepared to sail the whole day". Such papers are among the finest fruits of pan-global professional lichenology and the Society can exult in its connection with their publication and in the journal's editorial team. Grapevine is always delighted to see that connection stressed by the presence of the Field Meeting Reports, the earlier ones already valuable annals of founding days and founding fathers to whom later arrivals in the Society find themselves so indebted. We can be proud and grateful for the time and energy expended in leading and attending meetings, in collecting, recording and refereeing, especially the last, without which there could be no effective Mapping Scheme; proud too of the Society's contributory role through these activities in such productions as the new check list. All in all, ample justification for the (doubtless controlled) self-indulgence which the Society's well-known gourmets will certainly exhibit at the Jubilee Dinner early next year!

Archer fans who missed Tom Forrest's prologue to the weekly bumper edition on Sunday, 11 July, at any rate escaped the infelicities that occurred through misinformation or misunderstanding.

Nonetheless a homily reaching the ears of many agriculturalists and expressing an interest in lichens and their ecological role can only be counted as several steps forward for Autie Beeb after the disappointing disregard for lichens in the botanical surveys in Ambridge, an English village through the ages, by Jennifer Aldridge and John Tregorran (Borchester Press, 1981).

Grapevine was intrigued recently to learn informally of a new macrolichen genus, not as yet fully described, and reveals with permission certain salient features of the plant, quite common but often not recognised as a lichen.

> Thallus foliose, monophyllous, more or less circular, to about 20 cm diameter, tan-gold to brown, not known fruiting, without rhizinae, tomentum or umbilicus but often with plates beneath, brittle when dry, soggy when wet, thallus I+b, thermophilous, anthropophilous, preferring man-made substrates, e.g. ceramics, basket-work. From Asia has spread successfully throughout Europe and the New World. Proposed name Pseudumbilicaria popadoma. This plant and the as yet, undescribed P. chapatii together appear to constitute a new genus.

Grapevine's closing words in this issue must, of course, be a toast. To the British Lichen Society and to its members, past present and future, "what is passed and passing and to come"!

VINIFERA

The Lean Years - 2

My first lichen was Cladonia coccifera. This was a few years before the 1939 - 1945 War. But how to name it? A Handbook of the British Lichens (1921) by A.L. Smith gave the answer. The contents were easily digested, and Crombie and Smith's Monographs followed as well as Leighton's Lichen-Flora. I already had a good Baker dissecting microscope for byophytes so examining spores was no problem. In 1937 I answered an advertisement by Miss M.E.Ackerley, an elderly lady from a Yorkshire vicarage who wanted friends interested in lichens, but my enthusiasm was a bit too much for her and she passed me on to Mr. Ronald Burn. He worked as a specialist reader for the Oxford University Press correcting Greek

and Latin proofs, and as a relaxation was helping Dr.W.Watson with his Census Catalogue of British Lichens, eventually published in 1953. I was only too glad to send him specimens to be forwarded to Watson and henceforth collected lichens as well as bryophytes and vascular plants wherever I went.

On one solitary expedition to the Isle of Raasay early in the War before being called up, I came upon a long ridge of maritime cliffs with below it a raised beach. This was SE of Hallaig, on the east coast of the island. In one spot, approximately in 18/59.37., the rock ledges were covered with some of our most beautiful British Lichens (Platismatia norvegica, Pseudocyphellaria intricata, etc.) all well developed, indicating the presence of lime. But no pure limestones are marked on my geological map. With more experience I should have concentrated in this area, but wishing to cover more ground and proceeding down the steeply-shelving rocky terrain towards the sea, I stopped short on the very edge of a deep chasm which was probably connected with a subterranean cavern. It was enough ....Has any lichenologist, I wonder, rediscovered this dangerous paradise?

A spring bank-holiday weekend with Mr. Burn in Brecon also stands out in my memory. He was a small man, almost hunchbacked, bearded, keen-eyed and still retaining his nice Scottish accent inspite of long sojourn in the south. He had already introduced me to the art of chipping and now we happily collected saxicolous lichens, chiefly on the Brecon Beacons, in constant rain. Later he insisted on my purchasing stone-breaker's spectacles to safeguard my eyes, but they were only of use in dry weather as otherwise they got misted up.

It was on a field meeting of the British Bryological Society that I at last met Dr. Watson, also Mr.A.E.Wade, both so knowledgeable and so kind to beginners. I met Peter James for the first time on an outing to Westmorland. He was then still a student. We both became aware, I remember, of a familiar tap-tapping elsewhere in the wood. I lent him my chisel but unfortunately he does not now remember that I did him this service. When the British Lichen

Society was inaugurated in 1958 I made many more friends, notably the indefatigable Dr. Swinscow (who almost made one believe that 'pyrenos are fun') also others who had joined from the B.B.S. such as Mr. Peterken Mr. Sowter and Mr. Wallace. It was a happy time.

URSULA DUNCAN.

Country Diary - 5: Dorset

We met at a blustery location above Swanage Bay to explore some potentially interesting sites which had been overlooked by previous workers. Our first stop turned out to be a waste of time and we paused to survey the landscape in our search for new stimulus and fresh terrain. Eventually, we struck off in a north-westerly direction towards a curious ridge of Purbeck limestone perched high above a dense scrub of blackthorn and bramble.

The ridge was cratered, each hollow a humid scree trap stained back with Placynthium nigrum and Collema auriculatum. The moist inner walls were drilled with a ubiquitous assemblage of endolithic lichens but appeared to hold little else to contain our interest until one of us stumbled across Opegrapha persoonii one of the new generation of lichenicolous fungi. Closer investigation revealed its association with Lecidea metzleri amongst pockets of stable scree where both species showed maximum development, the latter being mainly confined to the spaces between wrinkled Collema thalli.

With our enthusiasm recharged we assumed the horizontal position, our lenses scanning the pitted rock like moon probes on a T.V. satellite link. Other finds followed such as Rindoina bischoffii and Caloplaca lactea, both more or less restricted to fragments of loose limestone in drier well-lit situations. From soil crevices we recorded Toninia coeruleonigricans whilst damper earth produced common colonists such as Catapyrenium hepaticum and Collema tenax.

We compiled a fuller list of the crater flora while on our way to Corfe Castle where only weeks before Caloplaca granulosa, a species more at home in the sunny Mediterranean, had been discovered in some quantity though seemingly overlooked by 19th century lichen sleuths, Crombie and Holmes. Our decision to leave the castle to a long string of coach tour operators was most fortunate. Instead

we chose to examine a nearby railway cutting, a section of the old Wareham to Swanage line. Unexplored by lichenologists since its closure in 1964 the cutting seemed devastatingly remote, though it surpassed all expectation in diversity of habitat. The most exciting finds included Gyalecta jenensis and Leproplaca xantholyta (first Dorset record since 1891) from deep recesses in the rock; Agonimia tristicula (new county record) on highly calcareous soil and Caloplaca cirrochroa frequent on chalk nodules.

- All in all a thrilling finale to an exhausting days recording.

VINCE GIAVARINI

How to achieve immortality and world-wide fame ?

To find and describe new lichens !

Jaroslav Hašek, the famous Czech writer and humorist, author of The Good Soldier Švejk, recommended it anyway. His story An Accident in the High Tatras (1912) begins as follows:
"It was at the time of great struggle near lake Morské oko when my poor friend fell off mount Garačka. That is to say, my unhappy friend was involved in the study of lichens, and here in the Tatras he hoped to find so many new species that they would make him world famous and immortal....."

Further events concerning disputes between the Hungarian and the Galizian authorities are unimportant to us. But why should a lichen collector seem to the writer to be funnier than, for example, a collector of bettles or butterflies ? It is well known that Hašek could very readily make use of every curiosity he came across. He must have known a lichenologist ! But who was that person ?

