BRITISH LICHEN SOCIETY BULLETIN

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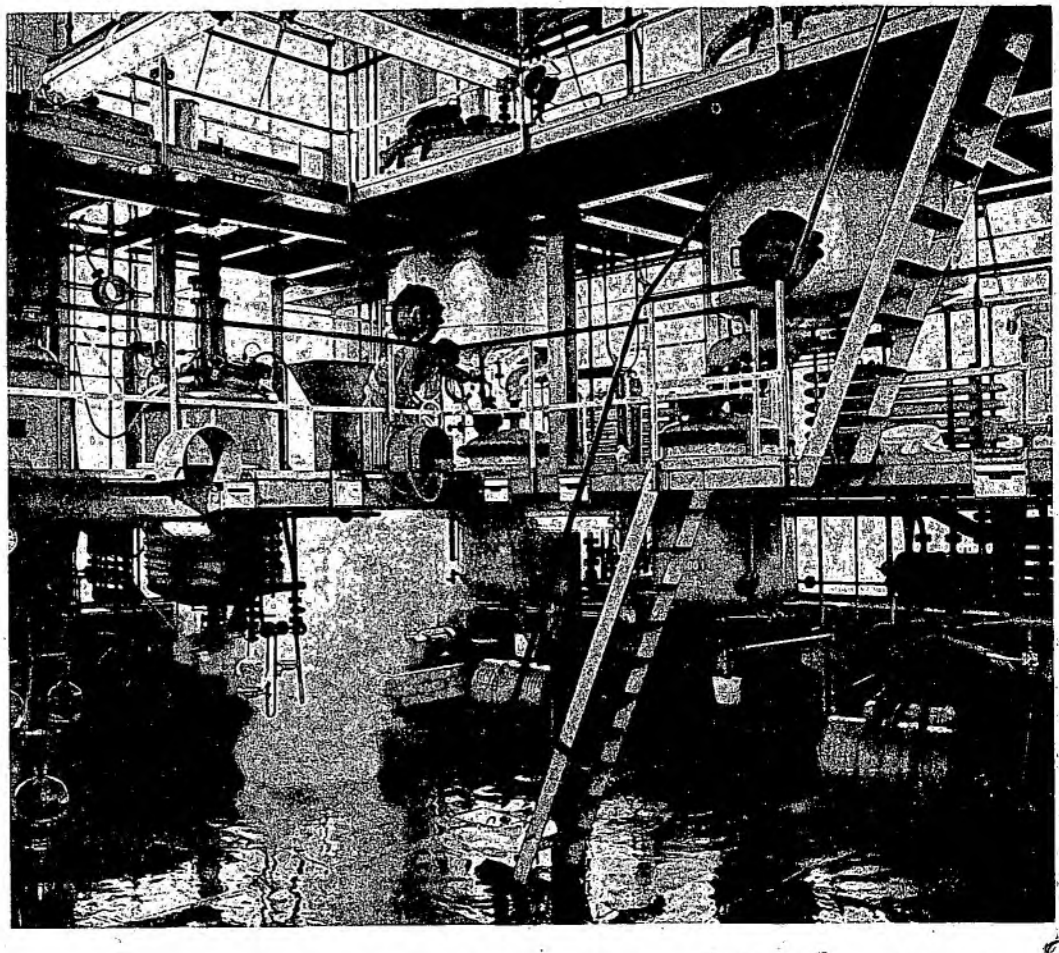
President: F. Rose, Ph.D.

Lichens and perfume manufacture

There are few commercial interests nowadays in which lichens play an economic role. However, large amounts of Evernia prunastri (oakmoss) and Pseudevernia furfuracea (treemoss) are still gathered for the production of perfumes and perfume fixatives. It is difficult to ascertain the total consumption of these lichens because the harvesting areas are scattered throughout the world.

Some idea of the scale of collection of Evernia and Pseudevernia can be gained from the amounts processed by the principal perfume manufacturers in Grasse, South France. Using this as a yardstick a conservative estimate of annual world consumption is about 8,000 - 9,300 tonnes. These figures compare with those of Arctander (1960) who estimated the world production of oakmoss and treemoss extracts to be 45-65 tonnes per annum. Working on a concrete extraction rate of 5%. approximately 900 -1,3000 tonnes of lichen would be required to produce this, which means that in the last 20 years the amount harvested has increased 7 or 8 times. Changing trends in modern perfumery make it impossible to forecast further increases, but the size of the extraction plant in the factories where oakmoss and treemoss are processed (see photograph) make it difficult to envisage any significant drop in production. Perfume manufacturers do not seem unduly worried about their supply of lichen because of the vast forest areas where it is collected. Their main concern appears to be the availability of gatherers



Perfume manufacturer's processing plant in Germany.

The extract from the raw material collects in the flasks in the bottom left corner. Photo by courtesy of Dragoco Ltd.

when there are more profitable activities available. Despite the large amount of lichen collected, no-one has seriously investigated the effect of harvesting on growth and recolonisation of the species concerned, nor its effect on species diversity in the habitat.

The gatherers harvest the lichen throughout the year, first stripping fallen branches, then moving through the forest picking it by hand from the trunk and lower branches, and sometimes using rakes where there is good growth they cannot easily reach. They go only where they see the lichen correctly developed on the trees, and after exploiting one forest they move on to the next, the rotation - usually about three years - is assured by the thousands of acres of suitable forest available. Oakmoss is harvested mainly in Yugoslavia (Macedonia, Southern Serbia, Bosnia) and in Morocco (Rif and Moyen Atlas), while treemoss comes largely form France (Lozère, Haute Loirem Puy de Dôme - Massif Central, Causse and Schistes). After collection the lichen is dried, sorted, baled and sent to the factory for processing where the extracts obtained by the different manufacturers vary considerably. Some are genuine, some are concoctions based on the natural product, while others are extracts of the various lichens mixed together. The important criterion for perfume manufacturers is the quality of the odour. Each company usually offers several qualities for sale, sometimes for reason of cost, sometimes to eliminate colouring effects and sometimes to satisfy a variety of odour requirements. Most perfume companies have in their inventories fifteen or twenty specified qualities of oakmoss extracts. (It is worth mentioning that this situation prevails with few fragrance raw materials other than those extracted from lichens; the majority of raw materials of botanical origin are derived from one species and offered without adulteration). Consequently it is very difficult to give any idea of the cost of lichen extracts - because of the varying purity or adulteration of the product. For example, oakmoss absolute is rarely sold as such, but only in dilution and for this reason the selling price can vary from £10.00 to £200.00 per kilo depending on type, quality and purity. Also it is difficult to give a figure for the quantity of lichen extracts imported into the U.K. because there are no statistics available for them alone. They are imported for use in compounding, already compounded into finished fragrances, and in finished retail perfumery and other cosmetic products. Oakmoss extracts are used in a wide range of goods both for their perfume qualities and fixative properties. Occasionally it is one of the main ingredients giving a heavy 'mossy' odour - Fougère (Fr. moss) and Chypre (Fr. Cyprus) being two of the well known range of products in which oakmoss absolute is one of the major components, although many other perfumes use oakmoss absolute as a base.

