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NATURE IN AVON

PROCEEDINGS OF THE BRISTOL NATURALISTS' SOCIETY 1999



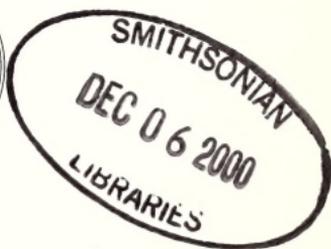
NATURE IN AVON

THE PROCEEDINGS OF THE BRISTOL
NATURALISTS' SOCIETY

VOLUME 59 (for 1999)

EDITED BY R. AVERY

ASSISTED BY A COMMITTEE



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Cover design.

Saw-fly Larva. The late K. M. Hewitt.

COUNCIL 1999

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	Secretary	M. Marsh
Invertebrate Group	President	D. Raynor
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Other members of Council: Mr J. M. Gething, Mr. W. Morris, Mr D. W. R. Strawford, Miss S. L. Myles, Mr N. J. Wray, Ms S. E. Hallett.

Past Presidents: Miss M. H. Rogers, Mr D. A. Wilson.

GENERAL & SECTIONAL PROCEEDINGS

REPORT OF COUNCIL 1999

Progress and achievements in 1999

1 Education

The Society held 28 indoor meetings, and 36 field meetings, with one invertebrate trip being rained off in August. Members helped with the Wildlife Trust's educational programme at Willsbridge Mill, gave courses, walks and workshops organised by various bodies including the Somerset Environmental Record Centre and the Department of Continuing Education. The Society's library, housed in the City Museum, was used by museum staff and members of the society. It is still in the process of reorganisation. New initiatives are being launched, providing support to new members and others, bringing more people into the running of the Society.

2 Publications

a) The Proceedings of the Bristol Naturalists Society for 1996 and 1997 were both published in June, in the series 'Nature in Avon'. The former is 108 pages long and contains two original papers on the Severn Estuary and the index to the Proceedings covering the twenty five years 1971 to 1995 inclusive. The usual biota reports are included, as is an errata slip for the Mendip Special Issue, Proceedings for 1995, issued in 1996. The 1997 issue is 97 pages long and bears two original articles, one on the Garden Birds Survey, covers twenty one winters from 1975 to 1997, and includes forty species or so, involving more than 92 recorders. The other article deals with the rise in the badger population in the past twenty years.

b) Dr R. A. Avery has been appointed Editor of the Proceedings for 1998 and 1999. The editorship of the monthly Bulletin has been shared between two editors this year. It gives details of meetings and includes reports of field meetings and surveys.

c) Details of the Society are available on the Digital City web-site at <http://www.bristol.digitalcity.org/members/nature/>. Mr D. Strawford has taken over the administration of this site that now includes the monthly bulletin.

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d) The Society made a donation to BRERC to support the publication of the Flora of the Bristol Region with colour photographs.

e) The Avon Bird Report was published in October. This is nationally one of the top five bird reports, a position it has held for the last five years. This year it is 168 pages long, a wonderful achievement.

3 Research

a) Ornithology. Members were involved in all the major British Trust for Ornithology and Wetlands and Wildfowl Trust surveys. During the year 120 Breeding Bird Survey squares were counted and the results fed to the Unitary Authorities as part of their Quality of Life monitoring. There was support for the new BTO Winter Farmland Survey.

b) Geology. Members supported Avon Regionally Important Geological & Geomorphological Sites (Avon RIGS) which involved both site recording and clearance, and they liaised with the geology staff of the Bristol City Museum.

c) Invertebrates. Members were involved in recording and mapping schemes for Molluscs, Butterflies, Moths, Dragonflies and Hoverflies, in association with BRERC and other bodies, and in many other regional invertebrate surveys. Of particular importance is the work on the Species Action Plan (SAP) for the Depressed River Mussel..

d) Mammals. Members were involved in checking and maintaining bat boxes at Chew Valley and Blagdon Reservoirs in association with the Avon Bat Group, and working with both BRERC and the national Mammal Society on various projects.

4 Conservation

The Society participated in the Peregrine Watch, and was represented at the annual meeting of the Leigh Woods Advisory Committee, and at meetings of the Severn Estuary Management Group. The Society's Conservation Officer, Dr. W. E. Dixon, represented the society on the Avon Wildlife Trust's conservation committee and is actively seeking to offer our expertise in habitat assessment to the four Unitary

GENERAL & SECTIONAL PROCEEDINGS

Authorities. Members are involved in the management of Lower Woods, Wickwar. An excellent reserve guide has been written by Dr. M. H. Martin. Dr Dixon has written a paper on the management of Weston Big Wood. The society has been able to make objections to planning applications on several sensitive sites, for example on the expansion of the car handling facility at Portbury.

The Geology Section has held work parties at which geological sites have been maintained by clearance work. Grants were made from the Hector Hockey Fund to Bristol City Council for work at the museum on the Sandwith Herbarium, and to Avon Wildlife Trust for conservation work at Littleton Pits, South Gloucestershire.

The Council of the Bristol Naturalists' Society wishes to express its gratitude to the Headmaster of Clifton College for the use of the Newbolt Room, and to Mr Stephen Price, Head of Museums, for the accommodation of its Library.

Council records with regret the death in the past year of Mr J. M. Boyd, Mr F.S. Clements, Mr D. M. Baldwin, and Mrs D. Maxwell.

GENERAL MEETINGS, 1999

The programme of General Lectures for 1999 was:-

- | | |
|------------------------|--|
| Jan 28 th . | AGM and the Presidential address, 'How migrants adapt to climate change' by Richard Bland. |
| Feb 11 th . | 'British Sharks' by Kelvin Boot. |
| Mar 11 th . | 'The Weather' by Tony Targett. |
| Sep 25 th . | 'What's wrong with GM food?' By Dr. Neil Ingram |
| Oct 23 rd . | 'Return of the Native to Ham Hill Farm' by Phil Tolerton |
| Nov 13 th . | BNS Library Open day. |

GENERAL & SECTIONAL PROCEEDINGS

GENERAL FIELD MEETINGS, 1999

These meetings were organised by the Field Committee, whose members were: Chairman – Miss S. M. Garden, Hon. Secretary – Miss R. C. Lee, Committee members – Mr D. A. Cullen, Miss S. M. McCarthy and Miss M. B. Morris.

The following meetings were held under the leadership of those indicated:

Mar 6th. Miss S. Garden. The Quantocks.
On a lovely day (not forecast) we went to Holford for a circular walk up Hodder's Combe and down the Great Road. Robins were singing, and two Dippers were seen. It really felt like the first day of spring.

Apr 2nd. Miss S. Garden. Bourton on the Water.
A Circular walk from Bourton past three lakes (made from old gravel pits). Early spring woodland and hedgerow flowers seen and some lakeside birds.

May 22nd. Miss R. Lee. Bredon Hill.
A walk from Overbury to the tower on top of Bredon Hill and back again through Overbury Park. Good views from the top. Many flowers of limestone found, and birds seen included Skylarks which are decreasing in number.

Jun 5th. Miss S. McCarthy. Coate Water.
An interesting visits despite two heavy showers, to a new venue. Many waterfowl were seen on two big lakes, and a fine wild flower meadow, and other damp loving plants.

July 10th. Mary Morris. Sapperton and Siccaridge Wood.
A most rewarding visit (in a heat wave) to the derelict Stroudwater Canal and the Daneway Bank reserve where many interesting flowers were seen. In Siccaridge Wood there was a walk beside five derelict locks on the old canal. On the return journey a brief stop was made to view the east end of the canal tunnel and its very fine entrance.

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Sep 18th. Miss R. Lee. Shearwater and Stourhead.
On a short walk along the side of Shearwater many fungi were found and some woodland birds heard. At Heaven's Gate we had excellent views of Longleat House and park and the countryside beyond. At Stourhead members visited the House and gardens, In spite of a bad forecast it only seemed to rain while we were in the coach.

Oct 2nd. D. Cullen. Exe Estuary
A rewarding visit to Dawlish Warren in the morning, where good views of a few birds (including the Red-throated Diver) were obtained from the hide. An afternoon visit to the bank of the Exe estuary at Powderham, where a great number of waders were taking advantage of the vast expanse of mud that was uncovered as the tide receded.

Nov 20th. Miss R. Lee. National Museum, Cardiff.
A fascinating visit. Stepehn Howe (a BNS member on the staff of the Museum) took us round the exhibition of "Evolution of Wales" which was full of interest. Members visited other exhibitions as they wished. A very worthwhile visit.

RACHEL C. LEE, General Field Secretary

REPORT OF THE MAMMAL GROUP, 1999

The Mammal Group had a quiet year in 1999, with no formal outdoor or indoor meetings arranged.

Regular contributions continue to be made to the monthly Bristol Naturalists' Society Bulletin. Liaison with the Avon Bat group, the Bristol Regional Environmental Group and Mammal Society continued during the year.

Mammal records continue to be collected and are summarised in the Bristol mammal report in this issue.

DAVID TRUMP, Secretary, Mammal Group.

GENERAL & SECTIONAL PROCEEDINGS

REPORT OF THE BOTANICAL SECTION, 1999

At the Annual General Meeting held on 25th January, Officers and Committee Members were elected as follows:- President: Mr A. C. Titchen, Hon. Secretary/Treasurer: Mr C. W. Hurfurt, Committee members: Mrs C. Kitchen, Mr M. Kitchen, Mrs P. Millman, Mr A. G. Smith, Mr L. Taylor, Mrs H. Titchen and Mrs M. Webster. This was an unchanged committee with vacancies. Mr Hurfurt gave notice that this would be his last year as Secretary/Treasurer.

Six indoor meetings were held during the two winter periods with titles and speakers as follows:-

Jan 25 th .	AGM and 'A botanist in southern Bulgaria', by Mr A. Titchen
Feb 22 nd .	Management of our forests in Bristol and Mendip by Mr. B. Lennon.
Mar 22 nd	Members evening with slides.
Oct 25 th .	'Twitching through the Mildew' by Mr. P. Marren.
Nov 29 th	Members evening with slides
Dec 20 th	'A view from the Fence' by Lady R. Fitzgerald.

Numbers attending meetings were lower than the quality of the meetings deserved, only one meeting topping 30 members. The last meeting by a former Botanical Section President unfortunately coincided with bad weather, snow etc. and only nine people heard the talk.

Outdoor meetings and leaders were as follows:-

Apr 24 th .	Weston Big Wood led by Dr W. Dixon
May 3 rd .	Uphill, led by Mr C. Hurfurt
May 23 rd .	Westridge Wood Wootton-u-Edge led by Mr & Mrs Kitchen
Jun 6 th	Brean Down led by Mrs P. Millman
Jul 17 th	East Hill SSSI, Folly Farm, led by Mrs M. Webster, & Mrs B. Price.
July 24 th .	Blagdon led by Mrs P. Pochson
Aug 7 th	Walton Moor led by Mr A. Titchen.
Sep 4 th	Stroudwater Canal, led by Mr C. Hurfurt

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Numbers enjoying these walks were variable, mostly below ten. The Brean Down meeting had been advertised in the Forest of Avon walks programme and attracted two non-members, but the total was still under ten. The Uphill meeting was held experimentally on a Bank Holiday Monday, and was successful up to the point when members faced long traffic delays on the return journey.

No local evening meetings were held during the summer season, an unfortunate omission on the section's part

C. M. Hurfurt Secretary

REPORT OF THE ORNITHOLOGICAL SECTION, 1999

At the 75th Annual General Meeting, held on Jan 22nd, Richard Bland was re-elected as President for an additional year. Mary Hill was re-elected as Secretary/Treasurer. Paul Farmer was elected to the committee, where he joined the re-elected members Paul Chadwick, Barry Gray, Mike Haines, Don Cullen, Sheila McCarthy, Harvey Rose, and Alan Kelly.

Once again members were very active in fieldwork. They were involved in the National BTO Breeding Bird Survey, Common Bird Census, Garden Bird Survey, Heronry Count, Nest Record Card Scheme, National Lapwing and House Martin and Garden Birdwatch surveys and the WWT Wetland surveys of wildfowl and waders. Members also helped with a number of local surveys, recording overwintering warblers, the local survey of Birds in gardens in winter, a winter bird count scheme, a count of Avon's rookeries, a breeding season tetrad survey and the new scheme to estimate the number of birds breeding in gardens.

The programme of meetings was very successful, and well attended this year. The following indoor meetings were held:-

- Jan 22nd. AGM and Paul Chadwick on "Birding in the Indian sub-continent"
- Feb 10th. Malcolm Sainsbury on 'Birds of Western and Southern USA'
- Mar 10th. Sue Dewar from the Hawk and Owl trust showing her hawks and owls.
- Oct 15th. John Chamberlin on 'The wildlife of the Falkland Isles'.

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- Nov 10th. Peter Rock on 'Are sea gulls taking over our cities?'
- Dec 10th. Peter James on 'Wild Iceland'

The following 15 field meetings were planned (14 were held):-

Jan 23 rd .	Slimbridge	Trevor Evans.
Feb 13 th .	Exe cruise,	Mary Hill
Mar 27 th .	Brean Down	Barry Gray
Apr 14 th **	Leigh Woods	Richard Bland
Apr 24 th .	Catcott B	Barry Gray
May 5 th .	Weston Moor	Lyndon Roberts
May 20 th .	Inglestone Common	Paul Farmer
May 29 th .	Blaise	John Tully
Jun 9 th .	Frome Valley	Richard Bland
Jun 26 th .	Wentwood	Sheila McCarthy and a local warden
Jul 7 th .	Marshfield,	Paul Chadwick and Paul Farmer
Sep 18 th .	Slimbridge for waders	Trevor Evans/Dave Paynter
Oct 16 th .	Aust migration watch	Richard Bland
Nov 28 th .	Severnside,	Brian Lancaster
Dec 28 th .	Chew	Paul Farmer

** A small group met, but abandoned the walk because of snow.

Mary Hill, Secretary.

REPORT OF THE GEOLOGICAL SECTION, 1999

At the Annual General Meeting, held on 13th January, Mr D. Cope was re-elected as President. Dr E. Cook was elected as Hon. Secretary, Mr D. W. Strawford as Hon. Treasurer, and Mr S. C. Carpenter was re-elected as Hon. Field Secretary. Members re-elected to the Committee were Mrs M. E. Poolman, Mr R. Clark and Mr D. A. Wilson.

Secretary's Report 1999

The Geology Section indoor programme started on Jan 13th with the AGM and Presidential Address given by David Cope. David talked about the September (1998) GA field meeting in West Cornwall which

GENERAL & SECTIONAL PROCEEDINGS

was led by Dr Bob Symes, formerly President of the Geologists' Association.

On Feb 17th. Dr. Mike Bell of Cheltenham and Gloucester College of Higher Education related his experiences as a sedimentologist and field geologist working in collaboration with the Chilean Geological Survey. His talk was well attended by members of the Bristol Naturalists' Society and the Earth Sciences Department, University of Bristol.

On Mar 3rd. Dr. Paul Davis recently spent a year based at the National Science Institute in Tokyo, Japan, studying the fossil birds of the Pacific region. He talked about his stay in Japan his hunt for fossil and living birds in the remote southern islands of Japan.

In the autumn on Oct 13th Prof. Mike Benton, Bristol University, gave an entertaining presentation on the history of discovery and study of Thecodontosaurus, the Bristol Dinosaur. The talk covered fights between the naturalists describing the material, and more recent analysis of the skeleton by modern palaeontologists.

On Nov 17th Andrew Ross, Natural History Museum, talked about the formation of amber, described some of insects and other animals preserved in it, and considered the search for DNA in amber. He kindly identified some items of jewellery and hand specimens belonging to members of the audience.

The final event for 1999 for the Geology Section was the Members Evening on Dec 8th. This gave members an opportunity to handle real dinosaur bones, see some spectacular Bristol minerals and see a superb collection of fossils collected by Mike and Sharon Curtis of Gloucester. The Department of Earth Sciences, University of Bristol is thanked for allowing the Geology Section to use its facilities for holding indoor meetings. Members are thanked for continuing to support our programme of indoor meetings.

Liz Cook, Secretary.

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Field Secretary's Report 1999

The following field excursions were organised for the 1999 period:

- Feb 28th, Mar 21st. Geological Site Clearance project - Fry's factory Railway Cutting, Keynsham. *Leaders: Simon Carpenter & David Cope.*
- May 9th. Geological Site Clearance project; The Railway Path rock section at Salford *Leaders: Simon Carpenter & David Cope*
- May 16th. Kimmeridge Bay, Dorset and Steve Etches Private fossil collection. *Leader: Steve Etches.*
- Jun 6th. Geological Site Clearance project; The Railway Path rock section at Oldland. *Leaders: Simon Carpenter & David Cope*
- Jul 18th Coal, Steam and Brachiopods, South Stoke, Bath *Leader: John Parkin*
- Aug 22nd. Geological Site Clearance project; Bitton Railway Cutting, Bristol. *Leaders: Simon Carpenter & David Cope*
- Nov 6th. Geologists' Association Annual Reunion, London

The Geology Section enjoyed a variety of excursions including a number of successful site clearance events. Leaders of excursions are thanked for their efforts and Bath Geological Society are thanked for allowing the BNS to join several of their excellent field trips.

Simon Carpenter, Field Secretary.

GENERAL & SECTIONAL PROCEEDINGS

REPORT OF THE INVERTEBRATE SECTION, 1999

Messrs David Raynor and Ray Barnett agreed to be acting President and Secretary respectively of the Section, although formal elections were not held.

The following indoor meetings were held:

- Mar 17th.. "The fascinating story of oak galls and their many inhabitants" by Mr. R. Williams
Nov 13th. "Hoverflies in the City Museum" by Mr. D. Gibbs,
Miss S. Hallett & Mr. R. Barnett

In March the talk by Robin Williams was an opportunity to see stunning examples of macro-photography with regard to a subject that bridges the gap between the entomologists and the botanists. Unfortunately the membership did not respond by attending in large numbers which was disappointing. The meeting in the Museum this year enabled those who attended, not only to see the Museum collections but also to learn about the voluntary work being undertaken by David Gibbs in assisting the curation of the specimens. The three main dipteran collections of Audcent, Payne and Watkins are being amalgamated together into new storage cabinets and the opportunity taken to catalogue and to check the identifications.

The following field meetings were held:

- May 22nd. Dolebury Warren, Mrs J. Boyd
Jul 17th. Kings Wood, Congresbury, Mr R. Barnett
Aug 8th. Holford, Quantocks, Mr A. Smith

Attendance at the field meetings was poor but interesting species were recorded nevertheless.

R. J. BARNETT *Secretary*

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REPORT OF THE PUBLICATIONS COMMITTEE 1999

The members of the Committee for this year were:- Dr H. E. Rose (chair), Dr R. A. Avery (Editor), Mr. R. J. Barnett, Dr K. Crabtree, Mr R. G. Symes, Mr D. P. C. Trump, (ex officio, the Society's Hon. Publicity officer), Mr R. L. Bland. The Committee met three times during the year.

The 1996 and 1997 issues of the Proceedings were published, and the 1998 issue was almost completed, so that at last issues were up to date. At the end of the year H Rose stood down as Chairman, and the Committee expressed its gratitude to him for many years of service.

H. Rose, Chairman, Publications Committee

REPORT OF THE LIBRARY COMMITTEE 1999

Mrs. A. F. Hollowell was re-elected as Honorary Librarian and was congratulated on gaining an MA degree in Information Services Management. The Library Committee, which welcomed Mr Brian Tizard as a new member, was chaired for 1999 by Mr Roger Symes and met on four occasions. The new Society Archivist became, *ex officio*, a member of the Library committee. Members of the Committee continued to staff the Library from 12.30 to 1.30 pm on Wednesdays, and from 10.15 am to 12.00 noon on Saturdays. During the year 58 (44 in 1998) members made 314 (269) visits and borrowed 260 (260) items. Eight (8) of these visits were made by new members.

29 (29) journals were received by subscription, 43 (45) were received by exchange and 10 (11) were received as gifts. 29 (1) books were purchased, and 10 (34) books, 24 (233) issues of journals and 2 (82) pamphlets/offprints, which had been donated, were accepted into the library stock. For all of these we are indebted to :- Mr R. L. Bland, Dr R. Bradshaw, Mrs M. Findlay, Mrs A. F. Hollowell, Mr P. J. M. Nethercott, Mr. and Mrs D. A. Reynolds, Mr M. A. Rogers, Miss M. A. Rogers, Mr S. M. Taylor, Mr D. A. Wilson, and to English nature and the Natural Environment Research Council. Special name-plates (which are currently being re-designed) are added to books given to the collection by members.

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A plan for the future of the Library was developed by the committee, and will be presented to Council in due course. LICON library software has been acquired and is being trialled before committing the entire library catalogue to the mercy of I.T.! Sorting and disposal of surplus stocks remains a problem- working parties try to address this. A portable vacuum cleaner was purchased to help reduce dust levels. Council agreed that money received in memory of Miss Joan Vine may be used to purchase CD sound recordings, and videos of birds.

In accordance with the charitable status of the Society but subject to the appropriate security considerations, access to the Library is made available to others, particularly by arrangement with the University of Bristol. Five (9) visits were made by members of the staff of the City Museum, one (1) visit by non-member Museum staff. A successful open day was attended by 23 members who were introduced to the library. Archive material was displayed and museum staff also showed the parties the City Museum library. The Society is grateful to all those who participated.

With the appointment of the Society's archivist more archival material is being stored in the Library, including glass photographic slides and the recently (re-) purchased Minute Book, containing the minutes of the first meeting of the society in 1862.