In 1912 E. Bayer lived in Prague, but at that time he was not interested in lichens. Another keen student of lichens may have served as an object of inspiration: Josef Anders (1863-1936). The author's wife had relatives in Haida (Nový Bor), a little-known town in northern Bohemia near to where Anders lived. There Hašek met him perhaps - and so lichenology came into a funny story...

IVAN PISUT

"In talk" 1982

The following phrases and catchwords are currently in vogue among field workers:

'Collecting stocking fillers:- can be indulged in at anytime of the year and refers to the practice of intensive random collecting of small samples when time is short. (Cumbrian origin).

'A Coppins species':- Anything small and nasty.

'A lead-in species':- This is used to refer to a species which indicates you are probably getting close to your objective. e.g. Catillaria sphaeroides when searching for Lobaria, or a Collema when trying to locate basic rocks.

'Making a winter collection' :- This refers to the practice of collecting boulders covered with small species to work at during the winter. (Derbyshire origin).

'An aura or presence':- When asked why a species has been identified as a particular lichen, experts are increasingly heard to explain that it has a certain aura or presence.

'Dots and dashes':- refer to spots and stripes unidentifiable by most in the field.

The Lean years - 3

My interest in lichens might be said to date from a day in 1911, when A.R. Horwood, then Assistant Curator of the Leicester Museum, found me looking through a reference collection of herbarium specimens in the Natural History Gallery. This chance meeting led to a long friendship and many botanising trips together. He was particularly interested in lichens and I, too, became keen, though I did not begin to study them intensively till 1932.

I left Leicester in 1920 to take up a post as Assistant in the Department of Botany at the National Museum of Wales. The lichen collection in the Museum was, at that time, very small and consisted of a number of specimens donated by Brook Mason. A collection of cryptogams purchased from E.M. Holmes in 1922, added a further 83 specimens. The need to build up a representative collection, especially of Welsh lichens, resulted in my becoming more deeply involved with them. About this time I recall browsing over Annie Lorrain Smith's display of British lichens in the Botanical

Gallery at the Natural History Museum, London. This must have been the first time lichens were exhibited in a museum public gallery anywhere.

Prior to my arrival in Wales, my botanising had been confined to Leicestershire and Rutland, apart from a rare day trip to Derbyshire. Consequently Glamorgan, with its varied topography and richer lichen flora was to me a lichenological wonderland.

Much of my annual leave from the Museum I spent in Leicester and on these occasions I met the late Fred A. Sowter. Fred and I corresponded regularly. Although his main interest then was with the bryophytes, he, from time to time, sent me lichens for identification. To use his own words, he found them fascinating and they soon occupied as much of his attention as the mosses and hepatics.

I owe a particularly deeply felt gratitude to Dr. W. Watson for his encouragement and considerable help with the identification of hundreds of lichen specimens, especially those collected during the preparation of the account of the lichens of Glamorgan for the Glamorgan County History (1936), which was published under our joint names. Most of my field work for this was done alone or in the company of one or another of my Museum colleagues who provided the transport.

In 1954 I was invited by Paul Holmes, at the suggestion of Jack Laundon, to conduct a course on lichens at Malham Tarn Field Centre, and held courses there in 1955, 1959, 1961 and 1963 and subsequently at Dale Fort and Preston Montford Field Centres. They were well attended and familiar faces appeared on each occasion, some of whom are now prominent members of the British Lichen Society. The idea of forming a Lichen Study Group to enable those attending the courses to keep in touch by means of a "Lichen News Letter", was talked about, but the eventual formation of the British Lichen Society made this unnecessary.

Fortunate today are those who take up the study of lichens. In my early days of lichenology, when active lichenologists could be counted on the fingers of one hand, the only books available to me were a small popular account of Mosses, Liverworts and Lichens by E.M. Holmes and the British Museum Monograph and Handbook by A.L. Smith. A reviewer of the Monograph, a somewhat forbidding book,

started his review "Here let none unskilled in lichenology enter."

In view of the changes now taking place I cannot refrain from saying that a feature of the pre-war period was a fairly stable nomenclature. For at least forty years there would appear to have been no taxonomic revision of a genus by British lichenologists, indeed almost the only taxomonic work seems to have been at the species level, much of it by Walter Watson and Mackenzie Lamb.

ARTHUR WADE

Acid rain clouds gather over Britain

Rainfall in Britain is now as acid as that falling over Scandinavia according to an unpublished report from Warren Spring Laboratory. This summer the Forestry Commission in south-west Scotland began adding lime to rivers and lakes in an effort to revive stocks of fish after they had disappeared from the high hillsides of Galloway where it is quite usual for the rain to have a pH of 4. Fish deaths in the Lake District have also been attributed to acid rain, but such chance finds may be just the tip of the effects in Britain. The areas receiving the largest inputs of acidity are surprisingly the West Central Highlands, the Southern Uplands of Scotland and parts of Cumbria.

The report found that "the very acid rain events were associated with 48 hour trajectories of wind over large industrial regions of the U.K. and Europe while the very clean rain events were associated with trajectories over the North Atlantic". Occasionally the rain in Scotland (at pH 2.4) is more acid than vinegar. The annual average acidity at the only two sampling points in south-east England is pH 4.1. A significant proportion of the acidity is caused by nitric acid believed to originate from oxides of nitrogen emitted in vehicle exhaust, though the major part comes from sulphuric acid formed from $SO_2$ emitted when ever coal or oil is burnt.

The effect of this acidity on lichens has been little studied and is mainly annecdotal. For example, in 1970 Monk Wood in Northumberland (close to Cumbria) had Lobaria pulmonaria well established on at least 20 oaks, today it is present on only two or three trees. There has been no management or other obvious changes in the wood, ground level $SO_2$ is believed to have fallen,

so increased acidity of the rain would appear to be the most likely cause though the finer points of the evidence are missing.

Leslie Reed, Britain's chief alkali inspector, is looking to long term technological developments to bring about reductions, so if acid rain is severely damaging our lichen flora, as many of us fear, it is time the necessary research got under way.

Further reading: New Scientist, 12 Aug 1982, p219-224.

Erasmus Darwin claims the earliest mention of lichens and air pollution (1790)

An early example of industrial atmospheric pollution and its effect on plants is given in the November 1797 issue of that short-lived periodical Nicholson's Monthly Magazine. Mr.Arthur Aikin was staying in Amlwch in Anglesey in August of that year and he visited the copper works on Parys Mountain which he says had been in operation for just over 30 years. "The nearer we approached the scene" he wrote, "the more penetrating was the fume of sulphur". He tells us that the copper ores contained 25% sulphur and goes on, "Parys Mountain is perfectly bare from the summit to the plain below; not a single shrub and hardly a blade of grass being able to live in the sulphurous atmosphere". He also quotes from Erasmus Darwin's poem (from Part I of the Botanic Garden, 1790) on the subject*

No grassy mantle hides the sable hills,
No flowery chaplet crowns the trickling rills,
Nor tufted moss nor leathery lichen creeps
In russet tapestry o'er the crumbling steeps.

*
A footnote to the poem indicates that the scene described alludes to the copper mines in Anglesey.

FRANK BRIGHTMAN

Dougal Swinscow retires as a lichen referee

Members will have noticed that Dr Swinscow's name has vanished from the list of referees in the Lichenologist after being there for some 20 years. They will be relieved to hear that he is still fit and well, but having passed the age of 65, he feels

his judgement of critical material may not be quite what it was. Also, over the last decade his study of pyrenocarpous genera has been somewhat forsaken as his interest turned to African lichens.