It seems surprising that with such vast amounts of lichen being processed annually so little is known about their growth and recolonisation; the only figures for the cycle of collection are based on casual observation by the harvesters. Growth rates quoted in the lichenological literature appear totally inadequate to explain the situation in the regions where Evernia prunastri is collected commercially, viz regrowth to collectable proportions in three years.

Indeed, we have progressed little in our knowledge of the growth of many lichens harvested by industry since Dr Lauder Lindsay (1867) commented "..... collectors are familiar with the fact that they may look for replacement of the species they remove in a certain number of years, varying generally within a period of three to fifteen."

Acknowledgement is made to the many perfume manufacturers and perfumers who have provided me so willingly with the information.

Arctander, S. (1960) Perfume and Flavour Materials of Natural Origin. Elizabeth, N.Y.
Lindsay, L. (1867) To what extent is Lichen growth a test of age? The Farmer, 23 October 1867: 528.

T.H.MOXHAM

(If any member can supply further details about the use of lichens in perfume manufacture, please write in - Ed.)

IMPORTANT: SUBSCRIPTIONS RAISED

Due to increasing costs, primarily associated with the publication of The Lichenologist, THE ANNUAL SUBSCRIPTION FROM 1st JANUARY 1981 WILL BE:-

Ordinary Member (Sterling)	£10
Ordinary Member (Dollar)	$25
Junior Associate Member (Bulletin only)	£1
Family Member	£0.25

Junior associate members are persons under 21, or under 25 if receiving full-time education.

Bankers Orders

It is necessary for all members who pay their subscriptions by means of a Banker's Order to cancel the existing one and send to their bank the blue one enclosed with this Bulletin. It should be made out in the sum of £10, this being the subscrtption payable from the 1st January 1981. As stated at the last Annual General Meeting the cost of printing and posting The Lichenologist is now greatly in excess of the £7 subscription. In fact the cost is now £8.64 per annum, which only leaves just over £1 to cover any further increases, plus printing and posting the Bulletin and incidental expenses.

NOEL TALLOWIN

Nominations for Officers and Council Members

Nominations for Officers for 1981 and Council Members for 1981 - 82 should be sent to the Secretary before 27 December 1980 on the form at the end of this Bulletin. No person may be nominated without their consent. Any number of nominations may be entered, but not more than one per position. Mr Ashby and Dr Pentecost retire from the Council and are not eligible for re-election as Council Members. For personal reasons Dr Pauline Topham has had to resign as our Vice-President.

Annual General, Lecture and Exhibition Meeting 10 January 1981

The Annual General Meeting will be held at 10.30 on Saturday 10 January 1981 in the Demonstration Room in the Department of Palaeontology (ground floor) at the British Museum (Natural History), Cromwell Road, London SW7 5BD. The nearest LT Underground station is South Kensington, and Cromwell Place or the subway connects with the museum. Cars may be parked in the museum's car park. It is hoped that all members will endeavour to attend.

Agenda

1. Apologies for absence.
2. Minutes of the last Annual General Meeting.
3. Matters arising.
4. Reports of the Officers.
5. Place, dates and leaders of annual general, spring, summer and autumn meetings 1982.
6. Election of Auditor.
7. Election of three members of Council.
8. Election of Officers.
9. Any other business.

J.R. LAUNDON
Honorary Secretary

Following the Annual General Meeting there will be a slide show from 11.30 until 12.00 and an exhibition meeting from 12.00 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. The meeting is entitled MODERN APPROACHES TO LICHENOLOGY. Non-members are welcome. Please display the enclosed poster. The full programme is as follows:

10.00 Museum opens to the public.
10.30 Annual General Meeting.
11.30 Slides of 1980 field meetings (arranged by Dr O.L. Gilbert).
12.00 Exhibition meeting.
12.30 Lunch. Members are kindly requested to make their own arrangements. The restaurants Barino (1Harrington Road) and Daquise (20 Thurloe Street) are recommended.
14.00 Lecture. D. L. HAWKSWORTH (Commonwealth Mycological Institute) & PAULINE B. TOPHAM (Scottish Horticultural Research Institute): The need and value of statistical approaches to taxonomy.
14.30 Lecture. B. J. COPPINS (Royal Botanic Garden, Edinburgh): The genus explosion.
15.00 Tea interval (tea gratis).
15.30 Lecture. A. PENTECOST(Chelsea College): Mosaic simulation with the digital computer.
16.00 Lecture. H. J. B. BIRKS(University of Cambridge): The analysis of plant distribution patterns.
16.30 Discussion.
17.00 Close.

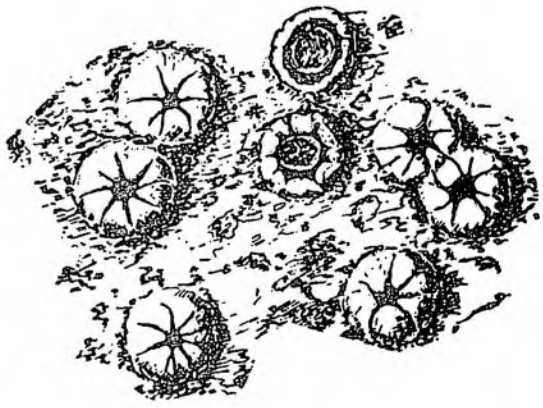
Joint Bristol University (Dept. Extra-Mural Studies)/British Lichen Society Workshop meeting to study

LICHENS ON LIMESTONE

A residential weekend from Friday, 10 April to Sunday 12 April 1981, at Burwalls, Leigh Woods, Bristol.

Tutors: D.L. Hawksworth, B.Sc., Ph.D., D.Sc., F.L.S.
P.W. James, B.Sc., F.L.S.
D.J. Hill, B.Sc., D.Phil.

Fee: £6.00 plus £20.10 residential fee.