All members of the Committee are thanked for their contributions during 1999. The Society also thanks Mr. Stephen Price, Head of Museum and Leisure Services, Bristol City Council, for the continued use of the Library room and for the assistance given to members during the year by Museum staff, and welcomes the continued use made of the Library by Museum staff.

ROGER SYMES Chairman, BNS Library Committee

THE SOCIETY'S ACCOUNTS FOR 1998

Owing to factors beyond the treasurer's control, the 1998 accounts were not ready at the time the Proceedings went to print.

GENERAL & SECTIONAL PROCEEDINGS

ADVICE TO CONTRIBUTORS

The editor welcomes original papers on the natural history of Avon and surrounding areas for consideration for publication in the *Proceedings*. Inexperienced authors may obtain advice from members of the Publications Committee. Authors should bear in mind that their readers will not usually be specialists in the particular subject, and that unnecessarily technical language can be a barrier to understanding.

All PAPERS for consideration should reach the editor by the end of August in each year. If there is likely to be a problem with this target date please contact the editor in advance. All SOCIETY REPORTS etc should reach the editor by the end of February in the next year.

Manuscripts should be sent on disc in MS word format with a hard copy or by e-mail. An abstract should be supplied, and the text should be broken up by appropriate headings and sub-headings, and accompanied by relevant illustrations.

Originals, not copies of photographs, slides, line drawings, diagrams and maps should be submitted- returnable on request. Photographs and slides may be submitted as prints, positives or negatives, preferably in monochrome.

References should be listed at the end of the text in alphabetical order of the first author's name, and should take the following form.

Book: AUTHOR (DATE). *Title*. Place of publication: Publisher. E.g. RACKHAM, O. (1986). *The history of the countryside*. London: J.M.Dent.

Paper: AUTHOR (DATE). *Title*. *Journal name*, **volume** (part), page nos. E.g. ROSS, S. M. & HEATHWAITE, A. L.(1986). West Sedgemoor: its peat stratigraphy and peat chemistry. *Proceedings of the Bristol Naturalists' Society*, **44**, 19-25.

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BRISTOL MAMMAL REPORT 1999

Compiled by David P. C. Trump and Mary J. Trump
Windrush, West End Lane, Nailsea, Bristol, BS48 4DB
e-mail: D.P.C.Trump@FRCA.maff.gov.uk

INTRODUCTION

This is the eleventh recent mammal report for Bristol and its surrounding districts. Its intention is to be a wide-ranging review of the records and studies of mammals in and around the Bristol area in 1999. The number of one kilometre squares in which those species were recorded are given in brackets after the scientific name followed the number of one kilometre squares for 1998. Where no figures appear after the species name, no specific records were received (however, there may have been records of that species from another source).

It is hoped to produce a Mammal Atlas for the Bristol area and so all records of mammals are being collected. It is likely that the atlas will be based on 1km square records (i.e. a four figure grid reference) but records with six figure grid references are preferred.

Weather News (summarised from bi-monthly weather reports in British Wildlife)

Wet and windy weather predominated in January and February although temperatures were mild. March continued to be mild. However by mid April there was a cold snap with snow and frosts in many areas. May and June were wetter than average months although temperatures were around normal. July was dry with above average temperatures and was the only month in 1999 where rainfall was below average. August started with high temperatures but finished with unsettled weather. September had a similar pattern with a dry start and wet weather to end the month. October was generally sunny with average temperatures. November continued a generally dry and mild autumn. The year finished with a noticeably cooler wetter month with a brief period of snow and severe frosts towards the end of the month.

REPORTS ON MAMMALS

INSECTIVORA (hedgehogs, shrews, and moles)**Hedgehog** *Erinaceus europaeus* (52,57)

There were 67 road casualty records from the following 1 km squares 4772 (2), 5165, 5269, 5476, 5576, 5672, 5677, 5680, 5768, 5770 (3), 5771 (3), 5774, 5777 (9), 5778 (2), 5782, 5877, 5878 (2), 5879 (2), 5974, 5976 (2), 5782 (2), 6086, 6167, 6176, 6179, 6262, 6288, 6361, 6387, 6389, 6390, 6474, 6489 (6), 6490, 6568, 6575, 6589 (2), 6668, 6767, 6866, 6867, 7064, 7066, 7263, 7268 (2), 7362, 7462, 7758.

Live hedgehogs were recorded from only four 1-km squares 5585, 5774, 5870 and 6489.

Records from RLB, DB, MB, PJC, PF, MJM, DP, SP, JCR, ES, DPCT

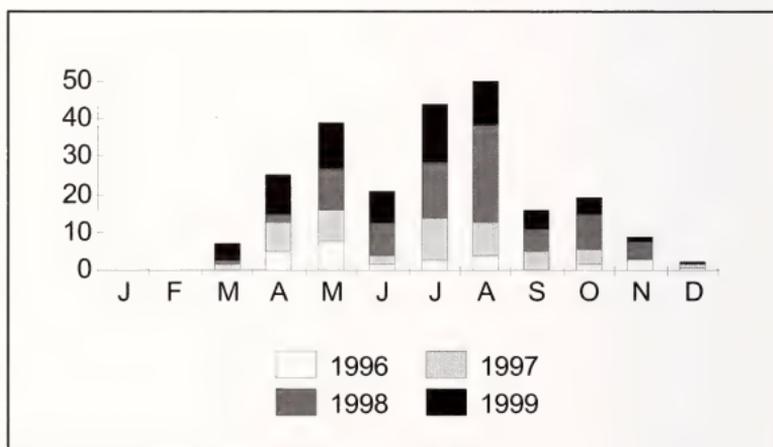


Figure 1. Number of Hedgehog Road Casualty Records per Month 1996-9

Four years data and 232 records of road casualty hedgehogs show two main peaks (Figure 1): May when most hedgehogs have emerged from hibernation and July/August when the young of the year disperse. Hedgehog road casualties have now been recorded in every month of the year except January and February.

A recent study undertaken by Dr Pat Morris of London University has shown that at least a third of sick and injured hedgehogs taken into captivity, nursed back to health and released back into the wild survive for more than two months. This is long enough for them to become

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fully re-established into the wild and makes the rescue of hedgehogs a worthwhile pursuit (Wildlife Reports, British Wildlife 11(2) December 1999).

Mole *Talpa europea* (78,49)

Records from the following 1-km squares: 4057, 4368, 4473, 4756, 4758, 4759, 4858, 4865, 4866, 4967, 5075, 5258, 5266, 5276, 5377, 5470, 5472, 5476, 5477, 5559, 5571, 5572, 5577, 5585, 5660, 5671, 5672, 5677, 5759, 5760, 5761, 5762, 5770, 5860, 5861, 5862, 5963, 6075, 6175, 6176, 6185, 6186, 6269, 6276, 6277, 6278, 6280, 6282, 6376, 6377, 6471, 6582, 6682, 7068, 7070, 7372, 7374, 7376, 7392, 7472, 7484, 7572, 7574, 7575, 7576, 7577, 7580, 7586, 7675, 7677, 7682, 7685, 7687, 7774, 7775, 7790, 7865, 7974.

Almost all the records were of mole hills - generally the only visible signs of the presence of these secretive mammals.

Records from RLB, PJC, PF, MJM, JCR, DPCT,

Common Shrew *Sorex araneus* (3,10)

Only five records for the year from 4354, 5585 (3) and 5968.

Records from PGF, PF, JCR.

Water Shrew *Neomys fodiens* (2,2)

Three records, one from Chittingen Warth (5282) on 7 August (BL) and two from Locking Castle (3660) on 8 and 14 April (both killed by a cat!) (JP).

CHIROPTERA (Bats)

Greater Horseshoe Bat *Rhinolophus ferrumequinum* (8,1)

The following records were provided by Bob Cropper (RSC): a male found in a small cave at East Harptree Combe (5655) on 18 April was earlier ringed at Mells on 8 November 1987 as a juvenile. This bat was still present on 14 November. A female at Denny's Hole, Compton Bishop (3955) on 31 October was ringed at Gough's Old Cave, Cheddar on 24 October 1987 as a juvenile. A male at Elm Cave, Great Elm (7448) on 7 November was ringed at Mells as a juvenile on 17 November 1985.

The following records were provided by Avon Bat Group (ABG):

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292 at Iford (8058) in June, 44 in Kings Wood (4665) on 3 April, 2 in Bath (7669) on 19 July, 1 in Avon Gorge (5674) on 13 March and 1 at Burrington (4658) on 30 December.

Lesser Horseshoe Bat *Rhinolophus hipposideros* (15,2)

35 at Compton Martin Ochre Mine on 1 January, 21 at Shute Shelve Cavern on 31 January (RSC).

The following records were provided by Avon Bat Group (ABG):

13 at Black Down (4758) on 8 March, approximately 12 at Wrington (4663) on 29 May, 59 at Upper Langford (4559) on 31 May, Approximately 20 at Warleigh Manor (7864) on 11 August, 19 in Kings Wood (4665) on 3 April, 34 at Cleeve (4464) in August/September and 100+ at Winscombe during 1999.

There were 7 other records, all of less than 10 bats. All of these being south of the River Avon and, with the exception of a single bat at Keynsham, west of the A37.

Daubenton's Bat *Myotis daubentonii* (2,2)

A male was found at Gough's Old Cave, Cheddar on 23 January and a female at St Cuthbert's flues, Priddy (5450) on 31 January (both RSC).

Noctule *Nyctalus noctula* (0,5)

Surprisingly no records for the year.

Brown Long-eared Bat *Plecotus auritus* (0,1)

No records for the year.

Natterer's Bat *Myotis nattereri* (3,0)

A male at Browne's Hole, Stoke St Michael (6647) on 17 January (RSC). The Brent Knoll (3350) breeding colony in the church porch continued to be active in 1999 with several emerging 26 July (RSC). Forty seven emerged from a roost at Burnett (6665) on 6 June (ABG).

Common Pipistrelle *Pipistrellus pipistrellus* and **Soprano Pipistrelle** *P. pygmaeus* (2,5)

Only two records for the year from Severn Beach (5585) with between one and three bats seen regularly between 15 May and 29 September and 263 soprano pipistrelles counted out of a house roof in Chew Magna (5763) on 9 July - see figure 2.

Records from JCR, DPCT and MJM.

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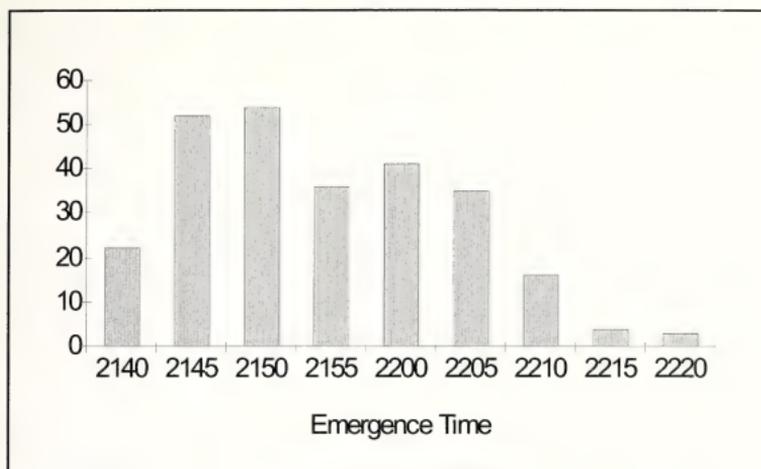


Figure 2. Emergence times of Soprano Pipistrelles from a roof in Chew Magna.

Whiskered Bat *Myotis mystacinus* (1,0)

Twenty three were seen emerging from a roost in Chewton Keynsham (6565) on 22 July (ABG).

Bat Studies at Bristol University

“Bat’ll do nicely - a new species” (Bristol Evening Post 1 December). Until recently only one species of pipistrelle existing as the two phonic types, 45 kHz bats and 55 kHz bats, was recognised in Britain. However, Gareth Jones and Elizabeth Barratt (Institute of Zoology) have now proposed that the taxon known as *Pipistrellus pipistrellus* be separated. They propose that the species with the lower pitched call (45 kHz) should be denoted with the name *P. pipistrellus* (Common Pipistrelle) and that the name *P. pygmaeus* (Soprano Pipistrelle) (Leach, 1825) should be used for the smaller species which calls at a higher frequency (55 kHz) (Jones and Barratt 1999).

“Bats Put At Risk by Scientists’ Clattering Ring Tags” (Daily Telegraph 22 April 1999), “Bat Alert - Jangling ID tags warn prey that there’s a hunter on their tail” (New Scientist 24 April 1999). Gareth Jones and colleagues reported that the technique of double ringing bats (a durable metal ring with a serial number and a coloured plastic ring)

could be interfering with the bats' feeding behaviour because the rings knock together making a sound which scares away the insects which the bats feed on (Norman et al 1999).

Kirsty Park, Gareth Jones and Roger Ramsome (Park et al 1999) investigated the activity patterns of Greater Horseshoe bats at caves in Cheddar during the hibernation season. They found that bats remained largely nocturnal during winter with the mean time of activity during a 24 hour period of 88 to 369 minutes after sunset. They found that there was an increase in diurnal activity from late May to early June probably because bats remained active after foraging at dawn towards the end of the hibernation season.

Kate Barlow and Gareth Jones reported on investigations into the numbers and wing morphology of bats at maternity roosts of the two phonic types (45 kHz and 55 kHz) of *Pipistrellus pipistrellus*. Bats were counted at roosts throughout the British Isles including a number of roosts of both types in the Bristol area (Barlow and Jones 1999). Bats of the two phonic types use separate maternity roosts which are formed from May to July. Thirty three 45 kHz roosts were counted with a median of 76 bats (range 20-223) and forty 55 kHz roosts counted with a median of 203 bats (range 30-650). There were significantly more bats in 55 kHz roosts than in 45 kHz roosts. Forearm length in 45 kHz bats was also found to be significantly longer. These results corroborate existing evidence that the two phonic types are 'cryptic' species.

The foraging ecology of Leisler's bat at two sites in southern Britain was investigated by Dean Waters, Gareth Jones and Mick Furlong (Waters et al 1999). One site was in Kent and the other was the Leisler's roost (more than 200 individuals in a large Victorian house) in Clifton (5673). Diet was studied by faecal analysis and habitat use by radio telemetry and bat detectors. The diet of bats from both roosts consisted primarily of small flies (*nematoceran diptera*) with smaller numbers of Beetles (*coleoptera*) and moths (*lepidoptera*). Foraging ranges were relatively large - bats flying a mean maximum of 4.2 km from the roost. Bats significantly preferred foraging in areas of woodland and along scrub-lined roads in Kent, but over pasture around Bristol. Urban and arable areas were avoided at both sites. Bat detector transects showed a significant preference for bats to forage along woodland margins.

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LAGOMORPHA (Rabbits and Hares)

Brown Hare *Lepus europaeus* (18,30)

There were 21 records from the following 1 km squares: 3157(2), 4261, 4262, 5671, 5871, 5958, 6191, 6761 (2), 6796, 6864, 6865, 7275, 7574(2), 7577, 7677, 7775, 7976, 8075.

Records from: DB, MB, PJC, RSC, JWD, PGF, PF, MJM, DP, DPCT

The Brown Hare Project continued during 1999 with Ruth Temple and Nancy Vaughan of Bristol University conducting post mortems on road traffic casualty and shot hares from around the country. (Wildlife Reports, British Wildlife 10 (4) April 1999).

Rabbit *Oryctolagus cuniculus* (30,83)

Very under recorded but records received from 4355*, 4473, 4975, 5378, 5585, 5661, 5790, 5862, 6085, 6185, 6277, 6278, 6286, 6972, 7066, 7271, 7272, 7372, 7472, 7476, 7574, 7577, 7579, 7582, 7677, 7687, 7777*, 7778, 7788, 7888.

(* = black rabbits seen with normal coloured individuals)

Records from RLB, PJC, PF, MJM, JCR, DPCT.

RODENTIA (rats, mice, voles and squirrels)

Brown Rat *Rattus norvegicus* (11,25)

Records from 4069, 5585, 5760 (Denny Island, Chew Valley Lake), 5769, 5861, 6272, 6375, 7256, 7372, 7576, 7677.

Records from MB, PJC, MJM, JCR, DPCT.

Grey Squirrel *Sciurus carolinensis* (42,75)

There were records from the following 1 km squares: 4057, 4160, 4256, 4353, 4476, 4971, 5377, 5477, 5556, 5571, 5575, 5585, 5671, 5673, 5674, 5677, 5760, 5772, 5773, 5778, 5869, 5870, 5873, 5876, 5877, 5973, 6174, 6176, 6273, 6275, 6276, 6292, 6376, 6377, 6476, 6577, 6583, 7072, 7172, 7684, 7882, 7982.

As part of his standard weekly bird recording walk (2 km within ST 5673 old Clifton) Richard Bland has been counting grey squirrels. In 1998 he counted 58 at a rate of 1.29/hour. This year he counted 78 at a rate of 1.71/hour - perhaps an indication that the number of 'urban' grey squirrels is on the increase.

Records from RLB, AMB, MB, PJC, PF, SH, MJM, JCR, DPCT.

Water Vole *Arvicola terrestris*

Avonmouth and Lawrence Weston continue to be a stronghold for this species. The Wildlife Trust is surveying and monitoring water voles in the area and are pressing for the most important areas to be made Sites of Nature Conservation Importance within the Bristol Local Plan (Wildlife [Avon Wildlife Trust] 57 Autumn 1999) especially as it is a prime area for development. The only other substantial water vole population in Avon is in the Kennet and Avon canal ('Bristol: Action for Biodiversity Water Vole Action Plan' Bristol City Council 1999).

Bristol City Council in partnership with the Avon Wildlife Trust, the Bristol Regional Environmental Records Centre (BRERC), English Nature, Wessex Water and the Environment Agency published the Water Vole Biodiversity Action Plan in October 1999. This followed a lively seminar at the Wessex Water Avonmouth Sewage Treatment Works attended by representatives of a large number of organisations (including the Bristol Naturalists' Society) and individuals. A series of eight objectives and targets were drawn up as follows:-

Objective 1. Identify all water vole populations within the Bristol area (by 2000)

Objective 2. Halt the decline of the water vole in Bristol (ongoing)

Objective 3. Enhance, restore and create water vole habitat (ongoing)

Objective 4. Encourage sympathetic habitat management (ongoing)

Objective 5. Monitor water vole populations to establish population trends. Ensure that all data collected is passed to BRERC (ongoing)

Objective 6. Ensure public utilities are aware of important water vole colonies (by 2000)

Objective 7. Inform and involve local communities in understanding water voles and their needs (ongoing)

Objective 8. Monitor and control mink populations (ongoing)

With so much public affection and an action plan with achievable targets it is hoped that the water vole will continue to thrive in the area well into the next millennium.

Bank Vole *Clethrionomys glareolus* (1,4)

Single record from 5585 (JCR)

Short-tailed Field Vole *Microtus agrestis* (2,3)

Records from 5382 and 5585 (JCR)

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Work undertaken by Alasdair Love and Charlotte Webbon of Bristol University have shown dramatic declines in the populations of small mammals, particularly field voles and common shrews, in the last 25 years. Barn Owls are good monitors of small mammal populations. Their diet has shown a change from common shrews to pygmy shrews which are about half the size. It is thought this may be due to the drier summers recently. The drop in small mammals also has knock on effects on species such as the polecat. (BBC Wildlife 17(1) January 1999)

Harvest Mouse *Micromys minutus*

No records for the year.

Dormouse *Muscardinus avellanarius*

Dave Clarke's dormouse box studies in King's Wood, Cleeve continue.

Woodmouse *Apodemus sylvaticus* (2,9)

Two killed by a cat at 6677 (MB), one seen at 5585 (JCR)

House Mouse *Mus domesticus* (1,1)

Two records, both from 5585 (JCR)

Yellow-Necked Mouse *Apodemus flavicollis* (1,4)

Possible specimen found dead on the A46 at Dyrham Park 7576 (PJC).

CETACEA (whales, dolphins and porpoises) and **PINNIPEDIA** (seals)

Grey Seal *Halichoerus grypus* (2,1)

Just two records for this year with one seen on 17 August at Northwick Warth (5487) and one seen on 7 September at New Passage (5486) (both records from BL).

Striped Dolphin *Stenella coeruleoalba*

The post mortem report on the dolphin washed up at Clevedon in December 1998 (Trump and Marsh 1999) suggested that it died due to 'the pathophysiological consequences of live stranding' (RB pers. comm.).

CARNIVORA (carnivores)

American Mink *Mustela vison* (3,2)

Only four sightings this year: at the River Pill (5585) in April and June, Northwick Warth (5686) in August and the Frome Valley (6176) in November.

Records from MB, BL and JCR.

Studies by P. Ferreras and David Macdonald (Wild CRU, University of Oxford) have shown that as well as decimating the water vole population, mink also have a significant impact on water birds. Their study along the Thames showed that nesting coots are particularly vulnerable as they nest on the ground, spend a great deal of time in reed beds and are poor fliers making them particularly vulnerable to predation by mink. (Mammal News 120 14 Winter 1999/2000).

Stoat *Mustela ermina* (7,3)

Records from Chelvey Batch (4767) on 20 March, Saltford (6966) and Hinton Charterhouse (7858) both on 25 June - all road casualties; one at Bleadon Level (3157) on 27 March, Saltford (6867) on 28 May, one fighting with a magpie at Cross Quarry (4155) on 4 August and one at Uphill Quarry (3158) on 13 August (records from DB, JWD, BJ, DPCT, LW).