The popularity which pyrenocarpous lichens enjoy in Britain, where they are often collected more avidly than discocarps, is in very large part due to the comprehensive, workable and beautifully illustrated keys to the group which Dougal Swinscow published in the Lichenologist from 1960 to 1971. An additional spur to studying them was the rapidity with which parcels of specimens were returned from Knebworth or more lately Topsham. Perhaps if the truth were known he has done his job so well and there are so many voucher specimens (det. TDVS) in circulation that there is no longer a need for a specialist referee in what was once considered the most difficult of groups. We, your old customers, thank you for unstinting help given over so many years.

Good news for the crofter is bad news for the machair

The machair of the Hebrides is a unique coastal ecosystem, yet over the next five years a government development programme may destroy much of it for ever. The distinctive ecological elements are calcareous sand and an oceanic climate which combine to give a lime-rich but unstable habitat often heavily grazed by sheep, hares, rabbits and wild geese. Many thousands of years ago the coastal shell sand ( 20-80% Ca $Co_3$) blew inland, often for several miles, to cover the seaward-facing acid moorland which is now a flowery pasture, reckoned by many to be one of the most beautiful habitats in the world. The role of lichens in the machair ecosystem has hardly been studied, but it is known to be rich in Cladonia, Peltigera, Collema, Leptogium and Toninia species whilst others, such as Solorina saccata, Placidiopsis custnanii and Microglaena muscorum have been recorded less frequently.

Since 1 September 1982 the Department of Agriculture and Fisheries for Scotland has brought in the Integrated Development Programme, and large sums of money are now available to induce crofters to amalgamate holdings, re-arrange common grazing and 'improve' the machair. Much of the money for these vastly inflated grants will come from the EEC, and, as the purpose of the scheme is to improve the socioeconomic conditions of the region,

proposed developments will not be subject to rigorous cost benefit analysis. Predictably neither the NCC or RSPB are happy with this programme, and lichenologists have already been approached for their views. Currently we do not have sufficient knowledge to comment in detail, as none of the major machair sites have been surveyed in recent years. It is hoped that the Spring 1983 field meeting to Coll & Tiree will start to remedy this, since both islands support hundreds of hectares of machair.

New, rare or interesting British lichen records

Arthothelium reagens Isle of Skye: on hazel in Tokavaig ashwood, April 1982. Second British record, the other being from near Oban. Ivan Day.

Chaenotheca carthusiae V.C.36, Hereford: On ancient oak, Brampton Bryan Park (with Lecidea sublivescens, Phyllopsora rosei, Lopadium pezizoideum) 1982. F. Rose. These discoveries underline the importance of this ancient parkland.

Cladonia cyathomorpha V.C. 70, Cumberland: sheltered cliff ledge, Red Pike, Wastdale, 35/16-10-, May 1982. This very distinctive species has broad inflated basal squamules with brown, K + purple, veins on their undersides. It is probably much overlooked. O.L.Gilbert & Ivan Day.

Lecanactis plocina Rhum National Nature Reserve: on the rock walls of a small wooded ravine with Enterographa hutchinsiae, Mullach Mor, April 1982. First Scottish record of this species which is only doubtfully distinct from L. premnea. Col.O.L.Gilbert.Det.B.J.C.

Lecanora subintricata Cumberland: on lignum of hawthorn, Low Stile Wood, Borrowdale, May 1982. New to V.C.70. Ivan Day.

Leptogium burgessii V.C.48, Merioneth: on old oak, Coed Crafnant; apparently not reported in Wales since last century, 1982. F. Rose.

Leptogium juressianum In six localities on birch and oak in South-West Ireland between Killarney and Glengarriff. New to the British Isles, only previously reported from Portugal, Sept.1982, Per M. Jorgensen. A full report on this interesting species is being prepared.

Myxomphalia maura South Yorkshire: on bonfire site on wasteland in the centre of Sheffield. Not associated with Botrydina. April 1981. O.L. Gilbert

Rinodina milvina Outer Hebrides, Mingulay: colonising slatey rock on McPhees Hill, Aug 1982. The only other British record is on Colonsay (see Bulletin No.50).

Col.V.J.Giavarini.Det.B.J.C.

Roccella phycopsis South Cornish Coast: abundant on rock underhangs, Pencarrow Head, West of Polperro, Aug. 1982, P.M. Holligan & O.L.Gilbert. Members are reminded that Peter James's offer of a bottle of whisky to the first person to discover Roccella in Ireland is still unclaimed after 18 years.

Sarcogyne clavus Outer Hebrides, Mingulay: growing in crevices of pegmatite vein in exposed outcrop, Village Bay. Associated with S. privigna. Col.V.J.Giavarni. Det.B.J.C.

Sticta canariensis V.C. 70, Cumberland: Borrowdale May 1982. First modern record from Northern England. Ivan Day.

Trapelia coarctata South Yorkshire: becoming common on the rubber lids of dustbins throughout Sheffield where it occurs together with L. conizaeoides. This community is a sign of ameliorating $SO_2$ pollution; has anyone else noticed it?

O.L.Gilbert.

New members

The following new members joined the Society between June and October 1982. FM = family member.

Miss C.D.Barnacle, Flat 3, 24 Bramley Hill, SOUTH CROYDON, Surrey.
Mr. A. Ferguson, 5 Fox Hey Road, WALLASEY, Merseyside, L44 2ES.
Dr. J.M.E. Fernandez, Departmento Botanica, Fac.Ciencias, Univ.Murcia, MURCIA, Spain.
Dr. J.-T. Corbin Ll, Departmento de Botanica, Facultad de Farmacia, Universidad de Valencia, Avda Blasco Ibanez 13, VALENCIA 10,Spain.
Mr.H. Oberhollenzer, Eduard Spranger Str. 7, W 11/7, D-7140 LUDWIGSBURG, West Germany.
Dr. J. O'Neill, St. Mary's Hospital, STANNINGTON, Northumberland.
Mr.R. Petch, P.O. Box 10, ST. ANDREWS, Fife, KY16 OLD.
Mrs.A.P. Sykes, 11 Upper Bell Hall, HALIFAX, West Yorkshire HX1 3EQ.
Mr. M. W. Sykes, 11 Upper Bell Hall, HALIFAX,West Yorkshire HX1 3EQ(FM)
Miss E.A. Watson, 43 Delius Way, STANFORD-LE-HOPE, Essex, SS17 8RG.

# WORD SEARCH 31

Mrs H. G. Brown

# LICHENS

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | S | U | R | O | H | P | O | R | E | A | H | P | S | T | I | C | T | A |
| P | I | X | A | N | T | H | O | R | I | A | A | I | R | A | N | N | A | P |
| L | A | L | L | E | C | C | O | R | R | A | M | A | L | I | N | A | E | L |
| A | R | R | P | A | L | C | A | E | I | L | C | E | S | A | T | R | O | E |
| C | I | C | M | I | F | C | Y | N | P | U | C | E | H | C | T | B | O | P |
| Y | S | N | A | E | I | X | O | S | D | I | C | P | O | U | A | C | I | R |
| N | E | L | M | L | L | D | B | B | D | E | A | L | S | R | H | A | N | A |
| T | C | L | I | Y | A | I | E | E | T | R | L | A | I | R | A | P | A | R |
| H | Y | B | E | L | G | A | A | R | G | E | R | A | O | I | I | A | M | I |
| I | M | L | C | P | R | O | A | E | M | I | N | L | R | A | N | S | E | A |
| U | O | I | N | A | T | R | P | A | A | A | E | O | I | I | R | U | R | N |
| M | E | C | Y | C | I | O | R | Y | P | C | T | L | R | G | E | N | T | I |
| A | A | H | P | A | D | O | G | T | H | C | L | O | W | O | V | L | O | D |
| I | B | I | L | E | N | R | Y | I | E | E | L | A | C | D | E | D | L | N |
| C | I | N | I | A | A | C | A | L | U | O | T | O | E | A | R | B | E | A |
| S | E | A | C | P | H | G | A | B | S | M | B | R | U | N | R | G | H | M |
| Y | A | E | H | I | P | E | L | T | I | G | E | R | A | E | S | P | T | R |
| H | L | I | A | I | R | A | C | U | R | R | E | V | N | I | N | U | O | O |
| P | S | R | C | A | L | O | P | L | A | C | A | M | O | R | H | P | E | N |