Limestone supports a rich lichen flora, although it is frequently overlooked since identification of the species is often considered to be less easy than species from other habitats. This course aims to help with identification in the field and at home using modern techniques. There will be field trips to various sites including the Mendips. Microscopes will be available but those wishing to bring their own may do so.

Prior enrolment essential as numbers will be limited. The enrolment form at the end of this Bulletin should be returned to Dr D.J. Hill, Dept. Extra-Mural Studies, 32 Tyndall's Park Road, Bristol, BS8 1HR.

Day excursion to the New Forest, 21 March 1981

A day excursion in the New Forest, Hampshire will be held on Saturday 21 March 1981 under the leadership of Dr F. Rose. It will be joint with the Southampton Natural History Society. Meet at Brockenhurst Station at 11.10 am. A train leaves Waterloo, London at 9.35 am arriving at Southampton 10.42; change there on to the Bournemouth train departing Southampton 10.47 am and arriving at Brockenhurst 11.09 am. Car seats will be found for those coming by train. It is planned to visit Red Shoot Wood, Pinnick Wood, and also to study some Cladonia-rich heath. Bring lunch and gum boots; a cold drink can be obtained at the Red Shoot Inn at lunch time. Collecting will be restricted to those species the leader indicates are common enough not to be harmed. Return trains leave Brockenhurst twice an hour.

F.ROSE.

Forthcoming Meetings

Other meetings planned for 1981 include a late summer meeting, probably in North Wales, and a long autumn weekend in the Scottish Borders. Details of both of these will appear in the May 1981 issue of the Bulletin.

Annual Meeting of the American Bryological and Lichenological Society, 7-12 June 1981

This meeting located at the Highland Biological Station, Highlands, North Carolina will emphasize the floristics of bryophytes and lichens in the Southern Appalachians and the Southeastern U.S. Contributed papers, Keynote speakers and field trips will feature in the programme. Further details from Dr T.H. Nash III, Dept. Botany and Microbiology, Arizona State University, Tempe, AZ 85281.

Grapevine

Grapevine was delighted to learn that David Richardson has moved to the shores of Liffey water and offers him wholehearted congratulations and best wishes on his recent appointment as Professor of Botany at Trinity Colege, Dublin. The scope of interests and the vitality evident throughout his Vanishing Lichens and his other work should make his occupation of the Dublin chair invigorating for all concerned.

Congratulations too to Karen Ruddock of Alexandra College, Dublin, for the success of her prize-winning project in the Irish Young Scientist of the Year and in the European Young Scientist of the Year competitions. Her 194-page typescript, Investigation of the relationship between the chemical composition of certain Irish lichens and their tolerance to various environments is a study of the hydrolising activity of sulphurous and sulphuric acids on the chemical components of some lichens and on algal plasmolysis of Parmelia perlata, P. caperata and Xanthoria parietina.

Proof has never seemed long lacking that the ghost of Linnaeus is still around to fret lichenologists despite their having forgiven, if not forgotten, the blinkered myopia that led him to call lichens "poor trash". Grapevine was nonetheless astounded to be confronted by his spirit stirring afresh like a dreadful doppelganger in the text of D.H. Janzen's Ecology of Plants in the Tropics (Studies in Biology 58) in the introduction to which there occurs the following pearl : "Britian may contain more species of lichens than higher plants, but ecologically lichens are hardly more than intricate scum on the surface of the rock and tree surfaces that are too harsh for angiosperms." Grapevine trusts that the ghost of Heinrich Sandstede, who spoke so delightfully of his "darlings, the lichens", and of his "friends, the maidenly Cladonias", will find some appropriately harsh subliminal words for both Linnaeus and his doppelganger. Or a word from that honest seaman, Capt. R. Fitzroy of

H.M.S. Beagle fame, might have saved from such error. He noted (January 1832) that in the Cape Verde Islands "the archilla weed (i.e. Roccella), so much used in dyeing, might be made highly profitable. At the time of our visit the yearly revenue, arising out of the government monopoly of this article, amounted to fifty thousand dollars; and in some years it has been as much as three hundred thousand dollars." Intricate scum indeed!

Catch-question; What is Parmelia? Answer: One of two yatchs (the other humdrumly and forgettably named Challenger) sponsored by Australia Post that raced from Plymouth to Australia, August-November, 1979, during the sesquicentenary of Western Australia carrying 26,000 specially stamped commemorative envelopes.

Grapevine rarely braves the Parnassian heights -- or lower slopes! -- but sympathy for the befuddlement of two fellow field-workers confronting recent nomenclatural advance, prompted the outpouring of the following clerihew.

Mary Poppins
Isn't very sweet on Hawksworth, James and Coppins.
She thinks it atrocious
To squeeze so many fresh words into a New Lichen Check-list and still leave
out "supercalifragilisticexpiallidocious".

VINIFERA

Checklist of British Lichen-forming, Lichenicolous and Allied Fungi.
D.L.Hawksworth, P.W. James and B.J. Coppins. Lichenologist 12 (1): 1-115 (1980). Academic Press. Also available as an interleaved reprint from P.W.Lambley Esq., Castle Museum, Norwich, U.K. NR1 3JU. Prices £4 (members of B.L.S.); £6 (non-members); both post-free in the U.K.

This well-heralded Checklist is, by any reckoning, a major achievement on the part of its authors, to whom we should all be grateful. But it is not an easy thing to review, unless by another taxonomist whose opinions as to the detailed changes made, or omitted, are at least worthy of respect.

Notoriously, this is untrue of the present reviewer, who may be taken as representative of the general run of people who want to be able to identify a lichen correctly by its accepted international name. Perhaps also he was selected as being known to take a pleasure in reminding taxonomists that theirs is a service industry, and not a private mystery for its initiates. So many industries nowadays appear to exist for the 'workers' rather than the 'product'. But this is not to deny them the delights of travelling hopefully towards their unattainable goal; the 'natural' system of classification: unattainable because nature is not a system, and is not subject to the limitations of the human brain which cannot focus its attention on more than one thing at a time.

Hence the necessity for arranging names in a linear series, whereas lichens or any other large group exist in a lattice of a spatial and temporal complexity far beyond our mental grasp. There is no escape, therefore, in taxonomy from a compromise between the 'workable' and the 'natural', but priority belongs to the first, otherwise the whole exercise becomes pointless - and especially so for lichens which are not even unitary 'organisms'. If one could imagine a taxonomist of such omniscience that he could devise a classification corresponding precisely with 'nature' it would be precisely as incomprehensible ! One is reminded (by one's wife) of the German Professor in Lewis Carroll's Sylvie and Bruno who drew maps on an increasing scale until he made one on the same scale as the landscape. Unfortunately the farmers would not let him spread it out as it shut out the sunlight. "So now", he said, "We use the country itself as its own map, and I assure you it does nearly as well!"