Weasel *Mustela nivalis* (3,7)

Only three records for the Avon area with one seen north of Saltford (6868) on 31 March (JWD), an individual crossing the road on 24 April at Crook's Marsh (JCR) and one at Uphill (3157) on 5 April (DB).

European Polecat *Mustela putorius* (1?,0)

No confirmed records. A polecat/ferret hybrid was found run over outside the Globe pub on the A4 at Newton St Loe (7065) on 12 June (JP).

A five year study by the Vincent Wildlife Trust suggests that the polecat is holding its own despite the possibility of a dilution of their gene pool as a result of interbreeding with feral domestic ferrets. It was found that although hybrids are common there is still evidence of a distinct polecat type descended from the original animals. Even where hybridisation does occur it seems that the polecat characteristics are

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stronger than the ferret's. "Polecat's Progress" British Wildlife 17(2) February 1999.

A postal survey by James Packer (ADAS Wildlife Unit) and Johnny Birks (Vincent Wildlife Trust) of 1200 farmers and game keepers within the main range of the polecat showed that only 11% of responding farmers had ever experienced damage by polecats; 28% regarded the species as a threat to livestock, 53% believed that polecats controlled rabbits and 39% believed that they controlled rodents on the farm. Two thirds of the gamekeepers who responded had experienced polecat predation of penned gamebirds. Most (68%) regarded the polecat as a minor pest but ranked it below foxes, feral cats, stoats, corvids and mink. Both farmers and gamekeepers stated that they would be concerned about an increase in the number of polecats and most wished to be free to control the species. Ninety one percent of gamekeepers had trapped polecats during the preceding five years despite the fact that trapping can only be undertaken under licence. However, overall very few farmers carry out polecat control (Packer and Birks 1999).

Otter *Lutra lutra* (1?,0)

Unconfirmed record from River Avon at Bitton on 25 Feb. (RR). During the year otter signs were found at Puxton Moor and Backwell Lake (Alison Washbrook North Somerset Levels Project Officer pers. com.).

Badger *Meles meles* (56,38)

Records of road casualty badgers from the following 1 km squares: 3363, 4058, 4255, 4666, 4862, 5064, 5072, 5369 (2), 5382, 5471, 5484, 5572, 5581, 5759, 5988, 6070, 6086, 6164, 6186 (2), 6261, 6277, 6289, 6290, 6377, 6469 (3), 6578, 6773, 6778, 6789, 6893, 6977, 6979, 7172 (2), 7472, 7474, 7476, 7560, 7561, 7576, 7577, 7674 (2), 7756, 7757, 7857, 7860, 7878

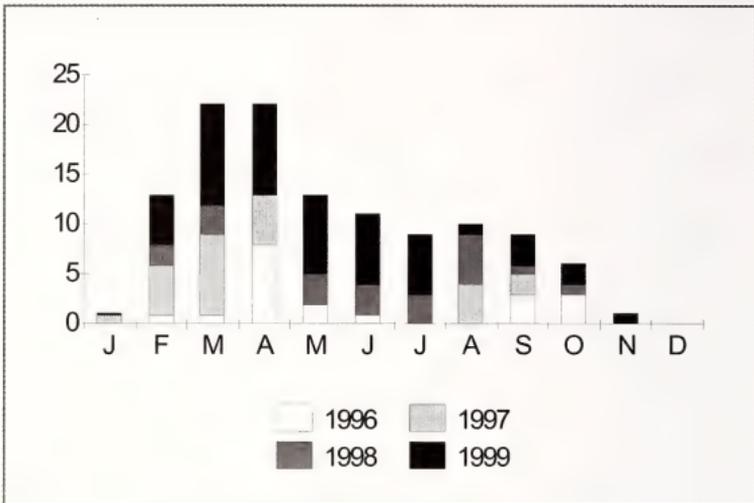


Figure 3. Number of Badger Road Casualty Records 1996-9
Four years of badger road casualty figures with 117 records to date show a large peak in March and April (peak breeding season) with a smaller peak in August (dispersal of young) (fig. 3). It is interesting to note the complete lack of badger road casualty records in December and only single records for November and January. This is the time of year when badgers are at their least active with the pregnant females underground in their setts prior to giving birth to cubs in February and March.

This seasonality was investigated in detail by Davies and colleagues at the University of Sussex (Davies et al 1987). They collected data from nearly one thousand road-killed badgers from the south of England in 1984. They too showed a bi-modal distribution in mortality for both sexes, with peaks occurring in spring and late summer. They found no significant difference between the total number of males and females killed, and no difference in the seasonal distribution of deaths between the two sexes. Nor was there any evidence that the dispersal of young animals was contributing to either of the seasonal peaks in mortality. They suggest that the seasonal peaks in mortality reflect increased activity in conjunction with mating.

Other badger records from 7475 (latrine), 7467 (trespasser had to be removed by security!), 5989 (one running along lane at 8 p.m.), 5470

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(large sett), 5165 (narrowly avoided being hit by a car), 4668 (active sett), 5862 (sett), 6571 (?), 7374 (dung pits), 7688 (sett)
Records from RLB, DB, MB, PJC, PF, MJM, DP, JCR, DPCT, LW.

A questionnaire survey of 3600 landowner occupiers was conducted in 1997 by staff from the Central Science Laboratory to determine the extent and significance of badger damage in England and Wales (Moore et al 1999). Almost 30% of those who responded reported that badger damage had occurred in the previous 12 months and 57% reported an increase in damage over the last 5 years. The most frequently reported damage (25%) resulted from badgers' burrowing activities (especially those causing damage to fences). Crop damage was also frequently reported (21%) with wheat, forage maize and vines being damaged most. The region suffering the most intense damage was the South West of England. Predation by badgers on livestock was considered to be a small scale and unproven problem. The majority reported damage was of little economic consequence to individual landowners; however, approximately 5% estimated that they had incurred costs of over £1000. It is estimated that badgers cause damage worth up to £41.5 million per year.

Badgers and Bovine Tuberculosis

Badger campaigners demanded that the UK Government suspend its controversial cull of badgers. The cull's aim is to find ways of preventing bovine TB outbreaks in cattle. Campaigners say that the government is acting against the Bern Convention, Europe's wildlife treaty, to which the UK is a signatory. The Ministry of Agriculture, Fisheries and Food submitted a report in December 1999 for consideration, to justify the cull. Dr Elaine King, conservation officer for the National Federation of Badger Groups says "It is designed to deliberately mislead by making false claims and leaving out vital information" (British Wildlife 17(12), December 1999).

Fox *Vulpes vulpes* (27,51)

Records from the following 1 km squares: 3457, 4672, 5064, 5269, 5369, 5576*, 5585, 5661, 5664, 5689, 5780, 5771*, 5968*, 6170*, 6278, 6287, 6471, 6475*, 6668, 7165, 7177, 7476, 7560, 7580, 7687, 7858, 7862, 7864.

(* = 'Bristol' foxes)

D. P. C. TRUMP

Foxes found within the Bristol city boundary were as follows:-

- 5968 (3 Jan) Adult resting in bramble patch in Hengrove park.
6475 (2 Mar) One seen at entrance of Staplehill tunnel.
5771 (23 April) One seen in garden in Bower Road, Ashton (very mangey)
6170 (date ?) Adult disturbed whilst resting in bramble patch in Brislington allotments.
5576 (12 Aug) One of the University's radio-tagged fox was found 'in a distressed state' in Glen Drive, Stoke Bishop. It was euthanased after two days. Despite tests for a variety of pesticides under the MAFF Wildlife Incident Investigation Scheme the cause of death remained unknown.

Records from RLB, DB, MB, PJC, PGF, JMM, MJM, JCR, DP, DPCT.

Charlotte Webbon and her colleagues at Bristol University began a national survey of foxes this year which will continue for three years. Their aim is to find out how many foxes live in different parts of the country, what their diet is and which areas of the country have the best habitat for them. Part of this study concentrates on foxes in rural areas which have not been studied much in the past despite much debate over fox hunting. However urban foxes have been studied in detail in Bristol over the last 20 years. 1994 saw the population reduced by over 90% due to sarcoptic mange *Sarcoptes scabiei*. The population is now approximately 20% of its original size with animals occupying territories of about 20 hectares and the social group size being an average of seven adults. Many of the foxes still show signs of mange infection and the population is unstable (Wildlife Reports, British Wildlife, 11(1) October 1999).

National Fox Survey (update): Charlotte Webbon reported that over 220 1-km squares were surveyed across Britain during the spring of 1999 and almost 3000 fox scats collected. The survey continues in the spring of 2000. (Mammal News 120 8 Winter 1999/2000).

ARTIODACTYLA (deer)

Red Deer *Cervus elaphus* (0,2)

No records of 'wild' red deer this year.

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Roe Deer *Capreolus capreolus* (31,43)

Records of roe deer from the following 1-km squares: 3959, 4057, 4355, 4455, 4639, 4665, 4756, 4858, 4959, 5258, 5271, 5470, 5573, 5557, 5760, 6766, 6967, 7064, 7164, 7374, 7473, 7477, 7574, 7575, 7576, 7577, 7578, 7771, 7788, 7878, 7888.

Records from RLB, DB, AMB, MB, PJC, JWD, PGF, PF, MJM, DPCT.

Fallow Deer *Dama dama* (2,1)

Records from 7578 and 6768 (deer park) DPCT/MJM and MB

Chinese Muntjac Deer *Muntiacus reevesi* (1,1)

There was one record of a Muntjac. On the afternoon of 13 March in Easton-in-Gordano (5274), an unseen animal was heard crashing through the undergrowth. Shortly afterwards a female Muntjac was found trapped in the gates at Habberfield Hall. It was released unharmed (RSC).

NOTES FROM OUR NEIGHBOURS

The following is reproduced from Mammal Notes in the Bath Natural History Society magazine of 2000 (page 1905) compiled by Terry Hardy.

'Few mammal records have been received for 1999. Peter James however has had sightings of a stoat in his garden in Hantone Hill together with the ever present urban fox. The rabbit population took a sharp drop early in the season evidence of the usual myxomatosis was seen but other factors seem to have contributed to the rapid decline in numbers.

The increase in Roe Deer has unfortunately brought about an increase in poaching; several instances have been brought to the writers attention of poaching in woods to the north of the city and some inhumane methods of capture have been noted (T H).'

EXOTICS

Wild Boar *Sus scrofa*

Charlie Wilson of the Farming and Rural Conservation Agency (FRCA) reported on the wild boar population in Dorset. In April 1996 it was reported that 6 animals had escaped from a local wild boar farm in the area to the south east of Beaminster the previous year. Between then and the end of 1998 up to 32 animals were killed. Reported sightings by the public included groups of up to 17 animals and sows with young. In October 1998 FRCA observed a sow with five half grown young. Despite the number of animals killed pasture damage continued again through the winter of 1998/99 so there would appear to be wild boar still at large in the Dorset countryside (Charlie Wilson pers. com.).

EXTINCT BRITISH MAMMALS

In his book *The History of British Mammals* Derek Yalden (Yalden 1999) investigates the mammal fauna of the British from the time of the last ice age some 15,000 years before present to the present day and beyond. Lists of archaeological sites containing the remains of mammals, some now extinct, many still with us, provide a fascinating insight to our mammal fauna past and present. (See section on Extinct Mammals and place names in the 1995 Avon Mammal Report). Of local interest are the following records, mostly from the Mendips. Where the evidence is appropriate, the date Before Present (BP) is given. Otherwise the dates are given as periods within the last ice age, and as a rough guide Mesolithic is 5,000-10,000 BP. Younger Dryas is about 11,000 BP, Older Dryas about 13,000 BP, Flandrian about 14,000 BP, Devensian extends from 14,000 to 70,000BP, and, as it was the last glaciation, Late Glacial fits within it. Ipswichian is 70,000-200,000 BP, Pre Ipswichian to 300,000BP and Cromerian to 500,000BP.

Irish Elk *Megaloceros giganteus* (extinct).

Bleadon Cave	ST4357
Gough's Cave	ST4653
Hutton Cave	ST3458
Loxbrook, Bath	ST7464.
Twerton, Bath	ST7263

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Wolverine *Gulo gulo* (current range - North America (northern USA to the arctic), Arctic and sub-arctic regions of Europe and Asia)

Banwell Cave ST3858 Devensian?
Chelm's Combe Rockshelter ST4654

Steppe Pika *Ochotona pusilla* (current range - Russian steppes)

Westbury-sub-Mendip ST5050 Anglian Glacial?
Hutton Cave ST3658
Chelm's Combe Rockshelter ST4654 Younger Dryas 11,000 b.p.
Rowberrow Cavern ST4558 Late Glacial
Wolf Den, Wavering Down ST3556 Late Glacial
Aveline's Hole ST4758 Late Glacial
Tom Tivey's Hole ST7044 Late Glacial
Bridged Pot, Ebbor Gorge ST5248 Late Glacial, Younger Dryas
Badger Hole, Wookey Hole ST5348
Gough's Cave, Cheddar ST4654 Younger Dryas?
Sun Hole, Cheddar ST4654 Younger Dryas
Soldier's Hole, Cheddar ST4654 c. 10,300 b.p.

Saiga *Saiga tatarica* (current range - the Russian steppes)

Sun Hole, Cheddar ST4654 Late Glacial
Gough's Cave, Cheddar ST4654 12,380 b.p.
Soldier's Hole, Cheddar ST4654 12,100 b.p.
Wolf Den, Wavering Down ST3556 Late Glacial

European Elk *Alces alces* (current range - the forests and marshes of Europe and Asia)

Nailsworth ST8499 ?Mesolithic

Norway Lemming *Lemmus lemmus* (current range - northern Norway and Finland)

4 sites in the Mendip area

Arctic Lemming *Dicrostonyx torquatus* (current range - arctic Russia, Alaska and Canada)

5 sites in the Mendip area

Narrow-headed Vole *Microtus gregalis* (current range - the Russian steppes, arctic Russia and Alaska)

3 sites in the Mendip area

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Root Vole *Microtus oeconomus* (current range - the Russian steppes, arctic Russia and Alaska)

6+ sites in the Somerset area

Aurochs *Bos primigenius* (extinct)

Gough's (New) Cave, Cheddar	ST4653	12,300 b.p.
Gough's Cave, Cheddar	ST4653	11,900 b.p.
Bath	ST7464	
Larkhill, Bath	ST7566	
Locksbrook, Bath	ST7364	

European Brown Bear *Ursus arctos* (current range - remnant populations in the French Pyrenees, north western Spain, Italy, Poland, Czech Republic, Slovakia and Norway, healthy populations in the Carpathians, the Balkans, Scandinavia, Russia across to Japan)

Bleadon	ST3456	Pre-Ipswich
Hutton Cave	ST3658	Pre-Ipswich
Picken's Hole	ST3955	Devensian
Banwell Cave	ST3858	Devensian
Goatchurch Cavern	ST4758	Devensian
Hyaena Den, Wookey Hole	ST5348	Devensian
Sanford Hill Cave	ST4259	Devensian
Dulcote Fissure	ST5644	Devensian?
Sun Hole	ST4654	12,378 b.p.
Gough's Cave	ST4653	c. 12,200 b.p.
Soldier's Hole	ST4654	Late Glacial
Bridged Pot	ST5248	Late Glacial
Wavering Down	ST3755	Late Glacial
Aveline's Hole	ST4758	Late Glacial?

Beaver *Castor fiber* (current range - indigenous populations in Finland, Scandinavia, Poland, the Elbe and the Rhone, Russia and western Siberia. Successful re-introductions in France, southern Germany and Austria)

Gough's Cave	ST4653	Late Glacial?
Gough's Old Cave	ST4653	9,320 b.p.
Brean Down?	ST2858	Bronze Age 4,000 b.p.
River Avon, Chippenham	ST9173	
River Avon, Melksham	ST9460	

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Wolf *Canis lupus* (current range - isolated populations in Italy and Spain, small numbers in Sweden, Norway and Finland, widespread throughout the Balkans, eastwards through Russia, Siberia, south to Arabia and India and in North America)

Westbury-sub-Mendip	ST8650	Post-Cromerian
Bleadon	ST3457	Pre-Ipswichian
Hutton Cavern	ST3458	Pre-Ipswichian
Durdham Down	ST5674	Ipswichian
Banwell	ST3858	Devensian
Sanford Cave	ST3959	Devensian
Hyaena Den, Wookey Hole	ST5348	Devensian
Picken's Hole	ST3955	Devensian
Rhinoceros Hole	ST5247	Devensian
Uphill	ST3158	Devensian
Wookey Hole	ST5347	Devensian
Aveline's Hole	ST4758	Late Glacial?
Bridged Pot	ST5248	Late Glacial
Gough's Cavern	ST4654	Late Glacial
Soldier's Hole	ST4654	Late Glacial
Sun Hole	ST4654	Late Glacial
Walton	ST4274	Late Glacial
Wavering Down	ST3755	Late Glacial
Chippenham	ST9173	

Lynx *Lynx lynx* (current range - Scandinavia, eastern Europe and Spain, also in most of northern Asia and Canada. Recent introductions in Switzerland and Bavaria)

2 sites in the Mendips

Spotted Hyena *Crocuta crocuta* (current range - east and southern Africa)

Sandford Hill ST4259 36,000 b.p.

LEGISLATION

The Department of Environment, Transport and the Regions (DETR) recently released proposals to amend Schedule 9 of the Wildlife and Countryside Act (1981) to protect Red Deer *Cervus elaphus* from hybridisation with Sika Deer *C. nippon*. Hybridisation of Red Deer with Sika is a constant problem in the UK and the DETR proposals suggest

prohibiting the deliberate release of Sika and Sika hybrids into the wild (Wildlife Reports, British Wildlife 10(4) April 1999).

WILDLIFE POISONING

Robbie McDonald and colleagues at Bristol University together with the Ministry of Agriculture Fisheries and Food Wildlife Incident Unit found traces of anti-coagulant rodenticides in 40% of weasels and 20% of stoats. These predators were accidentally exposed to the poison whilst eating their normal diet of mice and rats. Dr McDonald said "These are not isolated cases of poison abuse but reflect a national increase in the incidence of secondary poisoning of wildlife." (Evening Post 12 February 1999).

PUBLICATIONS

This year saw the publication of the Atlas of European Mammals by Tony Mitchell-Jones (Mitchell-Jones et al 1999). This amazing publication should surely be on the book shelves of anyone interested in the distribution of mammals throughout Europe.

English Nature published a leaflet 'Water Vole, guidance for planners and developers' during the year.

A useful key to identifying the guard hairs of British canids and mustelids was published in December (Cowell and Thomas 1999).

ACKNOWLEDGEMENTS

Our thanks to all those who provided records and information for this report.

Dick Best (RB), Alan Britton (AMB), Richard Bland (RLB), Des Bowring (DB), Mark Brookes (MB), Paul Chadwick (PJC), Bob Cropper (RSC), Will Duckworth (JWD), PG Farmer (PGF), Paul Fletcher (PF), Sam Hallett (SH), Bob Howard for Avon Bat Group (ABG), Beth Jefferies (BJ), Gareth Jones (GJ), Brian Lancaster (BL), Joan Marsh (JMM), Mary Marsh (MJM), James Packer (JP), David Paine (DP), Stephanie Payne (SP), JC Rawlinson (JCR), Rod Rees (RR), Eileen Stonebridge (ES), David Trump (DPCT), Len Wyatt (LW).

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BRISTOL & DISTRICT INVERTEBRATE REPORT, 1999

Compiled by R. J. Barnett
City Museum & Art Gallery, Queen's Road, Bristol BS8 1RL.

INTRODUCTION

A year notable for an increase in professional entomological survey work commissioned by the Avon Wildlife Trust and local authorities, leading to some excellent records in what was otherwise, not a very noteworthy year. Dave Gibbs, Janet Boyd and Martin Evans, in particular added substantially to the knowledge of the invertebrate fauna on Wildlife Trust reserves and elsewhere in the district. Some of the rarest species recorded by Dave Gibbs are listed here in summary, the full report for diptera is to be published in a national entomological journal and records from all three entomologists are being processed at the Bristol Regional Environmental Records Centre (BRERC), at Ashton Court Visitor Centre. In Dave Gibbs' list are a number of Red Data Book species in the coleoptera, diptera and hymenoptera, and of the species listed many are either new to the area or have only been recorded infrequently in the past.

One species of fly which is not only of national and local interest but is also a large and strikingly marked one is *Asilus crabroniformis*, the Hornet Robberfly. This species has been of concern nationally due to an apparent decline in records recently. It is therefore reassuring to see it "re-discovered" in our district with strong populations noted by all three entomologists listed above, in the Gordano Valley, and also from Monk Woods above Bath by Dave Gibbs. Furthermore I received a fine photograph of this insect taken by Alan Barrett from Bathampton. Together it would look as if the species has a localised but strong presence in the district.

Another fly which caught my attention was the small picture-wing *Anomoia purmunda*, which I have reported previously from my garden in Bristol. In 1999 I was somewhat surprised to discover half a dozen or so displaying, by waving their wings, on a recently painted garden chair. It was very apparent that they were only attracted to that chair and ignored a similarly painted (but not recently) chair. Presumably the

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solvents in the paint were confusing or misleading the flies in some way.

An important observation during the year was the discovery that the Long-winged Cone-head *Conocephalus discolor* is now established here. The northward movement of this cricket across the country in recent years has been monitored with interest, so it is no surprise that it has now joined our fauna. The questions are whether this can be directly assigned to global warming and what will be the limit to its population expansion? It is now likely to be found accompanying the Short-winged Conehead *C. dorsalis*.