*Alectoria*
*Anaptychia*
*Baeomyces*
*Buellia*
*Caloplaca*
*Candelariella*
*Cetraria*
*Cladonia*
*Coilema*
*Dermatocarpon*
*Evernia*
*Graphis*
*Hypogymnia*
*Lecanora*
*Lecidea*
*Lepraria*
*Leptogium*
*Lichina*
*Lobaria*
*Nephroma*
*Normandina*
*Ochrolechia*
*Opegrapha*
*Pannaria*
*Parmelia*
*Peltigera*
*Pertusaria*
*Physcia*
*Placynthium*
*Ramalina*
*Roccella*
*Solorina*
*Sphaerophorus*
*Sticta*
*Thelotrema*
*Umbilicaria*
*Usnea*
*Verrucaria*
*Xanthoria*

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# BRITISH LICHEN SOCIETY.

## Expenditure & Income for the Year Ending 31st December 1981

| 1980. | Expenditure | | | 1980 | Income | | |
|---|---|---|---|---|---|---|---|
| | Academic Press - | | | | | | |
| 3362 | The Lichenologist | | 3960 | 3057 | Members' subscriptions | | 4800 |
| | Subscriptions paid to:- | | | | Royalties:- | | |
| 20 | Bryol et Lichol. | 20 | | 121 | Progress & Problems | | 65 |
| 8 | American Bryologist | 9 | | 127 | Dr.U.K.Duncan's book. | | 192 |
| 4 | CoEnCo | 4 | | | Sales:- | | |
| - | Inter. Mycol. Assen. | 20 | | 30 | A.L.Smith's Book | | 12 |
| 9 | Biological Council | 15 | 68 | 3 | B.M.S. publications | | 2 |
| 301 | The Bulletin (Less receipts) | | 329 | 5 | Herbarium Catalogue | | 3 |
| 67 | Stationery & Typing | | 232 | - | Cons. of British Lichens | | 3 |
| 83 | Postage | | 194 | 83 | Checklist | | 168 |
| - | Reading Circle | | 4 | | Grant from B.P.- Air | | |
| 10 | Insurance | | 50 | - | Pollution on Lichens | | 400 |
| - | Air Pollution & Lichens | | 33 | - | Balance - Bangor Workshop | | 44 |
| - | Royal Society Loan Re- | | | | Interest:- | | |
| | payment Fund. | | 200 | | Girobank | 28 | |
| 14 | Sundry small payments | | 52 | | Nat. Westminster Bank | 712 | |
| - | Excess of Income over | | | | Canadian Imp. Bank | 68 | 808 |
| | Expenditure. | | 1375 | | Excess of Expenditure | | |
| | | | | 113 | over Income | | - |
| | | | £ 6497 | | | | £ 6497 |

## Balance Sheet as at 31st December 1981

| Liabilities. | | | Assets. | |
|---|---|---|---|---|
| Subscriptions paid in | | | Cash at Banks:- | |
| advance. | | 153 | National Westminster | 5865 |
| World Wildlife Fund. | | 10 | Canadian Imperial | 556 |
| Royal Society - Loan. | | 600 | Girobank - Reserve Fund | |
| Reserve Fund to repay | | | investment | 371 |
| Loan. | | 200 | Pd. - Stock | 56 |
| General Fund at31/12/80. | 5300 | | Checklist - Stock | 790 |
| Add surplus for year | 1375 | 6675 | | |
| | | £ 7638 | | £ 7638 |

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

R.T.Ashby
Hon. Auditor 17th May 1982

S.N.Tallowin
Hon. Treasurer
1st May 1982

Literature on lichens - 39

Lichenologist 14(2) was published on 19 August 1982.


AHMADJIAN, V. 1982. Algal/fungal symbioses. Prog. Phycol. Res. 1: 179 - 233. [Scholarly review.]

AHTI, T. 1982. The morphological interpretation of cladoniiform thalli in lichens. Lichenologist 14: 105 - 113. [New definition of a podetium. Discussion of related structures.]

AHTI, T. 1982. Evolutionary trends in cladoniiform lichens. J. Hattori bot. Lab. 52: 331 - 341. [Comments on 17 genera. A table of species pairs in Cladonia is given.]

ALSTRUP, V. 1982. The epiphytic lichens of Greenland. Bryologist 85: 64 - 73. [Annotated list of 106 species reported.]

ANON. 1982. Lichens - the watchdogs of environmental pollution. New Scient. 95(1321): 623. [Review.]

ARMESTO, J. J. & CONTRERAS, L. C. 1981. Saxicolous lichen communities: nonequilibrium systems? Am. Nat. 118: 597 - 604. [Discussion of lichen populations on large isolated rocks and very small rocks.]

COPPINS, B. J. 1982. Field meeting in Berwickshire. Lichenologist 14: 189 - 193. [Descriptive account.]

COPPINS, B. J. 1982. Lichens. In BALLANTYNE, G. H. (Ed.) The Wildlife and Antiquities of Kirkcaldy District: 129 - 134. Kirkaldy Nat. Soc., Kirkaldy. [Data on 132 species for this area of Fife.]

ERIKSSON, O. 1981. The families of bitunicate ascomycetes. Op. bot. Soc. bot. Lund 60. [Account of the morphology and nomenclature of c. 195 families. The origin and evolution of the Ascomycetes are discussed. 109 clades, mostly orders, are recognised.]

ERIKSSON, O. 1982. Outline of the Ascomycetes - 1982. Mycotaxon 15: 203 - 248. [228 families are recognised, belonging to 39 orders in two subclasses.]

FERRY, B. W. 1982. Lichens. In BURNS, R. G. & SLATER, T. H. Experimental Microbiol Ecology: 291 - 319. Blackwell, Oxford. [Review of ecological studies.]

GIAVERINI, R. J. 1982. The vegetation of Slepe Heath. Proc. Dorset nat. Hist. archaeol. Soc. 103: 107 - 110. [Includes brief account of the lichens.]

GILBERT, O. L., FOX, B. W. & PURVIS, O. W. 1982. The lichen flora of a high-level limestone-epidiorite outcrop in the Ben Alder range, Scotland. Lichenologist 14: 165 - 174. [Descriptive account; many rare lichens. Lecania alpivaga Th.Fr. and Sagiolechia protuberans (Ach.)Massal. are checklist additions.]

GILBERT, O. L. & LAMBLEY, P. W. 1982. Field meeting at Ludlow, Shropshire. Lichenologist 14: 185 - 186. [Descriptive account.]

HAFELLNER, J. & BELLEMÈRE, A. 1982. Elektronenoptische Untersuchungen an Arten der Flechtengattung Bombyliospora und die taxonomischen Konsequenzen. Nova Hedwigia 35: 207 - 235. [Bombyliospora is shown to be a synonym of Megelospora. New comb.: M. pachycarpa (Delise ex Duby)Bellem. & Hafellner.]