Not that anyone is in any danger of approaching omniscience about lichens, where there are such huge areas of ignorance concerning both fungi and algae apart from the lichen thallus. But the 15 years since the last British Checklist (P.W.James, Lichenologist 3 (1) 95-153, 1965., with Addendum ibid 3 (2) 242-247, 1966) has seen such major advances in the study of ascocarp, ascus and pycnidial structure and lichen chemistry, with such new techniques as UV, and thin-layer chromatography, that considerable changes in taxonomy were inevitable, and, indeed, necessary in the interests of 'practicability'. Easily seen diagnostic characters such as spore colour and septation can become very confusing in use when they are know to lump together widely different species. What howling chaos we should be in if we returned to the Linnaean system for flowering plants; and, for that matter, how many of us could make head or tail of that classic work on British Lichens by Crombie and Lorrain Smith? Our authors are a bit worried in their Introduction that:"Many will at first find the extent of the changes now adopted somewhat daunting." Probably they are right, though time alone will show; and at least they show a proper and wholesome respect for the 'consumer', unlike some of their Continental colleagues. On the whole, so far as I can see, they have observed the British tradition of a moderate 'conservatism' in taxonomy in a period of very active change. For instance, despite all the new work on chemical characters, we do not have 'chemical species' inflicted upon us unless these are associated with distinctive morphological or anatomical characters.

The new Checklist (as compared with the last, in brackets) contains 1471 (1355) lichenized/fungal species, i.e. lichens, 12(6) subspecies, 41(91) varieties and 13(4) forms. There are 294 genera in the new List, including some restored from the early Nineteenth century. Some old familiar subgenera or 'sections' are back with us again as genera (Aspicilia, Psora, Hypogymnia). In addition the new List includes 183 lichenicolous fungi and 47 allied species, making 1701 species in all. It is pointed out that these numbers reflect not only a lot of additional species but also the reduction of many taxa to synonymy. A further addition is the inclusion of reference to relevant literature under some listed genera. There is a list of 36 species not seen since 1900 and now assumed to be extinct in the British Isles. A criticism of the layout is that the names of genera which run on from one page to another are not repeated, as in the old List, at the top of each page.

It will be noticed that the number of varieties is more than halved, which I hold to be a retrograde step. In my view the subspecific taxa are grossly under-used in the fungi. Whenever a taxonomist 'splits' a taxon, he seems automatically to promote all the bits to the same rank as the original - a sort of taxonomic inflation! Particularly with the Ascomycetes, with their peculiar mating systems, often unknown, and our inability to cultivate most lichen fungi, I think that specific rank is far too lightly awarded for slight morphological or other differences, quite apart from the still mysterious influence of the algae. Moreover, the proliferation of the genera and species reduces the efficiency of a classification by reducing the 'steps' by which one can approach precise identification. But this is obviously a personal view.

Finally, for those who do not want to spoil their copy of the Lichenologist by carrying it in the field or making notes in it, there is the separate copy of the Checklist obtainable by post from Mr Lambley (not from Academic Press). This is interleaved with alternate sheets of blank paper giving more than ample space for notes on the species on each page. It is paper-covered, stitched, and with a square back; about twice the thickness of the 1965 List, which was stapled. There is a short list of 13 errata at the end, added since publication in the Lichenologist. It is scarcely necessary to add that this new Checklist will be an essential tool for every lichenologist for the next decade or so.

GEOFFREY DOBBS

Country diary - 1: Cornwall

At last a sunny day, so making an early start we sped along empty roads to the north coast. The approach to the notable but little visited site which was our objective, lay down a sunken lane and across two fields then suddenly one is on the cliff-top with the ground sweeping down to the sea 150 m below. The breathtaking view diverts attention from the undulating 30 - 40° slopes of curiously uniform colour and texture but it gradually dawns that these are composed of a continuous, tight, wind-pruned canopy of oak leaves; near the bottom two rock pinnacles project through like sea-stacks. This dwarf wood has been completely overlooked by the Ordnance Survey, not even appearing on the new 1:50,000 maps. Entry is difficult as it involves pushing through a dense thicket of scrub and bracken.

Once inside movement becomes easier in the half-light below the miniature, crooked, multistemmed trees. A preliminary examination of the lichens which together with bryophytes cover every available surface, reveals mostly common species of Usnea and Parmelia, but the initial exposure to the wood is so dramatic it is difficult to concentrate on detail. Ducking and swinging downwards through the trees shouting to keep in touch, suddenly a richer patch of lichens appears without any apparent change in the structure of the wood. First Nephroma laevigatum, then Sticta limbata, S. fuliginosa and S. sylvatica followed by Pseudocyphellaria crocata (its only English locality), Dimerella lutea and Lobaria scrobiculata. A few yards further and the trees are covered with Lobaria pulmonaria, so dense you couldn't fit another thallus on some of the trunks, even trailing stems of honeysuckle are covered in it, I didn't know there was so much in the country. Curiously, despite its luxuriance, none is fertile. After a few minutes we're surrounded by common species again but soon encounter another rich patch with Pannaria pityrea, P. rubiginosa, Parmeliella atlantica, P. plumbea and Normandina pulchella on most of the mossy trunks and twigs. This would be an ideal place to study canopy lichens, one step up on a low branch and your head is sticking out above it. An ascent of a crumbling rock pinnacle produced Leptogium lichenoides the only member of the Collemataceae seen all day, then a steep heathery slope lead down to the beach. Looking up at the wood from the shore reveals much evidence of past (and more recent) mass movement, which might explain the patchy nature of the lichen flora, the age of the trees being controlled by the history of landslipping.

The climb back up on a new line yielded few species of note and ended with a painful exit through a forest of blackthorn and bramble. A second foray east of the 'trig' point immediately struck another rich area including nitrophilous species on marginal elder. The corticolous experts have recorded 135 epiphytic lichens from this 60 ha wood so we were pleased to add Lobaria laetevirens and Phaeographis smithii to the list. During a leisurely drive back our talk was not so much what we'd seen but of the impossibility of ever exploring this incredible site.