Butterflies did not have a great 1999. The lack of immigrant butterflies was noticeable and weather conditions did not do any great favours to native populations either. This situation was very similar for moths. The Avon Butterfly Project and Bristol & District Moth Group both continued to flourish and received many thousands of records for the respective distribution mapping schemes. The former has contributed to the national "Millennium Atlas" being produced under the aegis of Butterfly Conservation.

The most significant moth records were probably the identification (by genitalia preparation) of a Pauper Pug from Leigh Woods by Mike Bailey, the Waved Black found at Filton by Andy Pym and the Jersey Tiger, (one recorded by Bill Dixon and another seen on a Moth group meeting at the Gordano Valley National Nature Reserve). The Pauper Pug has long been expected given its larva feeds upon Small-leaved Lime and it is known from the Wye Valley and East Anglia. It may yet be found in other woodlands locally just as the similar specialist *Salebriopsis albicilla* has been in recent years. The appearance of a False Mocha at Timsbury was also a very unusual capture for our region. With regard to the micro-moths, a search for *Coleophora albella* at its known site at Wetmoor was unsuccessful but good populations of another speciality of the region *C. ochrea* were confirmed in the Avon Gorge. Many other excellent records were added during 1999.

The Bristol & District Dragonfly Recording Scheme also had an active year, recorders being encouraged to seek out sightings right up to the end of the summer and into early autumn. The final sightings were both

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on the 25th November by Tony Moulin and Julia James at different sites and were both of the Common Darter *Sympetrum striolatum*.

A low point of the year was the death of John Boyd who has done so much to promote the study of insects, dragonflies and galls from his Mendip base; always extremely modest when it came to his extensive knowledge. I am however, pleased to report that the West Mendip Invertebrate Group, which he established, is continuing to record and photograph its local insect fauna.

Beetle records received were few but the appearance of the Lilly Beetle will fill gardeners with alarm. The 1999 records are from widespread sites and there are now reports that it was present in 1998. It certainly appears to be well established on garden lillies and other plants such as *Fritillaria*.

I am very grateful, as usual to John Weeks for the Weather Synopsis but also this year to Robert Cropper for submitting the report on the occurrence of the somewhat enigmatic Fairy Shrimp in the district. Its discovery is exciting and it is a species well worth looking for at new sites now that its presence has been revealed.

Observers mentioned in the species list:

Rich Andrews (RA), Mike Bailey (MB), Ray Barnett (RB), Alan Barrett (ABa), Alan Bone (AB), Dws Bowring (DB), Bristol & District Moth Group (BDMG), A Brome (ABr), John Burton (JB), Rosie Clarke (RCI), Robert Cropper (RC), Dixie Dean (EAD), Bill Dixon (WD), Roger Edmondson (RE), Martin Evans (ME), Derek Foxwell (DF), Pete Fraser (PF), Dave Gibbs (DG), Sam Hallett (SH), Jean Hathaway (JH), Rupert Higgins (RH), B. Jones (BJ), Mike Kendall (MK), Ted & Dave Levy (E&DL), John Martin (JM), Nigel Milbourne (NM), Tony Moulin (TM), J. Overfield (JO), Mark Parsons (MP), Ken Poole (KP), Steve Preddy (SP), Dave Pritchard (DP), Andy Pym (AP), Frances Stenner (FS), Des Sweet (DS), Roger Symes (RS).

My thanks also to those who, in addition, submitted records which do not appear in this report but which help significantly to build up a picture of our invertebrate fauna, and to the Bristol Regional Environmental Records Centre (BRERC).

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Scientific nomenclature follows the names given in Bradley (1998), Chandler (1998), Duff (1993) and Potts (1964).

WEATHER SYNOPSIS (by John Weeks)

1999 was warm and wet. The warmth was occasioned not so much by a long hot summer as by a mild winter and autumn. Indeed, the summer overall was about normal, thanks to a brilliant week at the end of July and beginning of August. The year's overall mean temperature of 11.5°C was the second highest of the 1990s, 1990 remaining in the lead at 11.7° and 1995 falling into third place at 11.4°.

There were comparatively few very hot days. Temperatures rose into the 80s F (26.7°C +) on an isolated day in June and again in September, but the best spells of such days were from 8th to 12th July and 24th July to 2nd August. The hottest day of the year was 30 July, with 85°F (29.5°C). The thermometer reached 60°F (15.6°C) for the first time on 17 March (about normal), 70°F (21.1°C) on 1 April (rather early) and 80°F (26.9°C) on 26 June.

As can be seen from the table, the rainfall exceeded long-term average in eight months. July alone was exceptionally dry, with February and November falling rather short of normal. The total for the calendar year of nearly 1160mm was the highest in my records, and easily exceeded the previous record of 1043 in 1998. It amounted to 135% of the average from 1989-1998. There were four days on which rainfall was over an inch, one of which topped two inches. Four months, January, August, September and December, each yielded over six inches and accounted for 57% of the year's total. There were 180 days with measurable rainfall, against 195 in 1998.

Thunder was heard on 19 days - the highest incidence in the decade - the heaviest storms occurring in the last days of May and early June and in early August. Snow was almost completely absent (at the low altitude of my station, 10m asl). There were two days when it was seen falling with rain during a cold snap in February and two days around Christmas time. None remained lying.

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The table gives an overall view of the months and seasons.

	Monthly Difference			Seasonal Difference	
	Temp Diff	Rain %	Sun %	Temp Diff	Rain %
Dec '98	+1.4	101	85		
Jan '99	+1.1	177	114		
Feb	-0.2	63	80	+0.7	119
Mar	+0.3	104	120		
Apr	+0.7	147	110		
May	-0.1	142	80	+0.3	131
Jun	-0.1	146	110		
Jul	+1.0	17	116		
Aug	-1.0	237	81	0.0	140
Sep	+1.7	209	116		
Oct	+0.6	82	125		
Nov	+0.4	76	129	+0.9	118

TABLE 1. Monthly and seasonal trends in climate during 1998

The table tells almost the whole story of the year. There were two short-lived spells of low minima in January, but day-time temperatures kept well up and that month ended as one of the warmest in recent years. Its wettest day was 19th with 41.7mm and it was the wettest January since 1995. February, March and April had similar cold snaps and the low altitude of this station probably preserved the record of "no snow lying" on 9th February. The Mendips and South Wales were less fortunate.

May was another month when lower than normal maxima were balanced by warm nights. Overall it was not too bad a month: it started dry (only 25.5mm had fallen by 24th) but the weather turned thundery in the last few days and lifted the total to 62.3mm and the month into the "wet" category. (However as with all convectional rain, totals varied widely over short distances.)

The thundery spell continued into the first week of June and temperatures remained at a disappointing level until the beginning of the last week when the magic figure of 81°F (27°C) was reached.

July also started with a thunderstorm on the 2nd, which yielded very little rain. Temperatures kept up and the five days, 8th to 12th, saw

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maxima of over 80°F. It also remained dry: half of the month's total of 9.3mm fell overnight 19th-20th. A second hot spell started on 24th and continued until 2nd August. This heat sparked off further heavy thunderstorms, especially over the Midlands, but the Bristol area escaped these. The "escape" was short-lived. Thundery rain on 6th August gave 26.5mm and on 8th 31.1mm. A further storm on 17th caused power cuts in the area and there was yet another on 25th on which day a total of 27.0mm fell in the twenty four hours to 6.00pm. (A "metereological day" runs from 9.00am to 9.00pm GMT. The 27mm to 6.00pm on 25 August has not, therefore, been counted as one of the four days with over an inch.) The August total of 158.2mm was the highest recorded here since 1979, but it was immediately overtaken by 160.8mm in September, the wettest month of this name since 1981. A complex frontal weather system brought a fall of 51.1mm overnight on 18th - 19th, the wettest day of the year.

The remaining autumn months were pleasantly near normal, but the year closed with a very wet December (175.3mm), another record!

THE OCCURRENCE OF THE FAIRY SHRIMP *Chirocephalus diaphanus* Prevost. IN NORTH SOMERSET (VICE-COUNTY 6) (by Robert Cropper)

The Fairy Shrimp *Chirocephalus diaphanus* Prevost. is a rare crustacean of the Order Anostraca, which lives in temporary pools. In Britain its headquarters are the New Forest, Devon and Cornwall and a site in Cambridgeshire.

The species is widely distributed in Europe and North Africa, and records exist for much of Britain, but over most of its range it is said to be declining, as seasonal pools are destroyed or damaged in some way. It is defenceless, and vulnerable to predation by fish and insect larvae, which would explain its restriction to these temporary bodies of water. In 1988 the species was added to Schedule 5 of the Wildlife and Countryside Act, 1981

On 4th April 1980 my attention was drawn to a temporary pool at Brent Knoll (ST35), which I visited after having been shown specimens of *C. diaphanus*, discovered by a schoolgirl on a pond-dipping excursion. The species was previously unknown in Somerset.

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On this date *C. diaphanus* was abundant in the site - a shallow, grassy pool with good algal growth, and a depth which I estimated to be 18 to 24 inches. The same visit produced single specimens of the water bug *Corixa punctata* (Illiger), and the beetle *Acilius sulcatus* (L.), the second of which would probably prey on *Chirocephalus*. However, neither species have been re-found in the pool, and both records would be casual occurrences, as the temporary nature of the water would make breeding impossible.

During the 1980 summer, the pool dried out completely, and in spite of consistently poor weather, remained empty until October. Young *Chirocephalus* were abundant on 2nd November and on 30th November the surface was frozen, but fully grown adults were swimming beneath ice.

Since the discovery, the species has been annually recorded, and is still thriving in 1999. The pool generally contains water from November until March, when *Chirocephalus* is present, together with the copepod *Diaptomus castor* (Jurine) which is also typical of this habitat.

SPECIES OF NOTE IN 1999

ORTHOPTERA (grasshoppers and crickets)

Long-winged Cone-head *Conocephalus discolor* (Thunb.) Sticklinch ST567 395 31 July (large colony in rank grass); Leighton Hanging ST706 444 30 August (breeding population); Downhead ST686 462 4 September (substantial colony associated with *Juncus effusus*); Hengrove Park ST592 683 25 September (large colony) (RC).

HEMIPTERA

Macroplax preyssleri (Fieber) Dolebury Warren ST45 58 5 June;
Goblin Combe ST47 65 9 June (DG).

Rhyparochromus pini (L.) Dolebury Warren ST45 58 19 August;
Goblin Combe ST47 65 9 June (DG).

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Calocoris alpestris (Meyer-Dur) Fortnight ST729 602 6 June (eight on nettles at woodland edge, first seen here in 1983 and again in 1994) (RC).

LEPIDOPTERA (butterflies)

Swallowtail *Papilio machaon* L. Whitchurch ST60 67 11 July (DF); Dundry Hill ST5 6 18 July (JH) (both presumably due to releases of captive bred stock).

Grayling *Hipparchia semele* (L.) Goblin Combe ST475 653 23 July, 21 August (DB).

LEPIDOPTERA (macro-moths)

Lunar Hornet Moth *Sesia bembeciformis* (Hb.) Weston-in-Gordano ST428 732 12 August (DP).

Six-belted Clearwing *Bembecia ichneumoniformis* (D. & S.) Dolebury Warren ST44 58 15 June (JM et al).

False Mocha *Cyclophora porata* (L.) Timsbury ST65 58 8 August (MB).

Vestal *Rhodometra sacraria* (L.) Portishead ST45 74 31 July (WD); Wrington ST4 6 11 September (TM).

Small Argent & Sable *Epirrhoe tristata* (L.) Weston Woods ST32 62 29 July (EAD, FS).

Brown Scallop *Philereme vetulata* (D. & S.) Tytherington Hill ST67 86 24 June (JM, RH, AP, RA, DG, PF, ABr, JO).

Pale November Moth *Epirrita christyi* (Allen) Leigh Woods ST55 73 15 October (RE, ME det. MB).

Pauper Pug *Eupithecia egenaria* H.-S. Leigh Woods ST55 73 11 June (MB (BDMG)).

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Shaded Pug *Eupithecia subumbrata* (D. & S.) Sand Point ST32 65 15
June (RE, ME).

Dingy Shell *Euchoeca nebulata* (Scop.) Weston Moor ST44 73 7 July
(DG, JM, RH, AP, RA, PF, ABr, JO).

Barred Umber *Plagodis pulveraria* (L.) Lords Wood ST63 63 26
May (MB, NM).

Brimstone Moth *Opisthograptis luteolata* (L.) Warmley ST6 7 7
March (BJ per AB).

Death's Head Hawk-moth *Acherontia atropos* (L.) Clewer ST4 5
9 April (MK, per JB).

Great Prominent *Peridea anceps* (Goeze) Brown's Folly ST79 66
14 May (DG (BDMG)).

Brown-tail *Euproctis chrysorrhoea* (L.) Filton ST 61 79 9 May
(larvae), 10 July, 11 July (imagines) (AP).

Orange Footman *Eilema sororcula* (Hufn.) Brown's Folly ST79 66
14 May (BDMG).

Jersey Tiger *Euplagia quadripunctaria* (Poda) Portishead ST45 74
September (WD); Gordano Valley N.N.R. ST43 72 10 September
(BDMG).

Varied Coronet *Hadena compta* (D. & S.) Pilning ST5 8 11 July
(JM).

Delicate *Mythimna vitellina* (Hb.) Bishopston ST58 75 19 September
(RH).

Miller *Acronicta aceris* (L.) Weston-super-Mare ST46 21 23 June
(KP).

Silky Wainscot *Chilodes maritimus* (Tauscher) Weston Moor ST44 73
7 July (DG, JM, RH, AP, RA).

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Silver Y *Autographa gamma* (L.) Blagdon ST5 5 27 April (NM) (early date).

Waved Black *Parascotia fuliginaria* (L.) Filton ST61 79 20 June (AP).

LEPIDOPTERA (micro-moths)

Micropterix mansuetella Zell. Wetmoor ST74 87 8 May (MP); Chew Valley Lake ST56 58 9 May (MB).

Caloptilia semifascia (Haw.) Westbury-on-Trym ST58 77 1 April (SH); Cleeve Heronry ST46 66 15 August (DG).

Phyllonorycter muelleriella (Zell.) Wetmoor ST74 87 8 May (MP).

Phyllonorycter leucographa (Zell.) Clifton ST57 73 March (ME) (larval mines); Filton ST60 79 9 March (AP) larval mines).

Coleophora ochrea (Haw.) Avon Gorge ST56 74 21 May (MP, ME) (larvae).

Stathmopoda pedella (L.) Weston Moor ST44 73 7 July (DG, JM, RH, AP, RA).

Monochroa palustrella (Dougl.) Weston Moor ST44 73 7 July (DG).

Scrobipalpa obsoletella (Fisch. von Rosl.) Ashton Hill Plantation ST52 70 19 March (DG (BDMG)).

Sorhagenia lophyrella (Dougl.) Weston Moor ST44 73 18 July (DG).

Pammene fasciana (L.) Weston Moor ST44 73 7 July (DG, JM, RH, AP, RA).

Calamatropha paludella (Hb.) Weston Moor ST44 73 7 July (DG, JM, RH, AP, RA).

Small Magpie *Eurrhyncha hortulata* (L.) Keynsham ST65 67 9 April (early date) (AB).

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Opsibotys fuscalis (D. & S.) Ashton Court Meadow ST54 72 27 May
(JM *et al.*).

Mecyna asinalis (Hb.) Weston-super-Mare ST46 21 (no date) (KP).

Hypochalcia ahenella (D. & S.) Tytherington Hill ST67 86 24 June
(JM, RH, AP, RA, DG, PF, ABr, JO).

Pempeliella dilutella (D. & S.) Timsbury ST65 58 14 July (MB).

COLEOPTERA (beetles)

Notiophilus germinyi Fauvel Goblin Combe ST47 65 9 June (DG).

Platyderus ruficollis (Marsh.) Radstock Sidings ST69 54 17 May
(DG).

Haliphus mucronatus Steph. Weston Moor ST44 73 29 July, 2
August, 16 August (DG).

Haliphus variegatus Sturm Weston Moor ST44 73 16 August, 17
August (DG).

Stenus canescens Rosen. Chelvey Decoy ST 46 68 6 August (DG).

Agrilus laticornis (Ill.) Pensford Colliery Tip ST61 62 13 July;
Dolebury Warren ST45 58 19 August (DG).

Cantharis fusca L. Uphill ST31 58 23 May; Weston Moor ST44 73 8
June (DG).

Platycis minutus (Fabr.) Lower Kilcott ST78 89 12 August; Cleeve
Heronry ST46 66 15 August; Combe Hay ST738 602 5 September
(DG).

Pseudocistela ceramboides (L.) Tytherington Hill ST67 88 24 June
(JM, RH, AP, RA, DG, PF, ABr, JO).

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Lissodema quadripustulata (Marsh.) Cleeve Heronry ST46 66 15 August (DG).

Ischnomera cyanea (Fabr.) Dolebury Warren ST45 58 30 June (DG).

Ischnomera sanguinicollis (Fabr.) Goblin Combe ST47 65 9 June; Ashton Court ST55 72 20 June (DG).

Musk Beetle *Aromia moschata* (L.) Weston Moor ST44 73 4 August (DG).

Phytoecia cylindrica (L.) Radstock Sidings ST69 54 25 May; Stockwood Open Space ST62 68 29 May (DG).

Cryptocephalus bipunctatus (L.) Browns Folly ST79 66 1 June, 10 July (DG).

Lilly Beetle *Lilioceris lili* (Scop.) Bristol ST (no date) (SP); Nailsea ST4 6 (no date) (RCl); Clevedon ST4 7 (no date) (RS).

Ptilinus pectinicornis (L.) Portishead ST46 76 14 June (RB).

Platyrhinus resinus (Scop.) Kings Wood ST45 64 17 July (RB); Cleeve Heronry ST46 66 15 August (DG)..

Eubrychius velutus (Beck) Weston Moor ST44 73 11 August, 17 August (DG).

Phytobius leucogaster (Marsh.) Weston Moor ST44 73 2 August (DG).

HYMENOPTERA (bees, wasps & ants)

Xiphydria camelus (L.) Max Bog ST40 57 25 June (DG).

Priocnemis coriacea Dahl. Stockwood Open Space ST62 68 29 May (DG).

Odynerus melanocephalus (Gmel.) Dolebury Warren ST45 58 5 June (DG).

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Colletes marginatus Smith Berrow Dunes ST29 52 6 July (DG).

Andrena bucephala Steph. Walton Hill ST46 34 3 May; St Michael's Hill ST49 16 10 May; Dolebury Warren ST45 58 19 May (DG).

Andrena fulvago (Christ) Dolebury Warren ST45 58 19 May, 4 July; Stockwood Open Space ST62 68 29 May, 14 June; Troopers Hill ST62 73 3 June

Andrena proxima (Kirby) Moorlinch ST39 36 3 May; Radstock Sidings ST69 54 25 May (DG).

Lasioglossum pauxillum (Schenck) Dolebury Warren ST45 58 19 May, 19 August; Tucking Mill ST76 61 3 July (DG).

Stelis ornatula (Klug) Radstock Sidings ST69 54 25 May; Dolebury Warren ST45 58 11 June (DG).

Nomada conjungens Herr.-Schaff. Radstock Sidings ST69 54 16 June; Tucking Mill ST76 61 3 July (DG).

Nomada hirtipes Perez Dolebury Warren ST45 58 3 May, 19 May; Walton Hill ST46 34 3 May; Cadbury Castle ST62 24 4 May; Goblin Combe ST47 65 16 May; Radstock Sidings ST69 54 25 May; Browns Folly ST79 66 1 June (DG).

Nomada lathburiana (Kirby) Dolebury Warren ST45 58 3 May; Radstock Sidings ST69 54 25 May; Browns Folly ST79 66 1 June (DG).

Nomada pleurosticta Herr.-Schaff. Dolebury Warren ST45 58 19 May (DG).

Eucera longicornis (L.) Blake's Pools ST36 66 2 June (DG).

Ceratina cyanea (Kirby) Radstock Sidings ST69 54 25 May, 16 June, 23 July, 20 August (DG).

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DIPTERA (flies)

Erioptera mejerei Edwards Lawrence Weston Moor ST54 79 24 July (DG).

Neopachygaster meromelas (Dufour) Radstock Sidings ST69 54 16 June (DG).

Oxycera pygmaea (Fall.) Max Bog ST40 57 25 June (DG).

Bombylius discolor Mikan Trooper's Hill ST62 73 6 April; Uphill ST31 57 7 April; Hellenge Hill ST34 57 18 April; Cadbury Castle ST62 24 10 May; Moorlinch ST39 36 3 May; Walton Hill ST46 34 3 May (all DG).

Asilus crabroniformis Linn. Monk Woods ST75 71 1 September; Weston Moor ST44 73 23 August (both DG); Bathampton ST7 6 (no date) (ABa).

Acalcus britannicus Pollet Weston Moor ST44 73 2 August (DG).

Systemus scholtzi (Lowe) Cleeve Heronry ST46 66 15 August (DG).

Chrysotoxum elegans Lowe Dolebury Warren ST45 58 4 July (DG).

Myopa extricata Collin Bourton Combe ST50 68 9 April; Walton Hill ST46 34 3 May; Uphill ST31 57 4 May (all DG).

Noeeta pupillata (Fall.) Radstock Sidings ST69 54 23 July (DG).

Chetostoma curvinerve (Robineau-Desvoidy) Monk Woods ST75 70 1 September (DG).