HAFELLNER, J. & BELLEMÈRE, A. 1982. Elektronenoptische Untersuchungen an Arten der Flechtengattung Brigantiaea. Nova Hedwigia 35: 237 - 261. [The family Brigantiaeaceae is described. Some species are transferred to Brigantiaea.]

HAFELLNER, J. & BELLEMÈRE, A. 1982. Elektronenoptische Untersuchungen an Arten der Flechtengattung Letrouitia gen. nov. Nova Hedwigia 35: 263 - 312. [The Bombyliospora domingensis group is placed in Letrouitia.]

HAFELLNER , J., MAYRHOFER, H. & POELT, J. 1979. Die Gattungen der Flechtenfamilie Physciaceae. Herzogia 5: 39 - 79. [21 genera are recognised. Phaeophyscia is sunk under Physcia, and Pnysciopsis under Hyperphyscia; H. adglutinata (Flörke)Mayrhofer & Poelt is a new combination.]

HALVORSEN, R. & BENDIKSEN, E. 1982. The chemical variation of Pseudevernia furfuracea in Norway. Nordic J. Bot. 2: 371 - 380. [Three chemical strains present; "there is no reason to believe that the chemotypes should be biologically distinct." A map shows the chemistry throughout Europe.]

HAWKSWORTH, D. L. 1982. Changes to the British checklist arising from the abolition of later fungal starting points. Lichenologist 14: 131 - 137. [Six name changes, and simplification of author citations for 13 others.]

HAWKSWORTH, D. L. 1982. Co-evolution and the detection of ancestry in lichens. J. Hattori bot. Lab. 52: 323 - 329. [An "acceptable hypothesis on the evolution of lichen families ... must ... take account of the ... lichenicolous fungi".]

HAWKSWORTH, D. L. 1982. Secondary fungi in lichen symbioses: parasites, saprophytes and parasymbionts. J. Hattori bot. Lab. 52: 357 - 366. [Review.]

HENDERSON, A. & SEAWARD, M. R. D. 1982. Yorkshire Naturalists' Union excursions in 1981. Naturalist, Hull 107: 103 - 111. [Includes some lichen records from Marske in Swaledale.]

JAHNS, H. M. 1980. Farne.Moose.Flechten. Mittel-, Nord- und Westeuropas. BLV, München. [Colour photographs, with text, of ferns, mosses, and lichens. Useful popular work. DM 36.00 (about £9); an English revised edition is expected to be published during 1983.]

JAMES, P. [W.] 1982. Lichens and Air Pollution. British Museum (Natural History), London. [Booklet to accompany the 1981 wall chart; descriptive. £0.95 + £0.35 postage. Wall chart and booklet £1.75 + £0.70 postage. Wall chart alone £1.25 + £0.35 postage.]

KROG, H. 1982. Evolutionary trends in foliose and fruticose lichens of the Parmeliaceae. J. Hattori bot. Lab. 52: 303 - 311. [Discussion of conidia, primitive genera, etc.; "it is possible that the alectorioid lichens ... should be segregated in a separate family".]

KROG, H. 1982. Punctelia, a new lichen genus in the Parmeliaceae. Nordic J. Bot. 2: 287 - 292. [The Parmelia borreri group and the P. flaventior group are placed in Punctelia Krog, gen. nov.]

MAGNUSSON, M. 1982. Composition and succession of lichen communities in an inner coastal dune area in southern Sweden. Lichenologist 14: 153 - 163.

MOBERG, R. & HOLMÅSEN, I. 1982. Lavar. Interpublishing, Stockholm. [Colour photographs, descriptions, distribution maps, and some keys to lichens in Scandinavia. Useful popular work.]

PETERKEN, G. F. 1981. Woodland Conservation and Management. Chapman & Hall, London. [Major work on the ecology etc. of British woodlands. Short paragraph on lichens. £25.00.]

REYNOLDS, D. R. (Ed.) 1981. Ascomycete Systematics. The Luttrellian Concept. Springer, New York. [Chapter by different authors on the development etc. of the ascocarp centrum and the ascus; detailed accounts of the Lecanorales.]

ROGERS, R. W. 1982. The corticolous species of Haematomma in Australia. Lichenologist **14**: 115 - 129. [Taxonomic account of eight species.]

SEAWARD, M. R. D. 1982. University of Wroclaw lichen herbarium. Nova Hedwigia **36**: 17 - 31. [Detailed account.]

SEAWARD, M. R. D. 1982. Principles and priorities of lichen conservation. J. Hattori bot. Lab. **52**: 401 - 406. [Review.]

SEAWARD, M. R. D. 1982. Lichen ecology of changing urban environments. In BORNKAMM, R., LEE, J. A. & SEAWARD, M. R. D. (Eds) Urban Ecology: 181 - 189. [Includes data on rates of colonisation.]

SEAWARD, M. R. D. 1982. Additions to the lichen flora of County Carlow. Ir. Nat. J. **20**: 442 - 444. [List of 79 species.]

SEAWARD, M. R. D., NELSON, E. C. & COPPINS, B. J. 1982. David Moore and Isaac Carroll: some lichenological and bryological correspondence. Glasra **6**: 73 - 96.

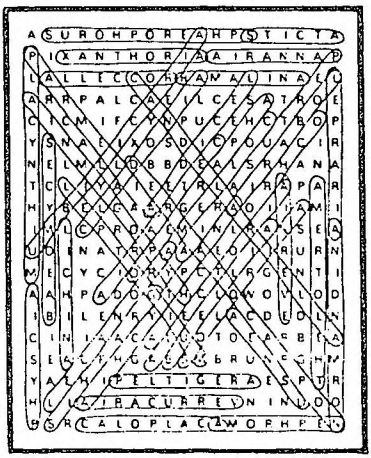
SMITH, D. C. 1981. The role of nutrient exchange in recognition between symbionts. Ber. dt. bot. Ges. **94**: 517 - 528. [Review. Comparison of symbiosis of algae with both fungi and lower invertebrates.]

SØCHTING, U. & RAMKAER, K. 1982. The epiphytic lichen zones in rural Denmark and Schleswig-Holstein. Nordic J. Bot. **2**: 171 - 181. [Marked recent depauperation reported from Schleswig-Holstein, and Danish lichen vegetation endangered.]

TITTLEY, I. 1982. Algal studies in the brackish reaches of the River Thames. [Abstract.] Br. phycol. J. **17**: 240. [A supralittoral zone of Lecanora dispersa is reported from river walls at Woolwich above four algal zones.]

VITIKAINEN, O. 1982. A key to Peltigera in Great Britain. Bull. Br. Lichen Soc. **50**: 28 - 36. [Includes an addition to the British checklist: Peltigera elisabethae Gyelnik.]

- - - - - - - J. R. LAUNDON



## KEY TO PARMELIA IN GREAT BRITAIN

1a Thallus strap-shaped, lobes attached at one end, often forming tufts. 2

1b Thallus ± attached centrally or by most of the underside, not tufted. 3

2a(1a) Upper surface green, uneven-ridged; sorediate, lower surface white. Widespread species on wayside and woodland trees. Evernia prunastri (L.) Ach.

2b Upper surface grey, ± isidiate; lower surface white, pale pink or black. Widespread species on acid barked trees and boulders. Pseudevernia furfuracea (L.) Zopf

3a(1b) Lobes inflated ± terete, often hollow, upper surface markedly convex; lower surface blackened, without rhizines, attached to substrate in part or entirely by the lower cortex. All species contain physodic acid. Hypogymnia spp.

3b Lobes not inflated, not hollow, flattened, usually attached in part or wholly by rhizines. 4

4a(3b) Lobes partly or mostly ascending; margins sorediate or coralloid-isidiate; upper surface grey or ± brown, lower surface black or partly flecked with brown or white, rhizines only present towards the centre of the thallus. Medulla K-, KC-, C-, P-. Widespread species on acid-barked trees and boulders. Platismatia glauca (L.) Culb. & C. Culb.