Rackham on woodland

Oliver Rackham has already written two highly original books on woodlands but his third, Ancient Woodland Edward Arnold (1980), price £50 is a classic. If you have ever wished to know how Keats felt on first looking into Chapman's Homer you should obtain a copy. The book is concerned both with the biology of lowland woods and with the part they have played in human affairs. It is a scientific work but the cold evidence is often fascinating detail culled from an East Anglian woodland or medieval document. Rackham is particularly informative about wood-pasture where the growing of trees was combined with grazing animals. This separate land-use system, quite distinct from coppice with standards, goes back at least to Anglo-Saxon times and is extensively recorded in the Domesday Book though it is no longer practised anywhere in Britian. Many medieval deer parks and commons were

managed for centuries under this system which involves pollarding; Staverton Park, Suffolk, with 4,000 ancient pollard oaks over bracken and grass is an example of wood-pasture which fell into disuse about 200 years ago.

Lichenologists have known for sometime that such sites are notable for containing relic lichen communities, so it is interesting to read what Dr Rackham in his overview of ancient woodland has to say on the matter:

"..... wood-pasture is an essential environment for the lichens and invertebrate animals which inhabit pollards or other ancient trees. These often require specific habitats such as old dry bark (especially under the overhangs of pollards) or large red-rotted trunk cavities. They are said also to depend on continuity of such habitats from the wildwood, in much the same way as some flowering plants do on ancient woodland. They are often referred to as 'old forest organisms', an inexpert translation of German Urwaldtiere (animals of the prehistoric forest). They are not usually to be found in woodlands (except sometimes on boundary pollards) because of the frequency of coppicing and lack of old timber trees and dead wood; nor are they usually on hedgerow trees..... The connection of certain organisms with ancient trees is well established, but little has been published so far on their requirement for ancient trees in a specific environment. The possibility remains that some of them may be relicts, not directly from the wildwood, but from earlier agricultural history: when the whole country was less contaminated by pollutants and fertilisers, and when - as often in the seventeenth century - hedgerow trees were more abundant than they are now, these organisms might have been more widespread, able to colonise younger trees, and less restricted to wood-pasture. We look forward to an investigation of how far environmental requirements, such as that for lack of disturbance, are borne out by the detailed history of particular parks and forests, and of whether pseudo-medieval parks of the Sotterley type are distinguishable from real medieval parks."

Quoting out of context can be dangerous, but Dr Rackham appears to be suggesting that there is scope for further work on 'old forest organisms' because some of them may be more characteristic of the long undisturbed but artificial conditions of wood-pasture than environments which have continuity with primary woodland.

Vintage year for county lichen floras

Nineteen-eighty has seen the publication of lichen floras covering seven English vice-counties which must be a record. Subscribers to The Lichenologist will already have seen the accounts covering Berkshire (V.C.22), Oxfordshire (V.C.23). Buckinghamshire (V.C.24), South Northumberland (V.C.67) and Cheviotland (V.C.68) but may not be aware of the first ever Lichen Flora of Lincolnshire (V.C.53,54) prepared by Dr M.R.D. Seaward, copies of which can be obtained from Miss V. Pennell, Waddington House, Waddington, Nr. Lincoln price £1.50. This coincidence of publication is not chance but reflects the 15 years or so which is required to adequately study the lichens of a county. The various authors all had their interest in the group aroused by the intense wave of enthusiasm for lichens which swept the country following the formation of the British Lichen Society in 1958. Other county lichen floras - part of the same phenomenon - at an advanced stage cover Devon (V.C.3,4, D.L. Hawksworth), Norfolk (V.C.27,28, P.W. Lambley), Caernarvon and Anglesey (Gwynedd, V.C.49,52, A. Fletcher and A. Pentecost), Angus (V.C.90, R.K. & J. Brinklow).

There can be few better ways of acquiring a knowledge of lichens in a wide range of habitats than embarking upon a county lichen flora, which will always be a popular outlet for interest, relaxation and as a contribution to science However, with the increasing emphasis on conservation, and demand for ecological studies, surveys of major habitats are becoming a valuable alternative field of

study. With the exception of the New Forest, Mull and certain urban areas such as London and Leeds, this type of study has been rarely undertaken by lichenologists in Britain. Nationally important habitats ripe for comprehensive study but dissected by administrative boundaries include Breckland, Upper Teesdale, Lake District, Chalk grassland, Carboniferous limestone, Magnesian limestone, Caledonian pinewoods, machair - the possibilities are endless.

Report on the lichenological excursion in the Parc Naturel Regional de Normandie-Maine, July 8-13, held jointly by the Association Française de Lichenologie and the British Lichen Society.

Sixteen lichenologists from the two societies gathered at Alençon on 7 July with expectations aroused by the excellent preliminary documentation. The weather for the period demonstrated at least one of the reasons for the region's rich assemblage of oceanic species, but each day with an enthusiasm which nothing could dampen we explored a different forest, admiring the well grown oaks and beeches and the picturesque gorges and escarpments of hard sandstone. We returned with packets of magnificent Usneas, huge Cladonia clumps and splinters of rock, to spend amicable evenings identifying, packaging and listing.

Each participant will have their own particular memories; mine include the stands of Umbilicaria grisea on quartzite ridges emerging from the vast screes at Vallée de Misère, of Parmelia arnoldii, and of Usnea ceratina fruiting and 50 cm long on felled oaks in the Forêt des Andaines, Cladonia on the mossy block scree at St Leonard des Bois, both Leproplaca species on a shaded limestone exposure at Fresnage sur Sarthe and the species-rich vegetation of the sunny exposures there with lichenologists clustered like bees at a honey comb.

One puzzling aspect of the lichen vegetation was that the corticolous flora, though rich, was largely a western atlantic flora without the extreme oceanic species; the saxicolous flora, however, included a much higher proportion of unfamiliar lichens.

The meeting was remarkable too for its excellent picnics, fourcourse meals which emerged from bushel boxes together with some yards of bread, half chickens consumed at picnic tables under a steady drizzle; for the triumphant appearance one evening of the organizing committee bearing piles of the same bushel fruit boxes, donated by the kitchen staff to hold our collections; for taxonomic discussions in Franglais and Fraustrian (translator's note: un tas de petits saletés - a heap of little nasties).

In all we visited over two-thirds of the 21 sites proposed in the programme in an atmosphere both relaxed and hard working. The success of the meeting was due to careful planning by the organisers, who scouted out good sites, yet left them to be explored, and who found us excellent accommodation. It says everything for the enthusiasm of our French hosts that with a membership of 35 they could prepare and support a meeting of such quality.