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- Colobaea bifasciella* (Fall.) Weston Moor ST44 73 27 August (DG).
- Antichaeta brevipennis* (Zett.) Weston Moor ST44 73 27 August (DG).
- Paraclusia tigrina* (Fall.) Cleeve Heronry ST46 66 15 August (DG).
- Scoilio-centra confusa* (Wahlgren) Monk Woods ST75 70 15 May (DG).
- Stegana coleoprata* (Scop.) Monk Woods ST75 70 24 July (DG).
- Arydroptera disco-myzina* Collin Pawlett Levels ST31 43 13 September (DG).
- Anomia purmunda* (Harris) Bishopston (on recently wet paint) ST58 77 12 August, 13 August (RB).

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BRISTOL BOTANY IN 1999

by A. J. WILLIS

Department of Animal and Plant Sciences, The University, Sheffield,
S10 2TN

The year 1999 was distinctly hot and extremely wet. Except for June, a cold month, temperatures were above average throughout the year, especially so in January (more than 2°C higher than normal), July and September. For the year the mean maximum temperature of 14.5°C was 0.8°C higher than the long-term average and the mean minimum temperature of 7.4°C was 1.1°C higher than normal. Over the year there were only 18 frosts, a very low number, confined to January to April and December. Apart from July, which was very dry and sunny, monthly rainfall was near average or higher than normal, often considerably so. Indeed January, April, August, September and December had nearly twice the usual rainfall. The total precipitation for the year was 1131.4 mm, about 30.6% above the 30-year average (1961-1990), being the wettest for very many years, exceeding even the extremely wet 1993 when there was 1082 mm rainfall. More than 0.2 mm of rain fell on 197 days of the year.

The warm early months of the year, as may be expected, led to early dates for flowering of many of the vernal plants. As last year, Stinking Hellebore (*Helleborus foetidus*) was in flower on New Year's Day at Churchill Batch and in early January Snowdrops (*Galanthus nivalis*) were in bloom at Uphill and Spurge-Laurel (*Daphne laureola*) beginning to flower in Cheddar Wood. By February Marsh-marigold (*Caltha palustris*) was flowering in Edford Wood (Stoke Lane Valley) and Green Hellebore (*Helleborus viridis*) was well in flower on a hedgebank at Nettlebridge. In March, Dwarf Sedge (*Carex humilis*) was profusely flowering on Brean Down, where there was also Hairy Violet (*Viola hirta*), Common Whitlowgrass (*Erophila verna*), Danish Scurvygrass (*Cochlearia danica*) and Rue-leaved Saxifrage (*Saxifraga tridactylites*). It was a good year for Adder's-tongue Spearwort (*Ranunculus ophioglossifolius*) on Inglestone Common and quite good for Brown Galingale (*Cyperus fuscus*) at Walton Moor, but Hutchinsia (*Hornungia petraea*) was in rather small quantity at Charterhouse (all records RSC).

The long persistence of plants, which had been feared lost, is again shown in some records this year. It is reassuring that *Helleborus viridis*

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still grows in Towerhouse Wood, that *Scirpus sylvaticus* persists in the Oldbury Court Estate and that *Carex divulsa* survives in Sneyd Park. Some plants are almost certainly new arrivals e.g. *Herniaria glabra* and *Photinia davidiana*, both recorded for the first time in the Watsonian vice-county 34 (West Gloucestershire) while other species may be spreading, such as the grass *Parapholis incurva*, now present at Sand Bay, the alien grass *Gaudinia fragilis* and the garden-grown *Acaena novae-zelandiae* in the Leigh Woods area.

Names of contributors associated with several records are abbreviated thus:

RSC	R. S. Cropper	MARK	M. A. R. Kitchen
IPG	I. P. Green	PJMN	P. J. M. Nethercott
LH	Ms L. Houston	EGMN	E. G. M. Niblett
CK	Mrs C. Kitchen.		

The area covered by this report is essentially that defined by J.W. White for his *Flora of Bristol* (1912). The eastern boundary is taken as the old boundary of Wiltshire where it meets the old boundaries of both Gloucestershire and Somerset. The southern limit is taken as approximately the course of the River Brue along some of its length. The area comprises the northern part of the Watsonian vice-county of North Somerset (v.c. 6) and the southern part of West Gloucestershire (v.c. 34). In the following records these parts are designated **S** and **G** respectively.

Plant names are in accordance with C. Stace *New Flora of the British Isles*, 2nd edition, 1997.

Helleborus viridis L. (Green Hellebore). Over twenty clumps in Towerhouse Wood, West Hill, west of Wraxall, **S**, IPG. First seen here in 1921 by Mrs C.I. and N.Y. Sandwith.

Ranunculus lingua L. (Greater Spearwort). A good flowering patch, no doubt introduced, in pool south of church, Shipham, **S**, RSC.

R. trichophyllus Chaix (Thread-leaved Water-crowfoot). Tealham Moor, **S**; also *Wolffia arrhiza* (L.) Horkel ex Wimm. (Rootless Duckweed), RSC.

Aquilegia vulgaris L. (Columbine). Roadside verge, Westhay, **S**; also on wood border, Sandford Hill, **S**, RSC.

Lepidium campestre (L.) W.T. Aiton (Field Pepperwort). One flowering and fruiting plant, Sandford Hill, **S**, RSC.

Herniaria glabra L. (Smooth Rupturewort). One plant on soil imported about two years ago on upper saltmarsh, River Severn, Holes Mouth, Avonmouth, G, R. J. Higgins. This is the second record for v.c. 34; specimen in Herb. MARK & CK. The first record for West Gloucestershire was on a tip at Shirehampton in 1961, PJMN (see *Bristol Botany in 1962*, p. 306).

Ononis spinosa L. (Spiny Restharrow). Several healthy plants on grassy Sea Wall, Portbury Wharf, S, EGMN.

Medicago arabica (L.) Huds. (Spotted Medick). A small patch on banks of the River Frome, Bromley Heath, G, M.J. Trotman.

Trifolium striatum L. (Knotted Clover). One plant in grassy gully, Wavering Down, S, and several flowering at Uphill, S, RSC.

Onobrychis viciifolia Scop. (Sainfoin). Scattered in several places on and near roadside, Court Lane area, Clevedon, S, PJMN.

Lathyrus nissolia L. (Grass Vetchling). Several plants flowering on quarry floor, Great Quarry, under Clifton Down, Bristol, G, PJMN. Evidently a new arrival in this much disturbed quarry, used by squatters and car-breakers in recent years. *Vicia tetrasperma* (L.) Schreb. (Smooth Tare) also present; White's *Flora of Bristol* (1912, p. 244) records this (as *V. gemella*) lower down the riverside where it still grows.

Rosa canina L. (Dog-rose). Several bushes, sparsely flowering in October, at the top of St Vincent's Rock, Clifton Down, Bristol, G, PJMN.

R. tomentosa Sm. (Harsh Downy-rose). One flowering bush in hedge by track, Combe Hay, S, RSC.

R. micrantha Borrer ex Smith (Small-flowered Sweet-briar). One bush, St Vincent's Rocks, Clifton Down, Bristol, G, PJMN. White (*Flora of Bristol*, 1912, p. 293) records 'St Vincent's Rocks 1843; Thwaites in Herb. Br. Mus.' Although there may be some doubt whether the record of Thwaites is for St Vincent's Rocks proper, this rose is certainly very rare on the Clifton side. See also *Bristol Botany in 1992*, p. 29.

Sorbus anglica Hedl. (English Whitebeam). A small specimen about 25 cm tall seen in 1990, evidently planted, has now grown to 1.5 metres and appears established, inward of saltmarsh and the new railway line, Sea Mills, Bristol, G, PJMN.

Saxifraga granulata L. (Meadow Saxifrage). Several plants on railway embankment, Hillsea, Yatton, S, C. Greenway.

Epilobium roseum Schreb. (Pale Willowherb). A few plants flowering and fruiting in old quarry, Downhead, S, RSC.

Myriophyllum spicatum L. (Spiked Water-milfoil). Flowering in

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abundance in rhynes, Ford Common, Berrow, **S**: also *Ranunculus circinatus* Sibth. (Fan-leaved Water-crowfoot) and *Potamogeton pectinatus* L. (Fennel Pondweed), **RSC**.

Crithmum maritimum L. (Rock Samphire). In weedy grassland by the pier, Avonmouth Docks, **G**, **R. J. Higgins**.

Parietaria judaica L. (Pellitory-of-the-wall). In many places on walls in the old dockland areas in central Bristol between Queen's Square and the Bristol General Hospital, **G**, **PJMN**. White's *Flora of Bristol* (1912, p. 530) gives no indication of the plant flourishing in the inner city area.

Primula x polyantha Mill. Two flowering plants in meadow, Uphill, **S**, **RSC**.

Myosotis laxa Lehm. (Tufted Forget-me-not). Stoke St Michael, **S**, **RSC**.

Lithospermum officinale L. (Common Gromwell). Very abundant in woodland clearing, Brown's Folly, Bathford Hill, **S**; also several clumps on ground recently cleared of scrub, Loxton Hill, **S**, both **RSC**.

Verbascum nigrum L. (Dark Mullein). Present for several years on edge of re-planted open grassy area, Norton's Wood, behind Clevedon Court, **S**, **EGMN**.

Chaenorhinum minus (L.) Lange (Small Toadflax). Frequent, rail track between Sea Mills and Shirehampton, **G**, **PJMN**.

Stachys alpina L. (Limestone Woundwort). Six good flower spikes at junction of tracks, Westridge Wood, near Wotton-under-Edge, **G**, **RSC**. Known here for several years by **CK & MARK**.

Hieracium lepidulum Stenstroem. In 1836, on old walls, Bristol, **G**, **J.W. Ewing**, det. **D.J. McCosh**. In *Herb. B.M.*

Spiranthes spiralis (L.) Chevall. (Autumn Lady's-tresses). A single specimen on lawn, Woodlands Road, Portishead, **S**, **EGMN**.

Ophrys apifera Huds. (Bee Orchid). Fifty plants in grassland, some with characteristics of var. *trollii* (Hegetschw.) Druce (Wasp Orchid), Uphill, **S**; also several plants in rough grassland, South Stoke, **S**; and several on grassy bank of B4057, Stoke Gifford, **G**, all **RSC**.

Anacamptis pyramidalis (L.) Rich. (Pyramidal Orchid). Flowering well in wide, roadside, grass verge, Toll Down Farm, near Tormanton, **G**, **P.J. Chadwick**.

Scirpus sylvaticus L. (Wood Club-rush). A patch, one m², with two fruiting spikes, under alder clump, Frome Valley, Oldbury Court Estate, Bristol, **G**, **MARK & CK**. Though searched for, not seen for over 15 years, being thought lost when sewage system put through Frome Valley.

Carex strigosa Huds. (Thin-spiked Wood-sedge). Good clumps,

A. J. WILLIS

fruiting, south bank of River Frome, Frome Valley, Oldbury Court Estate, Bristol, **G**, MARK & CK. Plentiful along woodland path, Nunney Combe, **S**, RSC.

C. divulsa Stokes ssp. *divulsa* (Grey Sedge). Surviving for many years in hedgerow near pavement and in undisturbed ground in a large garden, Sneyd Park, Bristol, **G**, PJMN. This sedge was recorded from 'Stoke Bishop Road' (near Knoll Hill) by Miss I.M. Roper in her Notes in her interleaved Flora as found there by F. Samson (her half-brother) in 1923.

x Festulpia hubbardii Stace & R. Cotton. A good patch, with both parents, on foredunes, Berrow, **S**, RSC.

Leymus arenarius (L.) Hochst. (Lyme-grass). A good-sized flowering patch on blown sand near mouth of the River Brue, Burnham-on-Sea, **S**, RSC.

Alopecurus aequalis Sobol. (Orange Foxtail). A few plants by newly made ponds south of Batheaston between the River Avon and railway, **S**, P.J. Pope. This is the first record (but no voucher material available) of this grass for the region.

Parapholis incurva (L.) C.E. Hubb. (Curved Hard-grass). In good quantity along sand dune system, Sand Bay, **S**; also *Carduus tenuiflorus* Curtis (Slender Thistle) flowering well on beach, RSC.

ALIENS

Cannabis sativa L. (Hemp). Avon Gorge, Bristol, **G**, LH.

Sisymbrium orientale L. (Eastern Rocket). Persistent, though scattered, in the vicinity of St Mary Redcliffe, Bristol and the Bristol General Hospital, **G**, PJMN.

Chenopodium quinoa Willd. (Quinoa). Several plants in fields where crops grown to feed pheasants, bog path near Wotton-under-Edge, **G**, N. Lusmore, det. E.J. Clement.

Ailanthus altissima (Mill.) Swingle (Tree-of-Heaven). Several shoots up to 30 cm tall at junction between pavement and house wall, Ashley Road, Montpelier, Bristol, **G**, PJMN. A large old tree in adjacent garden known for many years (also a sapling). This tree suckers freely and seeds germinate readily.

Melilotus albus Medik. (White Melilot). A few flowering plants on waste ground, Hengrove Park, **S**, RSC.

Acaena novae-zelandiae Kirk (Pirri-pirri-bur). Several plants on road verge of Bristol University Botanic Garden, Leigh Woods, Bristol, **S**, P.R. Green.

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Rosa rugosa Thunb. ex Murray (Japanese Rose). A well-established bush below railway track, north-west of Sea Mills, G, PJMN.

Sorbus croceocarpa P.D. Sell (Orange-berried Whitebeam). A large tree in grounds off Nore Road (other small trees planted on opposite side of road), Redcliff Bay end, Portishead, S, PJMN.

Photinia davidiana (Decne.) Cardot (Stranvaesia). A single plant growing horizontally out of sheer cliff just south of Clifton Suspension Bridge, Avon Gorge, G, LH, det. N. J. Wray. This garden-grown plant, native in China, is probably bird-sown. This record is the first for v.c. 34.

Fallopia x bohémica (Chrtek & Chrtková) J. P. Bailey (*F. japonica* x *F. sachalinensis*). Large patch, field edge, near monument, Upper Langridge, S, IPG.

Quercus x crenata Lam. (*Q. x pseudosuber* Santi) (Lucombe Oak). The record of *Q. castaneifolia* C.A. Meyer (Chestnut-leaved oak) from Black Rock Gully, Avon Gorge, G (Bristol Botany in 1988, p. xxx) should be deleted. The specimen has been re-determined by A. C. Titchen as the Lucombe Oak.

Veronica peregrina L. (American Speedwell). Several plants on stony tracks, Ashley Wood, Bathford, S, IPG.

Lonicera pileata Oliv. (Box-leaved Honeysuckle). One bush, in trees, Winscombe Hill, Winscombe, S, IPG.

Scilla bithynica Boiss. (Turkish Squill). Several plants on road verge (B3130) north of Jacklands Bridge, Nailsea, S, IPG. *Nectaroscordum siculum* (Ucria) Lindl. (Honey Garlic) was also with it.

Galanthus plicatus M. Bieb. ssp. *plicatus* (Pleated Snowdrop). Plentiful, with *G. nivalis* L. (Snowdrop) and hybrid between the two, Camerton Churchyard, S, IPG. Also *Lathraea squamaria* L. (Toothwort) around hazel bush here.

Gaudinia fragilis (L.) P. Beauv. (French Oat-grass). One plant by wall, Northend Road, Batheaston, S, IPG. Also *Anisantha diandra* (Roth) Tutin ex Tzvelev (Great Brome) and *Alopecurus myosuroides* Huds. (Black-grass).

ACKNOWLEDGEMENTS

I thank everyone who has supplied plant records and helped with these, especially I. P. Green, M. A. R. Kitchen and P. J. M. Nethercott. I am indebted to D. J. Lovell of Long Ashton Research Station for meteorological records.

SHORT NOTES

Hector Hockey Fund. By R. L. Bland

The funds invested in the memory of Hector Hockey, originally generated by the sale of a cottage in Wales that he bought on behalf of the Society, produce a small annual income that is disposed of in the form of grants to local societies or individuals who have a project that fits with the Society's aims. In 1999 there were unusually large sums available for grants, and the Trustees agreed to give £1000 to the Avon Wildlife Trust for work at Littleton Pits.

The area on the banks of the Severn was once a brick factory. The alluvial clay was dug out and fired by coal brought up the estuary by trow from Wales, and the bricks were distributed up and down the Severn by the same transport. The successive holes from which the clay had been dug filled with water. When manufacture ended and the site was abandoned willows grew around the ponds in an area otherwise dominated by grass pasture and saltmarsh, and a new and attractive natural habitat was created. Migrant birds travelling up the estuary naturally settled there, and it became a regular site for bird-watchers and ringers.

The ponds were partly filled by fly ash from Portishead power station, and as a result developed as reed beds, a comparatively rare habitat in the region. The Avon Wildlife Trust purchased part of the site as a reed bed, and one of its first reserves. However the natural processes of succession were at work. The reedbeds had begun to dry out and were being invaded by Sallow and other scrub. It was clear that before long, were natural forces to be allowed to run their course, the area would become a rather dull bit of scrubland, eventually perhaps be dominated by a small group of large trees, though it is an interesting question to ponder what species they might have been.

The Wildlife Trust wanted to preserve the reedbed habitat because of its comparative rarity, but also to maintain some open water to maximise biodiversity. So it decided to bring in machinery in the winter of 1999/2000 to lower the surface level, and dig out some of the centre of the ponds. The levels are critical, as reed will not invade water that is too deep, but will only re-create a reed bed if the rhizomes from which it originates still exist in the mud. Great care was taken to try to ensure

that the central channels were dug deep enough to sustain open water, whereas the margins were left with sufficient old mud to allow the reeds to regrow.

It is hoped that this work will ensure that the reedbed will be self-sustaining for the future, though it will still need normal annual maintenance of reed cutting and burning to ensure strong regrowth. The money from the Hector Hockey fund was essential to achieve this excellent piece of habitat restoration.

Dutch Elm Disease. R. L. Bland

It is hard now to recall that twenty five years ago the landscape of South Gloucestershire was dominated by great elm trees in every hedgerow. The early regional rookery counts of 1972 and 1975 recorded elm as by far the most frequent species used in S Gloucs, and as one of the most frequent trees in N Somerset. The disease spread with great rapidity through the whole region between 1976 and 1980, killing almost all adult elm trees. Two great avenues of Huntingdon Elms on the Downs planted in the 1850s were also destroyed, though there were three survivors at the top of Pembroke Road that withstood disease until 1999. One still stand as evidence of the magnificence of what we have lost. The rookery count in 1980 showed huge changes in rookery sites as the birds were forced to move to new sites and new species.

One of the reasons for the rapidity of the spread of the original disease was the fact that many elms were in fact clones, vegetatively produced by the process of suckering, and hence vulnerable to disease. One of the striking features of the disease was the way that dying trees produced an immense host of suckers, which appeared many yards from the trees, evidence of the extent of the root system. Of course when these suckers appeared in fields they were rapidly removed by the normal processes of agriculture, but the suckers very often came to dominate hedgerows, and also any area that was not regularly grazed, cut or ploughed. By the 1990s many of the suckers had become established hedgerow trees, twenty feet high and fifty centimetres in girth, and held the promise that the wonderful landscape of the past might be recreated. However in 1998 the taller trees were once more attacked by the beetle and the fungus it carries, having just reached the size that provided the beetle with the environment it needed to lay its eggs. In 1999 almost all

hedgerow trees over fifteen feet fell victim, and the ugly site of lifeless trees amidst the full green of summer, that had been so common in the seventies, returned.

The impact on the landscape, however, is much less now than then, partly because such a high proportion of hedges are now kept tightly trimmed to a height of two metres. Elm survives well in such hedges, and is not attacked by the disease, and thus there remains a huge reservoir of elm clones ready to develop in future. It is even possible that in future the present methods of hedge control, which are often condemned today by environmentalists, will be seen as essential to elm survival.

There are two further mysteries of the disease. How has the beetle, and the fungus, survived twenty five years in which there were virtually no substantial elm trees remaining, and during which those trees that had survived were apparently disease free? And why is the disease apparently still so dangerously fatal as it was twenty five years ago, when for much of the 20th century its incidence was apparently insignificant? How long will we have to wait before we can hope that great elm trees will once again be free to grow?

By the late R. J. G. Savage

INTRODUCTION

This paper is a survey of mining and quarrying in Clifton through the ages. Clifton is taken fairly loosely, and for the purposes of the paper includes Ashton Gate and Long Ashton. The history of these workings is closely linked with the growth of trade and industry in Bristol and the importance of Bristol as an inland port for export of produce by sea. Stone, coal and lead were all mined and quarried, and because of this overlap the subject will be treated by material, and not dealt with in separate mining and quarrying sections. Bristol diamonds and Hotwell water are mentioned in view of their commercial importance in the eighteenth century.

The Bristol region is fortunate in having a great variety of geology within its confines, and the Clifton area is no exception. The visual exposure of rocks in the Avon Gorge is both aesthetic and a source of raw materials. The geological systems present in Clifton are Devonian, Carboniferous, and Triassic. The Upper Devonian Old Red Sandstones are exposed by the exit of the railway tunnel along the Portway in the Avon Gorge. The exposure is nowadays barely visible, but further downstream in Shirehampton and Portishead these sandstones are well exposed. Most of the Avon Gorge exposures are in the Lower Carboniferous Limestones. A series of redundant quarries in these can be seen on both sides of the Gorge. The top of the succession near St Vincent's Rock is the Hotwells Limestone. Further to the south east this passes up into the Quartzitic Sandstone group with the Brandon Hill grits of Millstone Grit age. The Ashton basin is underlain by Coal Measures and coal seams in these have been extensively mined. Clifton and Durdham Downs are covered with a thin skin of Triassic conglomerate which often infills fissures and joints in the Carboniferous Limestone, and in places these have been worked for lead and iron ores. Thus within an area of no more than ten square kilometres there is a wide range of raw materials for economic exploitation. One of the earliest references is that of William of Worcester who, in 1480, wrote of the water in the fountain on the side of Ghyston Cliff (St Vincent's Rock) being as warm as milk. The

Hotwell was probably well known long before that, perhaps even in Roman times, though no direct reference to it survives.