4b Lobes ± closely attached, spreading, rarely ascending. 5.

5a(4b) Upper surface green-grey to yellow-green, or yellow-grey, grey or yellow tone predominating. 6

5b Thallus green-brown or grey-brown; brown tone predominating. 37

6a(5a) Thallus green-grey, grey tone predominating. Usnic acid absent. 7

6b Thallus yellow-green to yellow-grey, yellow pigment predominating. Usnic acid present. 30

7a(6a) Isidia and soralia absent. 8

7b Isidia and/or soralia present. 11

8a (7a) Upper surface with coarse, ± elongate maculae which tend to fuse to form a slightly raised, coarse, white network (X10 lens); lobe ends ± incised. Juvenile forms of P. saxatilis (13a), P. sulcata (19a) and shade forms of P. omphalodes (39a)

8b Surface of lobes not white maculate; lobe ends with rounded, sometimes indented margins. 9

9a)8b) Medulla K + y - r, C-, P + o. Upper surface grey-green to brown-grey, ± thinly grey pruinose, dark oily green when wet. Lobes large, to 1.7 cm wide, coriaceous with undulate margins; lower surface pale. Wayside trees, especially elm, sycamore and ash in eastern England (decreasing), northwards to Scotland (rare); very rare in Wales and south-east Ireland. Parmelia acetabulum (Necker) Duby

9b Medulla K-, C + r, P -. Upper surface grey or blue-grey, not becoming dark green when wet 10

10a(9b) Thallus closely appressed and firmly attached to the substrate; lobe ends not down-turned; upper surface uniformly blue-grey, often ± shining. Usually fertile, margins of apothecia ± densely rhizinose below. Well-lit branches and trunks of trees in hedgerows or open woodland sites in south and south-west England and south Wales only; very local and decreasing. P. quercina (Willd.) Vainio

10b Thallus ± loosely attached, often spreading amongst and over mosses; lobe ends ± down-turned; upper surface pale grey with occasional, irregular, white abraded areas. Apothecia very rare, margins not rhizinose. Old woodland indicator species in high rainfall areas in south, west and north Britain; also occurs rarely on coastal rocks with bracken; locally common. P. taylorensis Mitchell

11a(7b) Isidia present. 12

11b Soralia present. 18

12a(11a) Upper surface ornamented with white maculae, either in punctiform spots or as coarse, oval to elongate, raised lines which fuse to form a network (see also 25a). 13

12b Upper surface devoid of maculae. 14

13a(12a) Upper surface with oval or elongate, ± raised maculae which fuse to form a coarse, white network. Isidia elongate, at first arising from the maculae, later spreading to all areas of the upper surface. Lobe apices ± incised. Rhizines branched. Medulla K + y - o, C -, P + y - o. Widespread on trees and rocks. Common. P. saxatilis (L.) Ach.

13b Upper surface with scattered, rounded maculae. Isidia numerous, rounded, occasionally becoming coarsely sorediate, arising from maculae, surface and margins, often becoming flattened and forming small folioles. Lobes rounded with indented margins. Rhizines simple. Medulla K-, C-, P-. Old woodland and parkland indicator species, local and mainly in southern and western Britain. P. reddenda Stirton

14a(11a) Medulla C+ r or o - r. Isidia not associated with scattered black cilia. 15

14b Medulla C-. Isidia mixed with scattered, fine, black cilia. 17

15a(14a) Lobes small, up to 0.5 cm wide. Isidia elongate, often crowded, becoming ± coralloid-branched, concolorous with the thallus. Confined to ancient trees in a few old woodland sites in southern Britain. Rare. P. minarum Vainio

15b Lobes medium, up to 1 cm wide. Isidia black or concolorous with the thallus. On nutrient-rich bark and rocks. 16

16a(15b) Isidia pale brown to grey-brown or concolorous with the thallus, elongate-clavate, simple or coralloid. Thallus surface usually matt. Mainly confined to eastern Britain. Local.
P.tiliacea (Hoffm.)Ach.

16b Isidia black, button-like with a short stalk. Thallus surface usually ± shining. Mainly in southern and western areas of Britain. Local.
P.pastillifera(Harm.) R.Schubert & Klem.

17a(14b) Thallus large, up to 10 cm diam. or more, widespreading. Lobes to 1.5 cm wide, with crisped, undulate, rounded ends. Isidia ± cylindrical. Underside with a broad, naked zone near the margin. Medulla K + y - o, KC + o, P + o. Widespread in old woodland, coastal cliffs and scree in western and southern Britain. P. crinita Ach.

17b. Thallus small, seldom more than 3 cm diam. Lobes 0.5 cm wide, plane, with indented, ± incised ends. Isidia ± flattened. Underside densely rhizinose to the margin. Medulla K-, KC + pink, P - , Old woodlands in south and south-west England and Wales. Rare. P. horrescens Taylor

18a(11b) Upper surface ornamented with either small, white punctiform spots ( x 10 lens) or coarse, ± raised, elongate, network-forming maculae. 19

18b Upper surface smooth, devoid of pale maculae, or only with a faint mosaic of minute cracks. 23

19a(18a) Upper surface with oval or elongate maculae which frequently fuse to form a conspicuous, coarse, white reticulum. Soralia elongate, in lines, mainly derived from breakdown of the maculae. Lobe ends incised. Rhizines simple. Medulla K + y - o, C-, P + o. Widespread and common species on trees and rocks. P. sulcata Taylor

19b Upper surface with small, ± punctiform, rarely sigmoid, maculae which may develop into soralia. Lobe ends rounded, sometimes indented. 20

20a(19b) Plants large, up to 20 cm diam.widespreading. Lobes more than 2 cm wide, with ± raised, undulate margins. Maculae minute ( x 10 lens), scattered, never coalescing or becoming sorediate. Soralia strictly marginal. Rhizines scarce, underside with a broad, naked zone near margin. Medulla K-, C- (very rarely + r), KC pink, P-. Widespread species of old woodlands and wet carrs in western areas of Britain. Local but often abundant where it occurs.
Cetrelia olivetorum (Nyl.) Culb & C.Culb.

20b. Plants medium, up to 6cm diam. Lobes up to 1 cm wide, ± closely appressed, margins rarely ascending. Maculae small, scattered, becoming sorediate. Soralia marginal and/or laminal, often arising from maculae. Underside with a narrow naked zone near the margin. 21

21a(20b) Medulla C–, Soredia coarse, granular, sometimes becoming corticate to form ± flattened folioles. Old woodland indicator species in southern and western areas of Britain; recorded as far north as the island of Mull. Local. P. reddenda Stirton

21b Medulla C + r. Soredia fine, powdery. Widespread, particularly on wayside trees. 22

22a(21b) Underside pale brown at the centre. Contains lecanoric acid (C + carmine – r). Widespread species except in north and east Scotland. Locally common. P. subrudecta Nyl.

22b Underside black at the centre. Contains gyrophoric acid (C+ orange – r). (Soralia tend to coalesce more than 22a – also more robust and more likely to be fertile). Mainly confined to south and south-west England and Ireland. Most frequent in old orchards but very local. P. borreri (Sm.) Turner

23a(18b) Soralia strictly terminal, capitate, at the ends of incised lobes. Lobes ± elongate with markedly curved-sinuate axils. Rhizines richly branched. (See also 27a). 24

23b Soralia marginal and/or laminal, if at lobe ends then on the upper surface and not involving the apices. Lobes ± rounded with indented margins and axils. 25

24a(23a) Medulla pure white. Upper surface pale grey or grey. Widespread in acid woodlands and boggy areas in western Britain and Ireland. Locally frequent. P. laevigata (Sm.) Ach.