PAULINE TOPHAM

Report on the Field Meeting Questionnaire

Forty-eight members returned questionnaires. A wide range of localities, subject matter and types of accommodation would prove attractive and many members had strong views on various issues, they are thanked for expressing them so freely and entertainingly.

Duration and Accommodation: the most popular combinations were a) long weekend at a field centre or hotel (15 and 14 votes respectively), b) week at field centre or a hotel (10 and 9).
Timing: 16 people could only come during school or university vacations, 1 preferred them and 33 people were not tied to them.
Type of meeting: workshop 23, exploratory 14, well known rich sites 11, varied habitats 22, saxicolous 2, corticolous 2.
Objectives: a) help with common species (27), b) material for later study (22), c) wider geographical knowledge (20), d) rarities (10), e) other interests (incl. holiday) (17).
Facilities: a lab or private room was considered desirable though 11 people were definite that such provision was not essential. One member requested a convenient bar.
Localities: no consensus of opinion.
Subject matter for workshops: aspects of ecology (8), chromatography (5), pollution studies (5), Lecideas (4), Cladonias (4), temporary alpine rain water pools (1). One experienced member commented that the "grand" areas are already done, so that the potential areas for real work tend to be little known, remote and unattractive; however, many more recent members suggested areas which the Society has visited in the past. There is a real conflict of interest here, and another conflict between what people would like to do and what they can afford. But it is very encouraging to learn that so many people wish to use field meetings for serious study in field and laboratory, and this will be borne in mind.

PAULINE TOPHAM

Bumper Year for The Lichenologist

The Lichenologist volume 12 (1980) contained 406 pages, easily the largest number ever issued in a year. The previous thickest was 328 pages in volume 11 (1979). Members will be aware that their subscriptions only aim to cover 300 pages per year, but with increased printing costs the Society had to pay £7.50 for each member in 1980 -- 50p more than the 1980 subscription rate. That members have also been able to receive copies of the Bulletin and the Society remains solvent is in no small measure due to the astuteness of our Treasurer. Printing costs continue to increase and in 1981 it will cost £27.50 to print and issue each page of the journal; this is the reason for the increase in the membership fee for 1981 to £10, but it is hoped this level can be kept for several years.

The issue of an extra 106 pages in 1980 was made possible through grants and other payments made by the Royal Society (for the Checklist), Nature Conservancy Council (to cover literature on air pollution and lichens), University of Newcastle-upon Tyne Sponsorship Committee for Publications (Northumberland Flora), Mr. P.W. James and Dr O.L. Gilbert. The Society is very grateful to these various bodies and individuals for their support enabling us to issue more material than would otherwise have been possible.

300 pages are planned for 1981, but if authors can find money to support the publication of individual items additional pages may again be possible. Authors' wishing to issue a paper quickly can achieve this through The Lichenologist if they can cover the page costs; papers referred and found acceptable, can then be published in the next issue.

D.L. HAWKSWORTH

Starting Lichenology

Being a cyclist and living on the edge of the picturesque Vale of Belvoir I often explore the area with its small country villages and ancient Churches. I

find the churchyards fascinating and have become interested in the orange, green and grey rosette-shaped plants which grow on the gravestones.

As I was trying to find a topic for my 'O' level Environmental Biology special study, I thought it a good idea to mix work with pleasure and take up lichenology.

Being new to lichenology, I was amazed to find there were hundreds of species. I had always thought of a lichen as the "stuff" that grew on the asbestos cement garage roof, and after a lichen course at Malham Tarn, Yorkshire, I was even more surprised at the varied lichen forms from the Lecideas to the Cladonias and Cetrarias.

I find much pleasure in lichenology, and have much fun increasing the size of my herbarium (with conservation in mind).

PATRICK MITCHELL
(Aged 16)

New members

The following joined the Society between April and October 1980.
FM = family member.

Mr R. Ashwell, 62 Windermere Crescent, LUTON, Bedfordshire, LU3 2PR.
Mr E.F.I. Baker, Department of Biological Sciences, Ahmadu Bello University, ZARIA, Nigeris.
Mrs T.C.N. Baker, Department of Biological Sciences, Ahmadu Bello Universtiy, ZARIA, Nigeris. (FM)
Dr T. Bernard, Laboratoire de Physiologie Végétale, Univ. Rennes, Campus de Beaulieu, 35042 RENNES - CEDEX, France.
Mr K.J. Canters, Middelweg West 11, NL 3961 NA WIJK BIJ DUURSTEDE, Netherlands.
Mr R. Carpenter, 83 George Street, RYDE, Isle of Wight, PO33 2JF.
Mr J. Diamantopoulos, Laboratory of Ecology, Faculty of Physics and Mathematics, University of Thessaloniki, THESSALONIKI, Greece.
Miss S.K. Halstead, 21 Gateland Lane, Shadwell, LEEDS, LS17 8HR.
Professor Dr L. Kappen, Lehrstuhl für Botanik II, Mittlerer Dallenbergweg 64, 8700 WÜRZBURG, West Germany.
Mr S. Leinster, Department of Botany, Imperial College, Prince Consort Road, LONDON, SW7.
Miss C.S. Lovatt, 61 Wychwood Avenue, LUTON, Bedfordshire.
Mr T. Lumbsch, Heddernheimer Landstrasse 227, D-6000 FRANKFURT AM MAIN 50, West Germany.
Mr C. Mallery, 209 Hamlet Gardens, LONDON, W6.
Mr P. Martin, 6 Fernhill Road, ABERDEEN, AB2 6QS.
Mr M.J. McBain, GPO Box 325B, MELBOURNE, Victoria, Australia 3001.
The Reverend D.T. Muir, 63 Kincora Avenue, Clontarf, DUBLIN 3, Irish Republic.
Miss W.J. Noble, P.O. Box 512, UCLUELET, British Columbia, Canada, VOR 3AO.
Miss G. Ramsey, 62A Belsize Park, LONDON, NW3 4EH.
Mr T. Reve, 4062 KLEPP ST., Norway.
Mr B.M. Spooner, The Herbarium, Royal Botanic Gardens, Kew, RICHMOND, Surrey, TW9 3AB.
Miss D. Vokou, Laboratory of Ecology, Faculty of Physics & Mathematics, University of Thessaloniki, THESSALONIKI, Greece.
Mr T.P. Vrakking, Postbus 204, 1400 AE BUSSUM, Netherlands.
Mr J. Winham, 11 Dean Park Street, EDINBURGH, EH4 1JR.
Miss C.F. Wright, St Mary's College, DURHAM CITY, DH1 3LR.
Mr H. Woolf, 80 Tapton View Road, CHESTERFIELD, Derbyshire, S41 7JY.
Professor Dr L. Xavier Filho, UNB-IB-VEG-Cx POSTAL 152838, 70.910 BRASILIA, DF, Brazil.