CARBONIFEROUS LIMESTONE OF AVON GORGE & DOWNS

The Carboniferous Limestones of the Avon Gorge and the Downs have been worked for at least five hundred years. The stone has been used principally for road making and kilning for lime. In the nineteenth century it was widely used as a building stone and in the eighteenth century the St Vincent's Rock limestone was used for chimney pieces.

Following the dissolution of the monasteries in 1543 Henry VIII granted the lordship of the Lesser manor of Clifton to one of his favourites, Sir Ralph Sadler, later to become the chief falconer to Queen Elizabeth I. The Avon Gorge was famous for its falcons. The Court Book of the Manor of Henbury in 1599 shows that the Lord of the Lesser Manor of Clifton reserved for his own use "all maner of woods, underwoods, mynes and quarries and all maner of haukes". In 1630 John Bruckshaw obtained a 40 year lease from the Crown to mine rocks and minerals in the gorge. In the seventeenth century the two Clifton Manors were reunited when the Society of Merchant Venturers purchased the lordships; the Greater Manor was bought in 1676 and the Lesser Manor in 1686. Henceforth all mining, quarrying and the Hotwells were under its control. Many of the eighteenth century etchings and paintings of the Avon Gorge show quarries and lime-kilns in the Gorge.

Edward Owen (1754) gave the first detailed account of the limestone, its properties and uses. He noted that the stone from the cliffs in the Avon Gorge when broken small is used for ballast. Stone dug out of quarries on the Downs he recorded is burnt for lime, and as the stone is hard, so the mortar is strong. The stone is also used for building houses and walls, all yards and gardens being enclosed with walls. He regarded the limestone as very strong on the top, but the sides decay on exposure. On the Downs the locals are permitted to take what stone they require. Quarrymen dig the stone; pickaxes, iron crows and large hammers are used. Working high rocks in the Gorge is expensive (6d or 7d a ton). The master quarryman finds the tools and the gunpowder.

Chilcott (1844) in a guide to Clifton wrote about St Vincent's Rocks:

MINES AND QUARRIES OF CLIFTON, BRISTOL.

“The venerable appearance of these rocks is greatly lessened within the last fifty years by the operation of blasting and taking away of the fine old grey surfaces, rich with fantastic foliage and selling the sublime and beautiful by the boat load. But the stone is said to make the best lime in the world and this is the sweeping answer to all our regrets.”

Quarrying was to continue in the Gorge for another century, until the last working quarry below Leigh Woods was bought by Mr Melville Wills in 1935. It is part of Mr. Wills' gift to the National Trust, which now owns the Leigh Woods National Nature Reserve. Most of the quarries on the Downs have been in-filled largely with material removed in making the New Cut in 1809 to divert the River Avon and create the floating harbour. One can still be seen behind the Glen Hospital, which is built on the quarry floor. Two other quarry faces survive; one by Quarry Steps, which was the site of the dinosaur discovery of the early nineteenth century and another in what is now Worrall Mews. Sites of old lead workings can still be traced on the Downs. Remains of a Pleistocene hippopotamus were found in one of the quarries near the Water Tower. Unfortunately most of the specimens were destroyed during the war, but one charred *astragalus* bone survives in the Bristol University Geology Museum. The nearest working quarries in the limestone are Durnford, Long Ashton, and at Flax Bourton.

The lime-kilns and landing stages along the river have all disappeared; most were on the site of the present Portway, but the limestone setts are still to be seen in abundance in Bristol streets between the kerbstones and the metalled road surface. A few streets still have complete setts, as by the Coronation Tap public house in Clifton. Many boundary and garden walls in Clifton are constructed of dressed or undressed limestone but it was rarely used in house walling before Victorian times. The Observatory by the Suspension Bridge is constructed of Carboniferous Limestone from either the Gorge or the Downs. The building was a snuff mill in 1729 but has had many renovations, so it is not certain that the present structure is original. There is an old quarry just behind the Observatory which was in existence when the Suspension Bridge was being built. Blaise Folly (1766) is also built of Carboniferous Limestone, as is part of Ashton Court (1805). There was an upsurge in the use of the limestone for houses in Victorian times as seen in many of the villas on the Downs dating from the 1850s and 1860s.

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Frequent mention is made of the use of St Vincent's Rock limestone for chimney-pieces (e.g. Owen 1754 and Matthew's Directory 1794). The site is close to and part of the thrust faults which cross the Downs here. The rock is stained brownish, possibly due to petroleum seepage, and has an abundance of white calcite veins. It polishes well, and was to be seen in the chimney-pieces of the Hotwell pump room. Today it can still be seen in the mahogany parlour of Goldney House.

BRANDON HILL GRIT (MILLSTONE GRIT)

This is a silicified and very hard sandstone/grit, dark reddish in colour due to iron-manganese staining. Its most prominent outcrop is Brandon Hill, which in the old days was ringed in quarries. The stone was much used in building and in roadstone setts in the city and in the neighbouring Cliftonwood. Its use is very localised and is rarely seen outside these confines. It can be seen in the gatehouse to the Royal Fort and the walls of the stable block of Goldney House, both probably dating back to the late seventeenth century. Queen Elizabeth Hospital (1847) is built of stone excavated on the site. The extreme hardness of the stone means that it is mostly used in rubble walling, though in some buildings it is trimmed and used in coursed stonework. Traces of the old quarries on Brandon Hill can be seen in the bowling green, which is sited on one.

TRIASSIC

Just outside Clifton, outcrops of the Redcliffe Sandstone Formation are still to be seen in the cliffs near St Mary de Redcliffe church and in the nearby caves, excavated to obtain sand for window glass and bottle making. The caves cover some ten acres of workings. The pillar and stall principle was used to work the sandstone. Workings average ten feet (three metres) high and a maze of passages survives. In 1724 Bristol had fifteen glasshouses; there was one in Limekiln Lane, Hotwells, at the foot of Jacobs Wells Road. The famous Bristol blue glass dates from the second half of the eighteenth century using cobalt from Saxony. Bottling was a major industry in Bristol during the eighteenth century. Bristol (ie Hotwell) Water was bottled in large quantities and shipped to London. Wines, especially from Spain, were also bottled for export. However, by the end of the century, war with

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France and increased excise tax combined to effectively kill the industry.

The Triassic Dolomitic Conglomerate covers most of North Clifton. The stratigraphic term is often misleading in Clifton where the rock may be coarsely conglomeratic, brecciated or virtually without clasts. The matrix may have a high dolomitic content, when it is usually buff yellow or orange-brown in colour. Lower dolomitic varieties are reddish brown, red, and green or grey-green in colour. The stone was worked in many shallow pits often for building stone and used in situ. Clifton College (1862-1869) was largely built with stone excavated on the site, and this is true of many of the Victorian houses in the vicinity.

In the 1870s the Great Western Railway constructed an extension through Clifton to Avonmouth and it was cut through Dolomitic Conglomerate in Clifton before tunnelling under the Downs in the Carboniferous Limestone. Again this was a major source of material for the booming Victorian house building industry.

COAL MINES

Coal has been used from quarries in the Hanham area since Roman times. Mining is recorded as early as 1223, but was probably on a very small scale until the seventeenth century when the supply of timber from the forests began to decline. Most of the coal was won in Kingswood, east Bristol. However, in the nineteenth century Ashton and Bedminster became important mining centres. Here the Coal Measures are covered with a blanket of Triassic and the seams are all thin, averaging 18 inches (about 45 cm), rarely as thick as 24 inches (about 60 cm). There were only about half a dozen seams and on account of their thinness the workings were very low and the men worked prone. Gas was rare and so naked lights could be used. The present Winterstoke Road cuts through the main area of pits and at the Bedminster Road end the Miners Arms pub is one of the few visible relics of the industry. The South Liberty Mine was the last to close in 1925 and it also had one of the last working Newcomen atmospheric engines. Within the city boundary the last mine at Kingswood closed in 1936, but a new drift mine was opened at Harry Stoke near Filton in 1954, and closed on 14 June 1963.

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Coal was a crucial element in the evolution of the industrial revolution in Bristol. Abraham Darby, working at Baptist Mills, made the first brass using coal-fired furnaces and was later to move to Coalbrookdale and to produce iron in coal-fired furnaces there. (See note 1).

LEAD AND CALAMINE

The Romans worked lead on Mendip and the industry died out only at the end of the last century. In 1871 Mendip lead mines yielded 1888 tons of ore from which 632 tons of lead were extracted. The lead occurs as galena in veins in the Carboniferous Limestone, usually under a Triassic cover.

In the early eighteenth century there were extensive searches to find a source of calamine (zinc carbonate), an essential ingredient for brass making. Copper was plentiful in Cornwall, but without zinc, brass could not be made in Britain. It was known that calamine often occurred in association with galena, and so areas with similar geology were intensively explored. Calamine was found on the Worle at Weston-super-Mare, at Shipham and Rowberrow on Mendip and near Bristol at Wrington. Hence the search extended to Broadfield Down, Clevedon, Portishead, Kings Weston, Abbots Leigh, and Durdham Downs.

The Clifton and Durdham Downs failed to yield calamine, but did have small amounts of lead. Gough in *Mines of Mendip* records the opening of mines on Durdham Down in 1712. Traces of the NW-SE vein workings can still be distinguished in the surface topography of the Downs close to Upper Belgrave Road.

In 1756 the Rev. Alexander Catcott, minister of the Temple Church and a keen mineralogist, mentioned a fissure that had been worked for lead "130 yards north-east of Clifton Camp". This bearing places the site very close to the present position of Litfield House; it could be that Litfield is a corruption of 'lead field'.

CELESTINE

This strontium sulphate mineral occurs along with barium and gypsum evaporites in local Upper Triassic sequence. Yate, north of Bristol, has

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economically very important celestine deposits. A seam of celestine was discovered at Leigh Court on the west bank of the River Avon. The seam lies just south-west of the house. A house has stood on the site since at least the seventeenth century. Charles II hid there during September 1651 after his defeat at the Battle of Worcester, before catching a boat for France from Brighton in October. The present mansion was built in 1814 and a small railway was constructed to take the bathstone from the river Avon to the house 50 metres above. When the celestine seam was discovered, the railway was used to take the mineral down to the water's edge where it could either be shipped out or taken on the Bristol-Portishead railway running along the river. The mine closed about 1912 (see Note 2).

BRISTOL DIAMONDS AND POTATO STONES

These stones were highly prized trophies in the eighteenth century, sold in jewellery shops to visitors to the Hotwell spa and used to decorate grottoes. They are still popular with mineral collectors, though now most come from the Mendip area.

The nodules or geodes occur in the Dolomitic Conglomerate and are commonly associated with the iron ore veins. They have a size range similar to potatoes and are the product of silica replacement of anhydrite. The mammillated skin of the original nodule is usually retained. Inside the geode there may be a sugary crystalline mass with quartz, calcite, and barite, often stained red or pink from ferrous oxides; these are typical potato stones. Others have a hollow core with growth on the inner skin of clusters of clear quartz crystals; these are the classical Bristol Diamonds. Comparable geodes are found in iron mines in Cornwall (Cornish Diamonds) and in Kerry (Kerry Stones).

References to Bristol Diamonds go back over 400 years. Leland in the 1540s wrote "in hills about Bristow be found little stones of divers colours counterfeiting precious stones". Camden (1586) mentioned "S. Vincent's rock so full of diamonds that a man may fill whole strikes or bushels of them. These are not much set by because they are so plenteous".

Owen (1754) gave the first detailed account of their occurrence and characteristics. He noted they were usually colourless and transparent, and ready to be set in rings as found. Most were found in cavities

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associated with iron ores. Small ones look like clusters of small brilliants and are the most beautiful. Pure crystals will withstand red hot heat. There are three varieties: 1) most adhere to rock at one end, the other end terminates in a point; some are pointed at both ends, but these are rare. 2) long 3) short, often colour-tinged: it is these that are much used in grottoes.

Catcott recorded in his diary of 1748 that Bristol Diamonds were best found after rains, "but they are not to be found now in the Plenty they were formerly, for Mr Goldney at Clifton has employed men for 7 last years on purpose to gather them to adorn his grotto in which he has pillars made up of them". The grotto in Goldney House garden survives intact complete with the eight pillars encrusted with Bristol Diamonds. Alexander Pope, the poet, obtained Bristol Diamonds around 1740 to adorn his grotto at Twickenham. Visitors to the Hotwell Spa bought costume jewellery in Bristol Diamonds from stall holders along the river bank.

IRON ORES

Goethite, hematite, and limonite (iron oxides and hydroxides) are commonly associated with local Triassic rocks. They are found where the Triassic cover penetrates into fissures and joints in the underlying Carboniferous Limestone. They are supergene minerals, formed in descending fluids during the late Triassic- early Jurassic times when the iron rich Coal Measure sediments were being laterized in a hot monsoonal regime. While the Carboniferous sediments are frequently deeply iron-stained, workable ores are rare.

In 1872 Mr. Lewis opened a mine below Royal York Crescent. It was found by cutting a drain. A pit 60ft long, 40ft wide, and 12 feet deep (18 x 12 x 3.6 m) was excavated. A second working was opened 80 yards (72m) to the south-west and iron traced to a depth of fifty feet (15m). In red sandstone and shale were two beds of hematite (50% FeO₂), goethite and limonite. The mine in 1872 produced 3800 tons of ore and an unspecified amount in 1875. It was probably only worked for four or five years. The ores were smelted at the Ashton Vale furnaces. The exact site of the workings is not recorded, but it seems probable that it was on the site of what until recently were the tennis courts opposite Royal York Gardens.

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Nicholls in his Bristol guide of 1874 wrote:-

“In the green just below the (Royal York) Crescent is a deep shaft sending up iron ore; ‘tis a blot upon the fair face of the hill. But verily for pelf some Bristolians would chip a hole in the heel of the Venus de Medici, sell the sun’s nuggets of light by troy weight, or bray the rainbow in an oilman’s shop for its colours.’

The largest local workings of iron were at Providence, Long Ashton. Annual output from 1858 to 1872 was between 600 and 3000 tons. In 1873 output is recorded at 15,800 tons, which is on a par with Frampton Cotterell mine production. (See note 3).

Another local working was the Winford Redding Mine, which produced annually about 1000 tons of hemitic shales. The site is still exposed to view. The redding was used for marking sheep.

The gangue iron-manganese stained quartz crystals associated with iron workings were popular with grotto builders and Goldney has made much use of them in his grotto.

Other local minor minerals are wad or pyrolusite, a manganese ore associated with iron ores and used as a source of black in pottery. Traces of copper have been found at Henbury, Stoke Park, and Clevedon. Gold has been reported from Clevedon by Stoddart (1876).

CLAYS

Traces of old clay workings can still be seen by Clay Pit Road on Durdham Down which are known to have been used in the 1780s. They were in a pocket of Rhaetic Westbury Beds.

Local clays in the Coal Measures, Triassic, and Pleistocene have been extensively worked in the Bristol region for bricks, terracotta glazed brick, pantiles, clay pipes and pottery. The nearest to Clifton were the Ashton Gate (Coal Measures) and Malago Vale (Keuper Marl) brickworks. None remains and the only active brick yards in the region are at Cattybrook. This site is in Coal Measures’ shales, and was opened in the 1860s for the mass production of bricks to line the Severn railway tunnel. The deep red waxy Cattybrook brick is an all too familiar sight in Victorian buildings in Bristol; most prominent are the three great bonded warehouses (1905-1919) at Ashton Gate.

HOTWELL

The spring in the river Avon at Hotwell has a constant temperature of 24°C (Bath Spa thermal water is 45°C). References to the well go back over 500 years, though its popularity, like that of Bath, has fluctuated. The water contains calcium, and is well carbonated. Its prime efficacy in the eighteenth century was in the stone and gravel disorders. In later times it was regarded as highly beneficial for consumptives; this however led to the Spa's decline as it became known as death row. There was also a severe problem of contamination with river water.

Jacob's Well in Jacob's Wells Road was recently reopened and an inscription found there indicated it was in use by a Jewish community in 1089. The temperature of the water varies between 11.7°C and 13.8°C, considerably lower than Hotwells, but higher than normal groundwater. There are a number of other springs (Mardyke, Sion, St Vincent's, and Richmond) within the thermal belt, but none is more than a few degrees above groundwater temperature.

CONCLUSION

There are at present no mines or quarries working in Clifton or neighbouring parishes. The Durnford quarry at Long Ashton is the nearest and this is a large deep excavation producing only stone for the aggregate industry. The Hotwell has long ceased to function, and the Pump Room has disappeared under the Portway. Bristol Diamonds are no longer found due to the complete grassing over of the Downs and the barricades on the sides of the Gorge to prevent rocks falling on to the Portway. The last masonry yard in Cumberland Road closed some years ago. Until recently sand was still being brought in from the Severn to be washed in Poole's Wharf; now the site is being developed for housing. There are plans to develop the site of the last gasworks at the bottom of Jacobs Wells Road, beside the site of the old Limekiln Lane glasshouse. This plant was established in 1822 to produce gas from the oil of whales. It failed due to the uncertainty of supply and by 1830 had converted to making gas from coal extraction. Not only are all the old industries extinct, their sites are vanishing fast, and little thought is given to their value to industrial archaeology. This paper is their memorial.

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Editor's Notes

Note 1. At Coalbrookdale Darby managed to smelt iron using coal that had been coked, that is burnt in the absence of oxygen, which drove off sulphur impurities, which otherwise rendered the iron brittle and useless. This development was vital to the creation of cheap, high quality, iron, and moved the iron industry from its ancient sites in the Weald of Kent and Forest of Dean, to northern coalfields. The significance of his discovery in terms of Britain's role in the industrial revolution is hard to overestimate. It is not clear whether Darby developed this technique in Bristol for copper first.

Note 2. The barge dock beneath the railway arches can still be seen.

Note 3. Providence Lane still has a pub called The Miners Arms.

MILLENNIUM PAPERS

ENTOMOLOGY IN THE BRISTOL NATURALISTS' SOCIETY

Ray Barnett
City Museum, Bristol

The end of the twentieth century seems an appropriate time to look back at the history of the study of insects in the Bristol region, as carried out by members of the Bristol Naturalists' Society since its formation. There have been a number of retrospective articles in the past, most noticeably those by Alfred Hudd (1913) and F. Coles Phillips (1962) that have examined the first fifty and one hundred years of the Society, respectively. George C. Griffiths (1924) also wrote a short article on the diamond jubilee of the Entomological Section, published posthumously. The purpose of this paper is to briefly summarise the ground covered by the those three previous papers, as they may not be easily accessible to many members. It will also attempt to bring the story up to date and to present a personal view of the possible future of entomology within the Society.

The original seven members of the committee that founded the Bristol Naturalists' Society in 1862 included amateur entomologists Stephen Barton and W.J.Feddon. Therefore, it is perhaps not surprising that in 1864 the first of a number of different sections of the Society to be established should be one devoted to entomology. Similarly the first scientific communication to be received, at the second meeting of the Society, was "*some interesting observations relative to the anatomy of insects*" by F. Brittan.

Barton's collection of coleoptera, assembled from around the world, was an important focal point for the new section. Indeed Barton was the section's first President, a position he held for thirty four years until his death in 1898. In the first year of the section's existence seven indoor meetings were held. The first field meeting was, aptly enough, to that entomological mecca on their doorstep, Leigh Woods, on the 24th April 1865.

During Barton's presidency, we see the publication of the first major contribution to the knowledge of the local insect fauna, a *Catalogue of the Lepidoptera of the Bristol District* by Alfred E. Hudd published in parts between 1877 and 1883. Alfred Hudd was a significant figure who

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also compiled the lepidoptera listing for the Victoria County History of Somerset. Barton was succeeded by G.C. Griffiths, Honorary Curator of the insect collections at Bristol Museum, who also held office for a lengthy period, between 1899 and 1924. At the turn of that century the study of natural history was a popular and well supported pastime, given the Victorian sense of exploration coupled with breakthroughs in knowledge, led by Darwin's theories of natural selection. In Bristol, as well as elsewhere, entomology presented opportunities to contribute significantly to local and national knowledge about issues, not only taxonomic but also what today we would call ecology.

It was in 1912 that H.J.Charbonnier published a list of the Diptera of the Bristol district in the Society's Proceedings, so following the lead set by Hudd. Charbonnier also went on to contribute further notes to the Proceedings of the Somersetshire Archaeological & Natural History Society, a body which has often shared expertise with the Bristol Naturalists' Society. Remnants of Charbonnier's collection are also held in Bristol Museum. Other orders were receiving attention and in 1924 the *Aculeate Hymenoptera of Gloucestershire and Somersetshire* were reported on by R.C.L.Perkins. The *Apterygota of South West England* were discussed by H. Womersley during the period 1923 to 1927.