24b Medulla pale primrose yellow. Upper surface dull grey (thallus usually smaller than 24a). Similar habitats to 24a but much rarer and more local. P. endochlora Leighton

25a(23b) Upper surface with a faint, close network of white maculae, often developing into a mosaic of hair-line cracks ( x 10 lens). Soralia erose, mainly towards the ends of the lobes. Lobes often down-turned, especially when sorediate. Underside of lobes with simple rhizines extending to the margins. Medulla K+ y – r, C–, P + o (salazinic acid). Widespread, but often overlooked, species in south and west Britain and Ireland. Locally common. P. reticulata Taylor

25b Upper surface smooth, entirely without a faint mosaic of maculae or cracks. Lobe ends not down-turned. Soralia marginal and/or laminal. 26

26a(25b) Medulla C+ r (lecanoric acid). Thallus medium, to 6cm diam. Lobes appressed, without raised or undulate margins. Underside rhizinose to the margins, rhizines weakly branched. Marginal cilia absent. 27

26b Medulla C-, Thalli often large, often 10 cm or more in diam. Lobes often with raised or undulate margins. Underside often with an extensive naked zone near the margin. Rhizines simple. Marginal cilia few to numerous, usually present. 28

27a(26a) Lobes often elongate with sinuate axils. Soralia laminal or terminal, commonly near lobe ends; soredia granular, blue-black, upper surface often shining. Widespread saxicolous species mostly confined to coastal areas in western Britain and Ireland. Locally common. P.britannica D.Hawks. & P.James

27b Lobes rounded, often indented, axils rounded but not markedly sinuose. Soralia laminal, often near lobe ends, concolorous or slightly darker than the thallus. Widespread species on wayside and woodland trees, more rarely rocks, in inland and maritime situations. Widespread, often locally common. P. revoluta Flörke (including P.afrorevoluta Krog & Swinscow)

28a(26b) Medulla KC + pink, P - (alectoronic acid). Soralia and medulla UV + vivid ice-blue. Old woodland indicator species of south and west Britain. Rare. P. arnoldii Du Rietz

28b Medulla KC - or y - o, never KC + pink, P + o - r. Medulla and soralia UV -. 29

29a(28b) Medulla K + y - o, P + o (stictic acid). Widespread and often common species on wayside and woodland trees, more rarely rocks, in southern and western Britain extending to Shetland. P. perlata (Huds.) Ach.

29b Medulla K-, P + rust - r (protocetraric acid). On mossy rocks on the coast in extreme south-west Ireland. Rare. P. robusta Degel.

30a(6b) Lobes ± isidiate. Plant exclusively on rock. 31

30b Lobes with granular or farinose soralia. On rock, trees or, rarely soil 32

31a(30a) Isidia elongate, simple becoming coralloid, often crowded but sometimes almost absent. Contains stictic and norstictic acids. Widespread on acid rocks and roofing tiles. Common. P.conspersa (Ach.) Ach.

31b Isidia rounded or irregular, not branched. Contains salazinic and norstictic acids. On sunny boulders near the sea, Jersey (Channel Islands). Very rare. P.tinctina Maheu & A. Gillet

32a(30b) Soralia apical, capitate, at ends of ± ascending narrow lobes with incised apices, axils markedly sinuate. Underside densely black rhizinose, rhizines branched, often projecting beyond the thallus margin. Medulla K + y - r, C - (salazinic acid). Frequent on rocks and acid-barked trees in west Scotland and becoming scarcer in western England and Wales. P. sinuosa (Sm.) Ach.

32b Soralia laminal. Lobes elongate or rounded, axils not sinuate. Rhizines simple or branched, not projecting beyond the thallus margin. 33

33a(32b) Lobes large or medium, 0.5 - 1.3 cm wide, rounded, margins often indented. 34

33b Lobes small, to 0.3 cm wide, elongate, margins mostly even or notched. 35

34a(33a) Soralia coarse, granular, derived from pustular, erose patches. Medulla K + y, C-, P + rust - r, (protocetraric acid). Thallus ± closely appressed but centre often raised - undulate and uneven. Lobes up to 1.3 cm wide. Widespread wayside and woodland species, more rarely on rocks, in most of Britain and Ireland except north-east Scotland. Common. P.caperata (L.) Ach.

34b Soredia fine, farinose. Soralia scattered at first, becoming confluent to form erose, irregular patches. Medulla K + y - r, C -, P + o (norstictic acid). Thallus closely appressed throughout. Lobes medium, not exceeding 0.7 cm wide. Chiefly on sunny wayside tree boles and rocks, particularly in coastal situations. Rare except in south and south-east England. P. soredians Nyl.

35a(33b) Lobes markedly convex. Soralia forming at ends of upturned lobes in inner, older parts of the thallus, conspicuous, ± globose, often paler than the thallus. Medulla K-, KC + pink, P - or rarely + r, UV + ice-blue (alectoronic acid). Widespread but rather local species on acid rocks in hilly areas of Britain. Possibly increasing due to acidification by $SO_2$ pollution. P. incurva (Pers.) Fr.

35b Lobes ± ²plane. Soralia laminal, plane or excavate Medulla UV -. 36

36a(35b) Medulla K + y - o, C -, P + o (stictic acid). Exclusively on hard (quartzite or granitic)rocks. Widespread and locally common species in hilly areas of Britain; also on acid gravestones in south-east England. P. mougeotii Schaerer ex Dietr.

36b Medulla K -, C - , P - (divaricatic acid). Usually on bark or wood. Common and widespread species in $SO_2$ polluted sites, rare on rocks except in northern England. Parmeliopsis ambigua (Wulfen) Nyl.

37a(5b) Without soralia or isidia. 38

37b With soralia and/or isidia. 47

38a(37a) Upper surface with oval or elongate maculae which frequently fuse to form a coarse, ± raised, white network. Lobes numerous, overlapping, apices incised. Rhizines numerous, black, branched. 39

38b Upper surface devoid of white ridge-like maculae. Lobes without incised ends. 40

39a(38a) Medulla, K + y, - r, C -, P + o (salazinic acid). Widespread and often common species of acid rocks in most upland areas of Britain and Ireland.
P. omphalodes (L.) Ach.

39b Medulla K -, C - , P + rust - r (protocetraric acid). Local species with a similar distribution to 39a but mostly at higher elevations. Rare. (? overlooked)
P. discordans Nyl.

40a(38b) On trees (very rarely on rock). Upper surface smooth, not ridged. 41

40b On rocks. Upper surface often with transverse corrugations. 44

41a(40a) Thallus compact, distinct marginal lobes absent or few, often entirely composed of numerous very small, thin, overlapping folioles, 0.1 - 0.2 cm wide, pale brown, olive-green when wet. Underside pale. Never fertile. Medulla K -, C-, P - (no lichen substances). Distinctive species on boles and branches of wayside trees often in relatively polluted situations. Locally frequent in England, rarer in Scotland and Wales.
P.laciniatula (Flagey ex H.Olivier) Zahlbr.