BLS library catalogue now on a computer file

The BLS Library Catalogue is currently being put onto a computer file. This will allow the catalogue to be continuously up-dated as soon as new reprints are obtained. A complete listing of all items in the Library will always be available for members to consult. In addition, lists of items added in any particular year (starting in 1980) can be produced. Such lists will be in alphabetical order of authors names, showing author(s) names, journal reference, title and key words if required. The large bulk of the computer print-out will make it unlikely that many members will wish to either purchase or borrow a copy of the complete catalogue. Instead it is ecpected that members may wish to ask the librarian to supply partial lists. These may be in the form of lists of reprints from a particular author or a topic. The use of key words allows scanning of the catalogue for broad fields of interest (e.g. lichenometry, electron microscopy, new species descriptions, etc.). In addition it will be possible to scan the titles for specific words (e.g. photosynthesis, Lecanora muralis) or combinations of words. It is hoped that, at a later date, it may be possible for members with access to computer terminals to get direct access to this catalogue.

It is hoped that this improvement to the BLS Library will prove of value to members. The Librarian is extremely grateful to Mr Tim Moxham for his enthusiasm for this project and for the very many hours he has spent in transposing references onto data sheets.

The success of the BLS Library is dependent on the generosity of authors (and others) who send reprints for incorporation. If you have any spare or surplus reprints Dr D.H. Brown, Department of Botany, The University of Bristol, BS8 1UG would be very pleased to have them for addition to the Library. We are especially keen to obtain complete (or partial) translations of foreign papers of lichenological interest. If you have any translations which we could either keep or have copied for the library please send them to the librarian. Anyone willing to help by translating titles (especially Russian) or especially heavily requested foreign reprints would be enthusiastically welcomed by the Librarian.

DENNIS BROWN

Back numbers of the Bulletin sought

There is a small, but steady demand for back numbers of the Bulletin. Many are now out of print so if any members have copies of early numbers which they no longer require could they please send them to P.W. Lambley, Castle Museum, Norwich, NR1 3JH who will refund postage.

Literature on lichens - 35

Lichenologist 12 (1) was published on 9 May 1980 and 12 (2) on 26 August 1980. These are the dates copies were received by members and subscribers.

AHMADJIAN, V. 1980. Separation and artificial synthesis of lichens. In COOK, C. B., PAPPAS, P. W. & RUDOLPH, E. D. (Editors) Cellular Interactions in Symbiosis and Parasitism: 3 - 29. Ohio State University Press, Columbus. [Detailed study and review. One Cladonia mycobiont was shown to form thalli with at least three different species of Trebouxia.]

AHMADJIAN, V., RUSSELL, L. A. & HILDRETH, K. C. 1980. Artificial reestablishment of lichens. I. Morphological interactions between the phycobionts of different lichens and the mycobionts Cladonia cristatella and Lecanora chrysoleuca. Mycologia 72: 73 - 89. [Study of the acceptability of different phycobionts by lichen fungi.]

AHTI, T. 1980. Nomenclatural notes on Cladonia species. Lichenologist 12: 125 - 133. [Cladonia anomaea (Ach.)Ahti & P.James becomes the correct name for C. pityrea, C. conoidea Ahti for C. conistea auct., whilst C. cervicornis subsp. verticillata (Hoffm.)Ahti is a new combination.]

AHTI, T. 1980. Taxonomic revision of Cladonia gracilis and its allies. Annls bot. fenn. 17: 195 - 243. [Monograph of seven species. Cladonia gracilis is divided into six geographical subspecies, with intermediates, resembling hybrid swarms, occurring where they overlap.]

ARVIDSSON, L. & LINDSTRÖM, M. 1980. Förändringar i lavfloran i Botaniska trädgarden i Göteborg. Svensk bot. Tidskr. 74: 133 - 143. [In 1979 only 38 macrolichens occurred in the gardens, compared with 65 reported in 1961; discussion of changes.]

AWASTHI, D. D. & AKHTAR, P. 1979. The lichen genus Leptogium (sects. Leptogium, Leptogiopsis and Homodium) in India. Geophytol. 8: 189 - 204. [Taxonomic account of 24 species.]

BOWEN, H. J. M. 1980. A lichen flora of Berkshire, Buckinghamshire and Oxfordshire. Lichenologist 12: 199 - 237. [Includes detailed analysis of the lichen vegetation with data on communities, indicator species, distribution maps, etc.]

CHRISTIANSEN, M. S. 1980. Lichenoconium erodens and some other fungi parasitic on Lecanora conizaeoides. Lichenologist 12: 149 - 151.

CLARKE, G. C. S. & TITTLEY, I. 1980. A botanical survey of the South Swale Nature Reserve. Trans. Kent Fld Club 8: 51 - 72. [Includes list of 48 lichens.]

CULBERSON, C. F. & AHMADJIAN, V. 1980. Artificial reestablishment of lichens. II. Secondary products of resynthesized Cladonia cristatella and Lecanora chrysoleuca. Mycologia 72: 90 - 109. ["The production of ... lichen products is affected primarily by the establishment of a successful symbiosis."]

ELIX, J. A. 1979. A taxonomic revision of the lichen genus Hypogymnia in Australasia. Brunonia 2: 175 - 245. [Monograph of 11 species.]

FOLLMANN, G. 1980. Zur Nomenklatur der Lichenen. V. Tornabenea Parl. ex Webb (Apiaceae) und Tornabenia Trev. em. Kur. (Physciaceae). Philippia 4: 201 - 203. ['Tornabeniopsis Follm.' is proposed to replace the later homonym Tornabenia Trevisan, and 'Tornabeniopsis atlantica (Ach.)Follm.' and 'T. ephebea (Ach.)Follm.' are proposed as new combinations. However, 'Tornabeniopsis' is not validly published because there is no direct reference to its replaced synonym (Art. 33.2) and hence the two species are also invalid (Art. 43.1).]

GALLOWAY, D. J. 1979. Biogeographical elements in the New Zealand lichen flora. In BRAMWELL, D. (Editor) Plants and Islands: 201 - 224. Academic Press, London, New York, San Francisco.