Charles Bartlett was a prolific collector of Lepidoptera and Coleoptera from the Bristol Region in the first quarter of the twentieth century. Inevitably, given his extensive knowledge, he succeeded Griffiths as President of the Section. Yet again a very stable period ensued with this, the third President, carrying on the tradition of remaining in post for a long period, in fact between 1925 and 1938. After the Second World War, Bartlett's widow donated his collections to the Bristol Museum to help compensate for the significant losses incurred by wartime bomb damage to the Museum. This close link to the Museum has been a long time feature, with the Section's indoor meetings being held there at times in the past. The Lepidoptera collections of the wartime President (1939-1945), J.W.Norgrove are also held at the Museum.

J.V.Pearman held office from 1946 to 1950. Although it may not be obvious from the Proceedings of the time, Pearman was an acclaimed national expert on the psocids (book lice). He only contributed two short articles on psocids to the Proceedings (1925 and 1927), however

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during his Presidency one of the most important entomological publications appeared, namely the *Bristol Insect Fauna: Diptera* compiled by H.L.F. Audcent. This monumental work had started to be published in parts since 1928 but was brought together as a revised document published in the Proceedings for 1948 and 1949 (sponsored by the Royal Society). It was and still is, one of the most comprehensive local lists of Diptera ever assembled, for Audcent was not content to specialise in one or two groups of flies but to bring together records for the whole order. Over 2,200 species are listed approaching half the British species. His extensive collection was originally left to the University of Bristol, where Audcent had been awarded an honorary Masters degree, but it was transferred to Bristol Museum in the 1980s. His lists expounded on the work started by Charbonnier in the early part of the century and again included records from Bristol and both the surrounding counties of Gloucestershire and Somerset. It is still an extremely valuable summary of the fauna at that time to compare against our current knowledge.

In the 1950s Presidential office was held by A.H.Peach (1951-1953) and N.A.Watkins (1954-1962). A group of insects apparently hitherto neglected were the Heteroptera, (true bugs), which were tackled by M. Ackland in 1957. At this time natural history was going through another surge of interest nationally as advances in technology meant that radio programmes such as *Nature Parliament* in which entomology was the province of L. Hugh Newman, were complemented by television programmes such as Peter Scott's *Look*. Bristol became the home of the BBC's Natural History Unit and many of these programmes were recorded in the city. Within the Society amateurs were also making films, for example, C.L Bell produced a film on *The Marsh Fritillary Butterfly* at the Wetmoor Reserve, a site from which it has sadly now disappeared.

Butterflies and moths have always received the most attention from amateur entomologists, for very good reasons, mainly their attractiveness, ease of capture and identification. It is perhaps not surprising then that the annual *Lepidoptera Notes* in the *Proceedings*, were established in 1947 by A.H.Peach. C.S.H.Blathwayt, who had begun recording butterflies and moths in the 1930s at Weston-super-Mare, was the author of the Lepidoptera report from 1948, concentrating on the moths when J.F. Burton took over the summaries of the butterflies in 1962. Stephen Blathwayt was a prolific recorder

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and collector of moths, no doubt influenced by the interest shown by other members of this notable family, original owners of Dyrham House. In particular his father, Charles Blathwayt and his Uncle, Francis Linley Blathwayt, (contributor to the entomology section of the Victoria County History of Somerset), both practised entomology as a hobby.

John Burton, of the BBC's Natural History Unit remarked, in the 1963 *Proceedings*, "*The decision last year to publish all records of butterflies received, so as to obtain a clearer picture of the true status of all species at a time when many are apparently seriously declining in Britain, has produced a heartening response from local naturalists.*" Unfortunately those declines appear to have been all too real, but the remark sets the tone for the ethos behind the entomological work of the Society's members, to investigate the local fauna and use that information to contribute to its conservation, a far sighted view.

In 1964, Ken Poole took over the mantle of writing the moth report for the *Proceedings* from Stephen Blathwayt, who remained very active. The interest and following for recording the Lepidoptera was now growing year by year and many members were to contribute over a long period. For example, R. Angles, A. D. R. Brown, D. Cullen, D. J. Foxwell, D. G. Gibb, Miss I. F. Gravestock, M. Kendall, T. & M. Silcocks, C. W. Wiltshire, some being members of staff at the Bristol Museum or the Long Ashton Research Station, others specialist in other groups of organisms but still contributing valuable data, most especially on butterfly distribution.

J. E. Cooper, Derek Foxwell and then A. D. R. Brown took over the butterfly report from John Burton. Brown gathered information which he then converted into butterfly distribution maps for the region, published first in the *Proceedings* for 1969 and then in a revised form in the *Entomologist's Record & Journal of Variation* for 1971. This was the most comprehensive summary of the state of knowledge of the status of the butterflies of this area to have been published and a significant milestone.

The 1970s saw the increase in recording and interest in entomology continuing. A.N. Grose took over the butterfly report for much of the decade but also John Boyd's Odonata report began in 1970 itself. The early '70s carried papers on the spider and Diptera fauna of Steep

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Holm. Bugs got a look in with a report on the Heteroptera of Long Ashton Research Station and a preliminary survey of the littoral fauna along the Severn Estuary included many invertebrate records. The culmination of this increased interest was the establishment of the Avon Entomological Survey reported on in the 1977 Proceedings. At this point the President of the Section, G. Best, oversaw an enlarged series of reports adding to the butterflies, moths and dragonflies in the shape of Orthoptera, Coleoptera, ladybirds, Diptera, Hymenoptera and Hemiptera. Significant names included Barry Harper, A. R. Nichols, Keith Miller, Bob Rowe, Ray Poulding and Robert Cropper, as well as Graham Best himself. A feature of the entomological reports that began at this stage was the inclusion of comments upon the weather patterns as a close link between insect activity, and indeed recorder activity, and the climate is apparent.

The late 1970s and early 1980s saw the Section at perhaps its most active stage in its history. The national movement towards mapping the country's fauna and flora, coordinated through the National Biological Records Centre at Monks Wood, gave considerable impetus towards entomological recording, coupled to greater access to more useable identification books.

The start of the 1980s however also saw two highly significant events, partly instigated through the work of the Bristol Naturalists' Society. Firstly there was the formation of the Bristol Regional Environmental Records Centre within the Bristol Museums Service. It was established to help focus and use the results of biological recording, bringing together records from all organisations and individuals involved in wildlife recording. Secondly the Avon Wildlife Trust was formed to ensure that conservation of habitats and species in the area was achieved. Both these organisations, directly and indirectly, have influenced the subsequent work of the Entomological Section of the Society.

Throughout most of the decade a solid core of recorders kept the Section very active. To the names mentioned above should be added Simon Randolph and Jeff Holmes who added their expertise on dragonflies, Simon also contributing very many Diptera records and Ron Payne who turned to the somewhat neglected Hymenoptera. A.H. Weeks, known to everybody as John, began his weather synopsis that was to be a feature of the Entomological Report for nearly twenty years.

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He was also a leading figure in the compilation of butterfly data. The moth recording continued apace, with a strong contingent at Weston-super-Mare, not only Ken Poole but also "Dixie" Dean and at Congresbury, Bob Rowe and Geoff Sorrell sending in hundreds of records.

The strong core of recorders during the 1970s and 1980s shared around the responsibilities for holding office. On average the Section would hold four indoor meetings in the winter and four field meetings spread across the spring, summer and autumn. In addition other meetings were considered to be purely for record gathering as part of the Avon Entomological Survey mentioned above.

During this heyday for the Section, other papers included in the Proceedings covered a variety of related topics. There was more on the invertebrates of Steep Holm, thanks to the study by Tony Parsons, Steve Nicholl's survey of the Odonata of Gloucestershire, more on inter-tidal communities along the coastline, due to research by Dr Colin Little at Bristol University, Dr Les Strong's description of the dermestid beetles discovered when Bristol Museum and Bristol University collaborated on unwrapping a mummy from ancient Egypt and even a review of the publication *The Oxford Book of Insects* whose author, John Burton, continued to be a member of the Society.

The Bristol Regional Environmental Records Centre (BRERC) also began to influence insect recording with the Common Butterfly Survey which ran from 1982 to 1988 and its support for the production of *Dragonflies of the Bristol Region* by Simon Randolph, which was finally published in 1992. Liaison with the Entomological Section was close.

The Proceedings for 1987 were the first of the new special issues focusing on one particular topic, in this case the Avon Gorge and it included notes on the entomology of the Gorge by John Weeks, Ken Poole and Keith Miller. However the Section reports reveal that support for entomology was declining seriously with the AGM abandoned as not being quorate. Indoor meetings for 1987/8 were also abandoned. The 1988 Entomological Report saw a reduction back to just butterflies (John Weeks) and moths (Ken Poole). This was the twenty-fourth moth report to be written by Ken Poole, a similar span to that contributed by

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Stephen Blathwayt and together they form an exceptionally fine data set.

The decline of interest at this point may be due to a number of factors, including key players leaving the Bristol region. However, all natural history societies have faced declining and/or ageing membership difficulties in the last fifteen or so years. The rise of the conservation movement has seen the popular middle ground occupied by the Wildlife Trusts and related organisations away from what are sometimes perceived as the "scientific" societies. Traditional formats of spoken lectures have become sidelined in the face of extremely high quality wildlife film making (much of it in Bristol) and new developments such as the world wide web. Entomology with its inherent difficulties of identification and tongue twisting scientific terminology has always struggled to attract more than just a few dedicated enthusiasts. Ironically it may be the case that the very success of a strong core of entomologists, talking knowledgeably about apparently obscure creatures, can deter new members breaking in and developing the interest sufficiently to become leaders of the next generation.

The 1990s have not seen interest restored to their previous levels but the Section has continued to pursue a limited summer and winter programme. The results largely of Keith Miller's work on ladybird distribution, were published in the Proceedings for 1989 as distribution maps. Meanwhile BRERC and the Bristol Museum have initiated the formation of a number of recording schemes in order to foster and encourage the study of butterflies, moths, hoverflies, dragonflies and more recently grasshoppers and crickets. These loose groups are solely concerned with increasing recording and knowledge about the local distribution and ecology of the respective types of insect. As such they are supported by BRERC so that a membership fee is not necessary but the submission of records is hoped for in return for newsletters, identification sessions and feedback on recording. Other invertebrate recording groups have also sprung up, the West Mendip Invertebrate Group, started by John Boyd, for example has encouraged an excellent standing of recording to the south of our region. Somerset and Gloucestershire Invertebrate Groups have also been established to the south and north. An Invertebrate Group for the Gordano Valley also flourished for a short period.

The Proceedings during the 1990s have included some results from these other recording schemes and as such have sometimes included

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records from non-members of the Society. The Entomological report was extended to become the Invertebrate Report in 1993 in order to try and extend interest to include, for example, spiders and molluscs but this has largely been unsuccessful. The monthly Bulletin has also been carrying Invertebrate Notes since May 1993 in order to try and engender more interest and feedback. The Proceedings have begun to carry papers which are largely reporting the interests of some of the new recording groups. For example, the 1994 Proceedings included a summary of the rarer moths of the region and the 1995 special issue on the Mendips carried articles on dragonflies, invertebrates under stones and plant galls.

It is perhaps the latter development which offers one possible future for entomology within the Bristol Naturalists' Society, that of offering a publication to report on research and study not necessarily carried out by the membership but of interest to it. Similarly the Society is assisting in sponsoring the production of the Avon Flora publication in 2000 to which many of its members have contributed records. Similar publications for insects are also planned by BRERC and its associated groups to which the Society might offer support. As to the direct activities of the Invertebrate Section, I believe there is still an important role within the Society to present a broad series of talks and walks to the average member who does not consider themselves expert but are nevertheless interested and perhaps concerned about our fauna.

Recognition of the importance of the less big species of animal to our own ecology has been rising locally and internationally. Evidence of this can be seen in the explosion of "Species Recovery Plans" and "Biodiversity Action Plans" which manifest themselves in, for example, captive breeding programmes for insects such as the Large Marsh Grasshopper, undertaken at our local Bristol Zoo. Sadly this latter programme began just as it had become extinct on our own patch on the Somerset Levels. The Wildscreen @t Bristol visitor attraction that has opened this year in the city has also embraced the concept of focusing on our smaller invertebrate cousins. With such developments the Bristol Naturalists' should also be recognising that insects repay study and need our support to prevent the continued declines and local extinctions that we have seen gathering pace towards the end of the twentieth century.

100 YEARS OF ORNITHOLOGY IN THE BNS

S. M. Taylor

10 Cheddar Close Nailsea Bristol BS48 4YA

ABSTRACT

An account is given of the development of bird study in the Bristol district over the last 100 years or so, with special reference to the Society's role. Inevitably this involves reference to the history of the Society and, to a growing extent, that of the Ornithological Section. The effects of technical advances and growing expertise are sketched, as are those of the Second World War. Brief notes are included on some of the people who have played a significant role.

BACKGROUND

Compared with today, the birdwatcher of a century ago suffered drawbacks in the areas of mobility and of equipment. Bristol then was much smaller than today's conurbation (see, e.g., Figure 1a in Bland and Taylor, 1991) and the energetic bird-watcher could easily reach the nearby countryside, which held far more birds of more species than comparable areas today. However to go further afield was difficult unless by bicycle or train, or, for the affluent, on horseback or by horse-drawn vehicle.

As to equipment, small pocket telescopes, typically of 20X or 30X magnification, had been in use for over a hundred years, but were unsuitable for observing relatively nearby or rapidly moving objects. Larger instruments existed, but were unwieldy. (One such was the writer's first telescope, bought second-hand in 1945 for half a week's pay. It was a French military model made in 1875, with magnification variable from 15X to 60X. It was some 70cm long when extended to maximum magnification and needed the support of a fence post or friendly shoulder, or the knees of the half-supine observer). Field glasses were usually race or opera glasses, giving magnifications up to perhaps 3X. Prismatic binoculars, patented in 1859 and made by Carl Zeiss from 1894, provided greater magnification and a stereoscopic image, but were heavy, costly and uncommon.

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IN THE FIELD

The first problem is to identify the subject species. Knowledge of a bird's "jizz" - the detailed characteristic behaviour of a species - could come with experience, but the first pocket field guide with colour pictures, specifically designed to aid identification (Peterson, Mountford & Hollom, 1954) was still half a century or so in the future, and the most likely source of information was Howard Saunders' compendious *Manual of British Birds*, first published in 1888, and far from portable. Serious study involved 'obtaining' specimens - "What's hit is history, what's missed is mystery". Professor Eliot Coues' textbook of ornithology (Coues, 1890) under "Field Ornithology. Instruments for collecting and their use." gave pride of place to the double-barrelled shotgun and added later,

"But I fear I must tell you to shoot an unknown bird on sight; it might give you the slip in a moment and a prize may be lost. How many birds of the same kind do you want? *All you can get-with* some reasonable limitations, say 50 or 100 of any but the most abundant and widespread species."

He was of course writing for the academic, the museum collector or serious amateur, often working in a land whose birds had not been fully described, but nevertheless the extract conveys the spirit of the times.

Amateurs learned much through egg collecting, then a recognised branch of bird study, to which no opprobrium attached; the 'egger' necessarily had to know a good deal about the behaviour of the birds whose eggs he was collecting.

AN EXAMPLE

H. Bowman of Montpelier, Bristol, was an avid egg-collector. The following extracts from his notebook from 1888 to 1903 afford a glimpse into a world long gone. Nearly all his entries relate to the breeding season, and essentially to egg collecting. The extracts are produced verbatim, except that the Latin names he gave for almost every species are usually omitted here, for brevity and because many have changed. [Square brackets denote notes by the present author]. All times are of course GMT. Nailsea, Yatton, Clevedon and Congresbury could easily be reached by train from Montpelier. He walked to Filton, Abbots Leigh and Ashton Court, and other journeys were perhaps made by bicycle. His frequent companion "P. B." seems to have been a

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younger brother; we know nothing of W. K. Mann - he was not a BNS member.

1889 April 22nd. Walk to Ashley Hill towards Filton, in a lane find a Robin's nest, hard sat (2 taken by P. B.) nest placed on bank at foot of hedgerow. See some Great Tits in same lane. Yellowhammers and Yellow Wagtails very plentiful [The latter would have been our Grey Wagtail; our migrant Yellow was then known as Ray's Wagtail, a name Bowman used in later entries.] Find a Wren's nest evidently just completed, no eggs, nest placed in a hay mow. [No suggestion that it might have been a 'cock nest'.]...Lapwing nest in field, second arch after Ashley Hill station...We startled a moorhen from a little stream about 2 ft wide and 2 or 3 inches deep...

April 29th. Ashley Hill &c Sunrise 4.45am. Hear Cuckoo at 5.10am. Lapwings still sitting. 3 nests containing 3 eggs, 3 nests no eggs. Stonechats seen along the railway line.

May 11th. Walk to Duchess Woods [Stoke Park]...Hear Nightingale singing, said to frequent the same spot, been heard there 2 or 3 years, probably nests there.

May 17th. Go to Congresbury in search of eggs of Reed Warbler, Sedge Warbler and Black-headed Bunting *Emberiza schoeniclus* [the Reed Bunting of today] Could not find any...Whinchat plentiful. Find 1 nest in grassy bank of small stream containing 6 eggs newly laid...

May 20th. W. K. Mann says 'Nightjars breed every summer June at Leigh private woods, chiefly nest or rather eggs in open, no protection whatever. at other times under a bush or at foot of a tree.' [See photograph by J. H. Savory in Proceedings for 1973 Page 229]

Memo. Great Auk Dec. 1887, 1 egg sold for £57, following spring for £225. (Sir Greville Smyth).

May 21st. W. K. M. says Herons still breed at Brockley Hall.

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May 22nd. See 3 Common Crossbills in a bird-shop in Colston St,...caught this year in North of England.

May 28th. While at Clevedon see 4 Cormorants flying down the Channel. [A very unusual species at that time]. One of the boatmen says he has seen a pair of ducks (Common Sheldrake, Barrel Ducks they call them, a black and white bird), on one of the cliffs towards the Old Church. says he took a nest of 8 eggs from there last year, believes they frequent the same place still. Another pair said to breed towards Walton...

[Eighty years later the present writer, telling a Kingston Seymour farmer of the Sheducks he had just been counting was asked 'Did you see any barrel ducks?']

1892 May 17th. Brockley...have from Adams the gamekeeper 6 Long-tailed Tits eggs hard sat, 1 Blue Tit fresh, 2 Robin's fresh, 1 Ring Dove's fresh, 9 Jackdaws' fresh nd sat, Hedge Sparrow's, Blackbird's and Song Thrush's, and 4 Starling's' fresh.

May 27th. Have 12 Sheldrake eggs taken on Bluff, Clevedon, from 2 nests, one contained 11 and the other 6. 5 eggs broken in bringing them up over cliff. Both lots unsat [This whole entry is crossed through with the unexplained word **Fraud**]

June 22 Brockley Combe. In search of Nightjar eggs. See Redstarts in the combe...On the Rabbit Warren [at the top of the Combe] find a Nightjar's nest, or rather eggs, 2 hard sat, under the protection of a fern about 2ft high. Bird sat very close. See one other bird, but no more eggs. See the keeper of the Warren, and purchased one egg of his son for 2d [equivalent today to just under 1p, but worth £1), which was also hard sat.

1902 May 19th. Patchway - Sparrowhawk's nest in oak, high up in fork of bough running out at an angle. Contained 6 eggs - a very fine clutch.

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EARLY RECORDING

From the Society's foundation in 1862 up to 1896, there were some experienced birdmen among its members, but no organised study of local ornithology. Any records deemed to be worth reporting were handled by the Zoological Section until its demise in 1877, and then for a few years by the Biological Section. The *Proceedings* included occasional papers concerning particular bird species- one (Harding, 1868) dealt with the occurrence of European Bee-eaters at Stapleton in May 1866. Others were a note on the Pomarine Skua wreck (Charbonnier, 1882), and in Volume VII for 1892-4, papers on the Green Woodpecker, the Brown or Tawny Owl and the Nuthatch (Druitt, 1894). Vol. VIII part 1 for 1895-96 has a section on Natural History Notes, with contributions from C. F. Druitt, G Harding, H. C. Playne and D. T. Price. Exceptionally a paper in the issue for 1875-76 (Wheeler, 1876) listed 168 species of "Resident birds, Summer and Winter visitors, and occasional stragglers Observed in the Bristol District." This list, based on the author's own experience, with the help of Charbonnier and others, was incomplete and contained some misinterpretations of status and distribution, but it was important. A list is essential to the study of the birds of a district or region, and over the next twenty years this one inspired others to do better. A discursive lecture by H. C. Playne, a mathematics master at Clifton College, in 1894 on "Summer visitors to the neighbourhood of Bristol" was printed (Playne, 1896). This dealt with many species and described studies of migration, apparently the first account in our *Proceedings* of birds in relation to their habitat and data deduced from observations - indeed our first example of modern ornithology. He also wrote a readable book on the common birds of Clifton intended for the beginner at bird-watching, with notes on appearance, song, behaviour and habitat.

Thanking H. J. Charbonnier for help and encouragement he wrote "the object of this book is to encourage a love of birds and observations of their habits. There cannot be too many bird-lovers, but of collectors of skins and eggs there are already more than sufficient." The date of publication is not known, but a second edition (Playne, 1907) appeared after he had left Bristol; it was priced at 6d, equivalent to 2½p today, or £2.50 in value. The tide was indeed beginning to turn away from destructive ornithology, aided by the spread from London of a new fashion; putting out food for birds. According to *Punch* this had become a national pastime (Allen, 1976) and it is to be supposed that at least

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some of those following it looked critically at the birds, to identify them and watch their behaviour.