41b Thallus more expansive, marginal lobes often enlarged. Commonly fertile. 42

42a(41b) Thallus widespreading, upper surface grey-brown, often ± grey-white pruinose, dark oily green when wet. Lobes large, to 1.7 cm wide, coriaceous, margin undulate, not closely appressed. Medulla K + y, - r, C -, P + r (norstictic acid). Wayside trees, especially elm, sycamore and ash in eastern England; very rare in Wales and south-east Ireland.
P. acetabulum (Necker) Duby

42b Thallus pale brown, red-brown, olive, or black-brown, surface never pruinose, remaining ± brown when wet. Lobes medium, to 1 cm wide, thin, not coriaceous, often closely appressed to the substrate. 43

43a(42b) Upper surface with numerous ± evenly spaced, wart-like, conical papillae. Medulla P -, Apothecia usually present, margins ± papillose. Widespread species of smooth bark, especially of branches and twigs, more rarely on boles of wayside and woodland trees. Frequent in western Britain becoming rarer and decreasing elsewhere. P. exasperata de Not.

43b Upper surface smooth, without conical warts. Medulla P + rust - r (fumarprotocetraric acid). Apothecia crowded, often overlapping, margin very thin, smooth. Confined to the eastern highlands of Scotland. Locally frequent, mainly on twigs of birch (often with Cetraria sepincola). P. septentrionalis (Lynge) Ahti

44a(40b) Lobes small, to 0.2 cm wide, convex, not or shortly elongate at the margins. Alpine species. 45

44b Lobes medium, to 0.5 cm wide, plane, elongate and spreading marginally. 46

45a(44a) Lobes forming a central ± areolate crust, areoles convex, surface matt, without minute pseudocyphellae ( x 10 lens) Medulla C + pink, P + pale y (alectorialic acid). High mountains in Cairngorms and northern Scotland (very rare in the northern Pennines Allantoparmelia alpicola (Th.Fr.) Essl.

45b Lobes ± overlapping, not forming a central areolate crust, surface shining, with numerous minute, punctiform pseudocyphellae ( x 10 lens) Medulla C –, P + rust – r (fumarprotocetraric and protocetraric acids). High mountains in Scotland and northern England. Rare. P. stygia (L.) Ach.

46a(44b) Upper surface pale grey-brown to light brown. Contains glomelliferic and glomellic acids. On maritime acid rocks. Widespread and locally frequent often with 46b. P. delisei (Duby) Nyl.

46b Upper surface brown to black-brown. Contains either stenosporic or divaricatic acids. Widespread and locally abundant on maritime acid rocks along western coasts of Britain and Ireland. P. pulla Ach.

47a(37b) With soralia. 48

47b With isidia 49

48a(47a) Thallus shining dark brown to black-brown. Soralia elevated on short, ascending inner lobes, soredia farinose, leaving white areas when abraded. Medulla C–, a very rare species on acid rock known only from two sites in the mountains of western Scotland. P. sorediosa Almb.

48b Thallus matt, olive-brown or brown. Soralia granular, partly isidiate, sometimes verruciform, leaving a pale yellow area when abraded. Medulla C + r, widespread species on trees, especially branches and twigs, rare on rocks. Common and widespread in most areas of Britain and Ireland. P. subaurifera Nyl.

49a(47b) Medulla C + instantly bright carmine – r. 50

49b Medulla C –, rarely faint pink. 52

50a(49a) Isidia rounded or irregular, secondary, derived from soredia, leaving a pale yellow area when abraded, upper surface matt. Widespread species on smooth bark, especially on branches and twigs, rare on rocks. Rhodophyscin present. Common and widespread in most parts of Britain. P. subaurifera Nyl.

50b Isidia elongate, smooth, becoming branched-coralloid, leaving a white area when abraded, usually numerous but sometimes almost absent. Upper surface shining, especially towards the lobe ends. Rhodophyscin absent. Widespread species on trees and rocks throughout Britain and Ireland. 51

51a(50b) Upper surface dark brown to black-brown. Chiefly on rocks. P. glabratula subsp. fuliginosa (Fr. ex Duby) Laundon

51b Upper surface olive-brown to brown. Chiefly on bark or wood. P. glabratula (Lamy) Nyl. subsp. glabratula

52a(49b) Thallus small, entirely without isidia but composed of numerous, thin, flattened, overlapping folioles, up to 0.2 cm wide. Underside pale. Never fertile. Medulla K-, C-, P-. On boles and branches of wayside trees, often in relatively polluted situations. Locally frequent in England, rarer in Scotland and Wales. P. laciniatula (Flagey ex H.Olivier) Zahlbr.

52b Thallus lobes more than 0.2 cm wide, well defined at the margin of the thallus, spreading. 53

53a(52b) On rocks 54

53b On bark or wood. 57

54a(53a) Isidia inflated, hollow, simple, swollen towards the middle, often decumbent, orientated in all directions. Lobes undulate, partly attached, semi-pellucid when wet. Underside pale, K-, C-, P-. Locally frequent in England, rarer in Scotland and Wales. On boles and branches of nutrient - rich wayside trees, often in relatively polluted areas; when on rocks, often on walls under sycamore. P. exasperatula Nyl

54b Isidia not inflated, ± solid, clustered or dispersed often branched, ± cylindrical. Lobes closely appressed to the substrate; underside dark brown to black. 55

55a(54b) Lobes up to 0.15 cm wide. Isidia scattered or aggregated into nodulose or verruciform clusters. Sub-marginal pseudocyphellae present on lobes (x 10 lens). Medulla K-, KC-, P-. Contains perlatolic and stenosporic acids. A widespread but very local species of hard granitic rocks. Uncommon in hilly areas in western Britain. P. disjuncta Erichsen

55b Lobes up to 0.6 cm wide, surface often transversely corrugate. Pseudocyphellae absent. 56

56a(55b) Thallus yellowish to reddish brown. Lobes ± white maculate at tips. Isidia coarse, cauliflower-like clustered in pustular outgrowths. Medulla K-, C- or faint rose, KC + dull orange-red, P- contains glomelliferic, glomellic and perlatolic acids. Widespread, often common in maritime situations in western areas of Britain and Ireland. P. loxodes Nyl.

56b Thallus brown to dark brown, rarely black-brown. Lobes not or faintly white maculate at tips. Isidia coarse, scattered or in contiguous nodulose clusters (more ill-defined than in 56a). Medulla K-, C- or rose, KC - or rose red, P-. Contains divaricatic (or rarely stenosporic) acids. Widespread in maritime and inland areas in eastern, southern and western areas of Britain. P. verruculifera Nyl.

57a(53b) Upper surface with numerous, evenly spaced, conical papillae. Underside black. Often fertile, apothecia with a warted margin. Widespread species of smooth bark, especially of branches and twigs, more rarely on boles, of wayside and woodland trees. Frequent in western Britain becoming rarer elsewhere and decreasing. P. exasperata de Not.

57b With true isidia or flattened folioles. Underside pale. Rarely fertile. 58

58a(57b) Thallus compact, distinct marginal lobes rarely developed, often composed of numerous, very small, thin, overlapping folioles. C.0.1 - 0.2 cm wide, pale brown, olive-green when wet. Boles and branches of wayside trees often in relatively polluted situations. Locally frequent in England, rarer in Scotland and Wales.
P. laciniatula (Flagey ex H.Olivier)Zahlbr.

58b Marginal lobes well-developed. Isidia numerous ± cylindrical, not resembling small lobes 59

59a(58b) Isidia inflated, hollow, simple, swollen towards the middle, often decumbent, orientated in all directions. Lobes ± undulate, partly attached. Locally frequent in England, rarer in Scotland and Wales. On boles and branches of nutrient-rich wayside trees, occasionally on rock; often in relatively polluted areas, increasing. P.exasperatula Nyl.

59b Isidia not inflated, solid, often branched-coralloid, cylindral, ± erect. Lobes ± closely appressed. Locally frequent in England, widespread in Scotland, rare in Wales. On boles and branches of nutrient-rich wayside trees, often in relatively polluted areas, increasing. P. elegantula (Zahlbr.) Szat.

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CONTENTS




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