GILBERT, O. L. 1980. Effect of land-use on terricolous lichens. Lichenologist 12: 117 - 124. [Study of the limestone plateau of Derbyshire. "Derelict mining ground is now the main reservoir of terricolous lichens."]

HAWKSWORTH, D. L. 1980. Notes on British lichenicolous fungi: III. Notes R. bot. Gdn Edinb. 38: 165 - 183. [Several new taxa.]

HAWKSWORTH, D. L. 1980. Lichens of the south Devon coastal schists. Fld Stud. 5: 195 - 227. [Detailed study. Physcia tenella subsp. marina (A.E.Nyl.) D.Hawksw. is a new combination.]

HAWKSWORTH, D. L. 1980. Notes on some fungi occurring on Peltigera, with a key to accepted species. Trans. Br. mycol. Soc. 74: 363 - 386. [Many new taxa, key, etc.]

HAWKSWORTH, D. L., JAMES, P. W. & COPPINS, B. J. 1980. Checklist of British lichen-forming, lichenicolous and allied fungi. Lichenologist 12: 1 - 115. [1701 species of which 1471 are lichen-forming. Herteliana P.James is a new genus and there are 56 new combinations.]

HAWKSWORTH, D. L. & MINTER, D. W. 1980. New and interesting microfungi from the 1978 Exeter foray. Trans. Br. mycol. Soc. 74: 567 - 577. [Includes first report of Abrothallus bertianus de Not. from Britain, occurring on Parmelia glabratula.]

LAUNDON, J. R. 1980. The use of lichens for dating walls in Bradgate Park, Leicestershire. Trans. Leicester lit. phil. Soc. 74: 11 - 30. [A "probable lichen sere ... differentiates the walls of various ages." Sociology.]

LAWREY, J. D. 1980. Calcium accumulation by lichens and transfer to lichen herbivores. Mycologia 72: 586 - 594. [An "important source of calcium is lichen material."]

LLIMONA, X. 1979. Roger-Guy Werner (1901 - 1977). Collnea bot. Barcinone 11: 475 - 504. [Biography, bibliography, and new taxa.]

PENTECOST, A. 1980. Aspects of competition in saxicolous lichen communities. Lichenologist 12: 135 - 144. [Stages in colonisation, models, etc.]

POELT, J. 1980. Eine diözische Flechte. Pl. Syst. Evol. 135: 81 - 87. ["Lecidea verruca ... is ... dioecious. The male thalli bearing spermogonia are mostly smaller than the female ones."]

SHOWMAN, R. E. 1979. Cold injury to lichens in southern Ohio. Bryologist 82: 620 - 621. [Cold "injury was confined to the larger parmelias" following the severe winter of 1976 - 77.]

SIGAL, L. L. & TAYLOR, O. C. 1979. Preliminary studies of the gross photosynthetic response of lichens to peroxyacetylnitrate fumigations. Bryologist 82: 564 - 575. [Effects of PAN air pollutant.]

SLOCUM, R. D., AHMADJIAN, V. & HILDRETH, K. C. 1980. Zoosporogenesis in Trebouxia gelatinosa: ultrastructure potential for zoospore release and implications for the lichen association. Lichenologist 12: 173 - 187. [Zoosporogenesis in the phycobiont of Parmelia caperata which may "form free-living microcolonies."]

TIBELL, L. 1980. The lichen genus Chaenotheca in the northern hemisphere. Symb. bot. upsal. 23: 1 - 65. [Monograph of 14 species.]

VOBIS, G. 1980. Bau und Entwicklung der Flechten-Pycnidien und ihrer Conidien. [Biblthca lichenologica 14] Cramer, Vaduz. [Detailed study. In German.]

WALKER, F. J. & JAMES, P. W. 1980. A revised guide to microchemical techniques for the identification of lichen products. Bull. Br. Lichen Soc. 46: 13 - 29. [Issued as a supplement.]

WERNER, R. G. 1979. La flore lichénique de la Cordillére Bético-Rifaine. Collnea bot. Barcinone 11: 409 - 471. [Lichens of the Rif mountains in Morocco.]

J. R. LAUNDON

BULLETIN 47. Issued by the British Lichen Society, c/o Dept. of Botany, British Museum, (Natural History), Cromwell Road, London, SW7 5BD. (Tel. 01-589-6323 ext. 552). Edited by O.L. Gilbert, Dept. Landscape Architecture, The University, Sheffield, S10 2TN, who is author of all unsigned articles, except Grapevine. The views of contributors are not necessarily those held by the British Lichen Society.
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BRITISH LICHEN SOCIETY

EXPENDITURE & INCOME ACCOUNT FOR THE YEAR ENDING 31 DECEMBER 1979

1978 £	Expenditure		1979 £	1978 £	Income		1979 £
	Academic Press:						
2743	The Lichenologist		2984	2921	Members' subscriptions		3313
	Subscriptions paid to:			3	Donations		1
26	Revue Bryol. et Lich	24			Royalties on and sales of:		
7	American Bryologist	9		175	Progress & Problems		284
7	Council for Nature	10		6	Dr U K Duncan's Book		1388
8	Biological Council	8		67	A L Smith's Book		24
22	Intern. Assoc. for Lichenology	-		1	B.M.S.Publication		1
				1	Booklets		3
-	Intern. Mycol Assoc.	8	59	9	Check Lists		2
285	The Bulletin (less receipts)		419		Interest received:		
17	Stationery & Typing		28		Welwyn Hatfield	103	
87	Postage		85	119	Refund of Tax	46	149
10	Insurance		10	191	Banks		481
56	Sundry small payments		41	-	Stechert MacMillan		143
				7	Reading Circle		4
	Excess of income over						
961	expenditure		2167				
4229			£5793				£5793

WORLD WILDLIFE FUND

	£		£
Grants paid to 1978	1465	Grants received	1500
Grants paid in 1979	25		
Balance in hand	10		
	£1500		£1500

BALANCE SHEET AS AT 31 DECEMBER 1979

Liabilities		£	Assets	£
Subscriptions paid in advance		135	Investments: Welwyn Hatfield Council Bond @ 10%	1500
World Wildlife Fund		10		
General Fund at 31.12.78	3247		Cash at Banks:	
			National Westminster	3718
Add excess of income over expenditure	2167	5414	Canadian Imperial	196
			National Giro	70
			Stock - Fd	75
		£5559		£5559

S.N.Tallowin
Hon. Treasurer

14 May 1980

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

R.T.Ashby Hon. Auditor

27 June 1980