THE FIRST ORNITHOLOGY SECTION

In November 1896 a dozen or so members combined to form an Ornithological Section specifically to compile an up-to-date bird list. This was published in the *Proceedings* for 1899 (Anon, 1900); its 14 pages listed 197 species, all recorded within 15 miles of the city. The species notes were typically of one or two lines, and those for the more specialised or rare species were the work of H. J. Charbonnier, Dr J. A. Norton, H. C. Playne and D. T. Price. Its task completed, the Section dissolved itself in February 1901, at its eighteenth meeting. Charbonnier's name crops up frequently; he was a taxidermist who was interested both in ornithology and in entomology, and was later made an Honorary Member of the Society.

THE BRISTOL FIELD CLUB

This body was founded in 1920 "for the study of natural history in the widest circle". It was intended to concentrate largely on open-air walks for nine months each year, with winter meetings to discuss members' observations. The club was not seen as a rival to the BNS, in which field-walks played a small part, and it soon evolved four sections of its own, including one devoted to ornithology, though this lapsed after a few years through lack of support. In late 1926 the club opened discussions aimed at affiliation with the BNS, and from the start of 1927 it became the Field Section of the Society. This organised a programme of summer activities much as before, including some excursions specially devoted to birds. Much of its ornithological activity was guided by H. Vicars Webb, who had played the same role in the Club, and who organised several walks in spring and summer to local sites. The new members apparently revitalised the Society's outdoor activities. In 1947 when the society reorganised its structure so that all members belonged to all sections, the Field Section ceased to exist and its committee became the Field Committee, charged with organising an annual programme of meetings open to all members of the Society.

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THE PRESENT ORNITHOLOGICAL SECTION

The section was re-formed on 30 November 1922 when eight members - Dr A. L. Flemming, Miss E. Bolton, Miss Ida Roper, Miss E. Selman, Rev. W. Smith and Messrs R. H. Hellyar, C. Tuckett and H. Womersley - met in a Clifton house and resolved:

'to form an Ornithological Section of the BNS to study ornithology in all its aspects, but especially the relationship between structure and habits,

and

'that the business of the meetings shall be the exhibition of specimens, the reading of short papers and general discussion; and in this respect it is desirable that as many exhibits as possible should be brought to each meeting'.

Council approved, and the new Section elected Dr. Flemming, a medical practitioner, as President, and Coldstream Tuckett, a solicitor, as Secretary. It declared its intention to be "practical rather than popular" and to organise field parties only rarely, holding that "more than three, or at most four, people together would render serious study impracticable".

The reconstituted Section first met on 9 January 1923 in the City Museum, when Miss Bolton, a professional biologist and daughter of the Museum Director, spoke on 'Reptilian Characters in birds'. Under the Society's rules at that time membership of any section involved election and an annual payment of 2/- (10p, but in value £10, today). Election was not a formality; one applicant was rejected by 8 votes to 1. By the end of its first decade the section had 32 members, an annual income of £4-8s-11d and a balance in hand of £1-3s.

Meetings were held monthly from October to March in members' houses, except for visits to the City Museum, or to the University for some special purpose. In the first decade all the speakers were members. Thus in October 1924 Charbonnier spoke on 'Variation', and in the discussion R. P. Gait expressed his view "That on the Gloucestershire side the eggs of the Red-backed Shrike are usually of the grey type, but on the Somerset side they are usually of the pink variety." Discussion meetings were often held at which answers were thrashed out to problems posed by members. Occasionally non-avian subjects - Badgers and Bats - were considered, and at one meeting F. R.

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Willcox exhibited photographs of Badgers he had taken at Blaise Castle Estate, together with the flashlight apparatus he had used.

In his report for 1927 Tuckett announced "with regret his resignation as Section Secretary, necessitated by heavy inroads on his leisure"; years later a long-standing member interpreted this to the present writer: "He'd bought a boat and taken up sailing." This change of hobby had consequences for the Section. His successor was Humphrey Tetley, Curator of Natural History at the City Museum, whose nine-year term of office, followed by three years as Section President, had an enormous influence on the Section's progress. In 1932 Dr. Flemming was succeeded as section President by J. H. Savory, who remained in office until Tetley succeeded him at the start of 1939, and immediately proposed that the office should be held for no more than three years.

The section's second ten years opened with its first visiting lecturer, when Dr. O. H. Wild of Cheltenham spoke on British Wild Geese, illustrating his talk with skins from his own collection. Of the eight members present, one was Dr. L. Harrison Matthews, then a member of the University Zoology Department. Another member at the meeting was R. P. Gait, a skilled photographer, who exhibited fine photographs of a nesting Mallard, a young Tawny Owl and a female Stonechat in close-up. He too remained a member for many years, His bird photographs illustrated the first Annual Report of the Severn Wildfowl Trust.

Through the 1930s membership increased steadily, and as rural bus services developed and cars became more commonplace, records from the coast including the New Grounds at Slimbridge, and from the reservoirs of Barrow Gurney and Blagdon became more regular. The subjects of lectures were often now summaries of bird life at some specific location. Such was A. C. Leach's talk on the birds of Barrow Gurney Reservoirs, which was published in the *Proceedings* (Leach, 1933) which the Section's annual report called "a very useful summary which needed doing in view of the many detailed notes taken in recent years by Mr Leach as well as other members of the section.". Leach stated that he had found practically nothing on the subject in the records from 1865 to 1921, and added that H Tetley seemed to have "found" Barrow Gurney. The start of the annual "Bird Notes, Bristol District" in 1937 (see below) gave an impetus to the collation of data from different

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observers. The Section had by now abandoned its objection to field excursions.

By 1938 there were some 80 members, and meetings in members' houses became impracticable. For a time they were moved to the City Museum, and then to the University buildings.

THE SECOND WORLD WAR 1939-1945

The outbreak of war in 1939 interrupted the Section's second decade of progress, as some members joined the forces and the workload of others increased. Rationing of fuel and overcrowding of trains made field visits increasingly difficult and threatened to interrupt the annual counts of major heronries. Birdwatching permits for the reservoirs were cancelled as a security measure (poisoning of water resources by enemy agents was deemed a real risk). Moving about in the blacked-out city was difficult, so meetings were arranged to coincide with full moons, but with the threat of German bombing raids, moonlit nights had dangers of their own, and fixtures were changed to Saturday afternoons and sometimes again held in private houses. Tetley and Davis thus contrived to keep a programme going, even though it was not practicable to ask lecturers to come from far afield. Clifton College was evacuated to Bude, so removing A. C. Leach and W. R. Taylor, both experienced observers, from their usual sphere of activity. One positive local effect of the war came when the fledgling British Trust for Ornithology (BTO) launched a Woodpigeon Investigation on behalf of the Ministry of Agriculture, to assess the damage these birds were causing to scanty food supplies. A few members, particularly A. E. Billett and R. H. Poulding, did sterling work in making observations of feeding flocks and filling in the official record cards, thus paving the way for participation in future local and national studies.

COOPERATIVE FIELD STUDIES

As life settled down to peacetime conditions after 1945, the idea of making joint studies of a species in an area took root. Following their experience with the Woodpigeon Investigation, Billett and Poulding proposed in 1946 that the Section should undertake organised collective fieldwork. In 1948 a Fieldwork Committee was formed and a census of Rookeries in the City of Bristol was made. Other projects were set on foot, but were not very well supported. In 1950 the Committee

produced a duplicated report on activities in 1949. This contained a digest of bird observations made in 1949, prepared by H. H. Davis. There were also results of a Stonechat enquiry, a Swift Migration enquiry, and a survey of the winter status of the Lesser Black-backed Gull (about ten wintered in the district), all three done in support of national BTO studies. The issue also contained the results of a Lapwing breeding habitat survey, organised by AE Billett to determine the species status and provide a base-line for assessing future changes; a ringing report (781 birds of 31 species ringed by A. E. Billett, G. E. Clothier and R. H. Poulding); a survey of Brockley Combe heronry organised by B. King, and a report on the Section's contribution to the BTO Nest Record Scheme. This was roughly the pattern of future Fieldwork Reports (later known as Fieldwork Reviews, and then Bird Report, Fieldwork Supplements) which were produced annually until 1959 and then triennially; their relatively small cost was covered by sale to members for a small sum. An advantage of these homemade publications was that interim or provisional data could be published, which would have been unsuitable for a place in the permanent Bird Reports. The range and type of field studies broadened, and included, for example, a census of breeding Lapwings and Yellow Wagtails on Nailsea and Kenn Moors; and of breeding Wood Warblers, in which all woodlands in the district were visited and checked for song.

It was policy from the beginning to support BTO's national investigations and indeed when in 1958 the writer succeeded P. J. Chadwick as Section secretary, his first task was to seek advance warning of forthcoming studies from the BTO's secretary, Dr. Bruce Campbell, then housed in an Oxford attic. Thus we took part in national enquiries into Lesser Black-backed Gull numbers in the winters of 1949-50, 1950-51 and 1959-60, and into Lapwing numbers and their use of different habitats throughout the year 1960-61. In later years larger and more detailed studies included the Breeding Bird Atlas, for which every 10-km square of the National Grid had to be visited repeatedly during the breeding seasons of 1968 to 1972 to establish the species breeding in it. This involved as many recruits as possible, whether members of the Society or not. It led to the appointment of a network of "10-km square stewards". A steward was someone living in a square who took responsibility for carrying out, or arranging, any enquiries in which that square was involved, and keeping a general watch on it, to alert the birding community to any relevant happenings or proposals. Most large-scale local studies since then have been based

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on 10-km grid squares, including the national New Breeding Bird Atlas 1988-91.

In 1958 Hugh Boyd, then senior biologist at the Wildfowl Trust and a BNS member, proposed a study of the number of Shelduck using the Severn shore, the ground counts being used in conjunction with aerial counts made by the Wildfowl Trust staff. The organisation fell to the writer as Section secretary, and involved many observers. Analysis of the data, summarised in the Fieldwork Report, led to tentative estimates of the daily mortality of ducklings, which were used with other findings in a crude model of the population structure. The following year a series of frequent counts in one area by W. A. Holmes followed the fates of individual broods in detail, enabling a better estimate of daily mortality to be made. The full survey was repeated for several years, then on a reduced scale until 1980, after which infirmity ended personal involvement, though up to 1966 estimates of numbers were made in a consistent way from the routine reports of observers. The 38 years' data revealed changes in size and composition of the population which would not have come to light otherwise, and the early detailed observations sheets confirm substantially larger numbers on particular stretches forty years ago than today.

Some technical details of this survey, including problems of planning and of fieldwork, are described in a paper (Taylor, 1966). This also contains details of an estimate of the hunting range of Kestrels in the Bristol area, derived by application of a nineteenth century geometrical theorem to large numbers of field sightings. This formed part of a long-term study of local birds of prey, originated and inspired by George Sweet when Section President. The same paper contains analyses of data from other local fieldwork.

The 1958 Fieldwork report also contained a lengthy analysis by Hugh Boyd of the status of the Mallard in north Somerset. This was based on data from a team of volunteers trained and led by Bernard King who since 1948 have made monthly counts on inland waters, on predetermined Sundays from August until April, first for the International Wildfowl Institute and since 1954 for the Wildfowl Trust. Pre-war counts, largely by F. L. Blathwayt, W. R. Taylor and H Tetley were also used. These studies, of Mallard, Shelduck and Kestrel all took analysis of survey data much further than had been done locally before.

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In 1961 a project was started to map the birds of Bristol, under the leadership of Cynthia and Violet Graham. In spite of press publicity there were too few helpers to see the project to completion. Later R. L. Bland undertook a personal survey by bicycle, and produced a mimeographed report, which was too long to be included in the Bird Report within the financial constraints then applying. It was, however, used as a data source for several other projects. In 1981-84 during fieldwork for the BTO Winter Bird Atlas every 2x2km square (so-called tetrad) in Avon was studied in a standard way. Then in the breeding seasons of 1985-1987 every tetrad was visited and birds listed as present, possibly breeding or proved breeding. Finally from 1988 to 1991 all but five of Avon's 399 tetrads were studied for a standard two hours. All this information was correlated by Bland and J. Tully, and for each species five maps and a short written account was prepared showing different facets of this data. The results were privately published as an A5 wire bound book, *Atlas of Breeding Birds in Avon 1988-91*, now, alas, out of print.

A study of birds wintering in gardens was organised by R. L. Bland in the winter of 1975-76, and is still running, now affiliated to a much larger BTO scheme. Observers record daily in winter the numbers and species of birds feeding in their gardens. The collation of the results has shown interesting facts about response to temperature etc. (Bland & Taylor, 1988), and an unexpectedly close correlation between year-to-year changes in Bristol gardens and those found on the BTO's country-wide scheme.

It is now well understood that long running co-operative schemes can have great value, and the same is true of individual work. Such is H. E. Rose's study of the birds using the coast from Clevedon to the Yeo estuary. Dr Rose has walked this stretch almost every Sunday morning since 1978, acquiring an intimate knowledge of the area and its birds, but also collecting data for the Bird Report, which has proved to be useful for other purposes. Such too is R. L. Bland's inquiry into numbers of over-wintering Blackcaps and Chiffchaffs, and now also Siskins, which use no particular fieldwork but is based on standardised analysis of sightings sent in by members and others. A long running task of a different kind was H. R. Hammacott's 18 years as editor of the passerine section of the bird report. Each year he made detailed lists of the observations, as a preliminary to writing the text. Safely kept, these

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records have proved to be a valuable source of data not available elsewhere.

THE BTO NEST RECORD SCHEME

This was started in 1939 by Dr. J. S Huxley and James Fisher, under the title 'Hatching and Fledging Inquiry', soon to change to its present title. Observers fill in a record card for every nest they find, provided they have been able to count the contents at least once. Analysis of the cards for a species (nowadays by computer) gives much information about its breeding biology and breeding success. Section members have contributed to the scheme almost from the beginning, sending in some 2000 cards a year at the present time. Our participation was organised by G. E. Clothier for three years and then by M A Wright for six. Wright also abstracted basic data from each local card for our own records. In 1962 he handed over both tasks to H. R. Hammacott himself a skilled nest-finder, who continued them until February 1995, handing over, a few months before his death aged 87, to P. J. Chadwick. In 1986 he produced an analysis of 10,000 local nest cards (Hammacott, 1986) demonstrating changes in species abundance over the preceding 30 years.

THE BRISTOL ORNITHOLOGICAL CLUB

This was formed in December 1966 by 17 members who sought a less formal atmosphere for meetings than that provided by the Section, and a concentration on birds alone. It attracted many who had not previously belonged to a local bird organisation and so grew rapidly, reaching 140 members by February 1968. In time some BNS members joined it, producing a cross-membership of about fifty, and the two bodies started to co-operate on major projects. The observations provided by Club members for a monthly news-sheet were made available for the Bird Report, which grew in size to accommodate them, until it outgrew the available space in the *Proceedings*. It was agreed that from 1983 the report would be published separately from the *Proceedings*, but would be available to all BNS members as of right, as well as to members of the Club. The task of production was to be shared, and each body would buy copies for its members, leaving some for general sale. After negotiations sensitively chaired by D Walter, the Avon Ornithological Group, a consortium of the two bodies, was set up for the purpose. It consists of an Executive Committee made up equally

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from the two parent bodies, a Recorders Committee, which vets records, and an Editorial Committee which produces the annual report.

EQUIPMENT FOR BIRDWATCHING

Following the launch of bird-ringing in 1909 by A. Landsborough Thompson in Edinburgh and H. F. Witherby in London members started ringing in a small way in 1923, leaders in this being R. P. Gait and C. Tuckett. They visited the Channel Islands in 1926, ringing and photographing birds on the island of Annet. The local use of mist nest for catching birds for ringing studies began in 1962, and soon had a dramatic effect on the numbers handled which reached 6000 by 1965.

As to optical aids, field-glasses of up to 6X magnification were readily available in the 1930s, and prismatic binoculars became more common. In 1936 Zeiss invented coating of lenses to improve light transmission. After the 1939-45 war good binoculars became easier to obtain, lighter and cheaper. Draw-tube telescopes of much improved performance such as the B. Nickel, Hertel and Reuss and Bushnell brands, soon came on to the scene, to be displaced in turn by the prismatic telescopes of today.

Sound recording in the field was, and still is, a specialised undertaking, but the playing of recordings of bird calls or songs to lure shy males into view, to establish the presence of a species of skulking habit, or to obtain a reaction from a species with large territorial range, became feasible with the arrival in the 1960s of transistor-based devices of modest weight, size and cost. They have been used locally in survey work on Nightingales and on owls, and they came as a great relief to the writer, who had been coerced into carrying a portable wind-up gramophone through New Forest swamps in search of rarities.

Cameras with high-performance long-focus lenses, using high-quality colour film have come into use for specialised bird photography, replacing the large whole plate or half plate cameras and black and white glass plates used to good effect by earlier generations including Gait and Savory.

The first specialised pocket identification guide, *Field Guide to the Birds of Britain and Europe* by Peterson, Mountford and Hollom, appeared in the first of many editions in 1954. Its specially drawn

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colour plates, indicating key features in the way that Roger Peterson had pioneered in the USA, its succinct species accounts and distribution maps revolutionised field studies. Many other pocket guides have followed. Around the same time the application of computers to lens design led to the arrival of affordable prismatic binoculars and telescopes, giving a degree of magnification, clarity of image and portability never before available.

In the last twenty years or so the development of special water-proof but vapour-porous fabrics has led to the production of outdoor garments suitable for all weathers adding to the comfort of the well-equipped birder.

PUBLICATIONS

Lectures given to the Section have not been preserved in print, with the exception of Averil Morley's in its booklet form and a few which were enlarged into formal papers for publication in the Society's *Proceedings*. However papers on ornithological subjects have appeared. Some from the early years have been mentioned already, and a selection of others is given below.

In 1937 H. H. Davis, then honorary Secretary of the Ornithological Section, collected local observations for 1936 and wrote a short account of them, published in the *Proceedings* (Davis, 1936). These *Bird Notes, Bristol District*, became an annual feature with more and more available material, and from 1952 he was joined in their production by P. J. Chadwick. From 1955 the compilers were joined by others in a small Editorial Committee and the name changed to *Bristol Bird Report*. In 1974, when local government was reorganised and the County of Avon set up, it became the *Avon Bird Report*, published originally in the *Proceedings*, with, for several years, a supply of off-prints for members of the Bristol Ornithological Club. Eventually the whole report outgrew the available space in the *Proceedings* and in 1979 the Avon Ornithological Group (see above) was formed, to share the burden of production and publication between the Society and the Bristol Ornithological Club. The Report continued to develop, and in 1995 it won first place in *British Birds* magazine's annual competition for the country's best.

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A short note (Tetley, 1943) listed several years' arrival and departure dates of Swifts at a colony in Stoke Bishop, and showed how interesting facts could be obtained by simple analysis of careful observations.

An important paper was a new Bird List for the district (Davis, 1947); the author had tracked down old records and museum data, to verify the early occurrences of unusual or uncommon species, and gave statements on distribution and rarity, based on his and his colleagues' field experience.

Articles on birds have appeared more frequently in the *Proceedings* in recent years describing the birds of different areas and/or changes over time, and often attempting to relate these to ecological factors. Examples are Bland (1987), Bland & Taylor (1988), Gray (1986), Rose (1987, 1990, 1996), Taylor (1986) and Taylor & Bland (1995), and some have appeared elsewhere, notably an account by Hugh Boyd (Boyd, 1996) of two surveys of West Mendip rookeries fifty years apart, which he had made, in 1946 and 1996. More specialised papers have appeared in the *Avon Bird Report*.

PERSONALITIES

Many who played a role in the early days have been mentioned already. There follow brief notes on some individuals, with apologies to those excluded for lack of space.

An early member, elected on 1 August 1923, was **Guy Mountford**, a Bristol schoolboy. At the Section's first Annual General Meeting, mindful of the desirability of bringing exhibits, he demonstrated his remotely controlled camera release, made from parts of an electric bell and worked by a flashlight battery. (Dr. Flemming missed the demonstration, having been summoned from the Chair to attend a sick patient.) He accompanied C. Tuckett and R. P. Gait on their expedition to the Scillies in 1926. In time he became a senior business man in London, and a leading figure in ornithology and conservation., President of the British Ornithologists Union, and organiser and leader of the famous expeditions recorded in his books *Portrait of a Wilderness* (the Cota Donana), *Portrait of a Desert* (Jordan), and *Portrait of a River* (the Danube from Hungary to the Black Sea).

Others elected in the first decade include (1927) H. Tetley, Rev. F. L. Blathwayt, A. C. Leach, W. R. Taylor, and V. C. Wynne-Edwards, all

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elected in October 1929; Averil Morley (1930); J. H. Savory (1931); and C. J. F. Coombs and H. H. Davis (1932).

Humphrey Tetley (1890-1944), forced by a long and serious illness to abandon his medical studies, turned to zoology, and after war service and a period in the Sheffield University Museum, he became Curator in Zoology at the Bristol City Museum from 1927 until his death in September 1944. He was a mainstay of the Section from his arrival, and had great influence on the progress of local studies "through his careful and diligent recording, his influence and sound advice" (Davis, 1945). He was Secretary of the Ornithological Section from 1928-1936, its President from 1937 to 1939, and President of the Society from 1941 until his death. His papers in the *Proceedings* in 1935 on Gulls in the Bristol District was the first to review a group of species, and that on Weather Movements in the same year the first to relate bird numbers to environmental change. (Tetley, 1935)

Francis Linley Blathwayt (1875-1953) was educated at Malvern and Oxford, took holy orders, held various curacies and livings in Lincoln, then at Melbury Abbas in Dorset. A noted amateur ornithologist, he edited the Dorset Bird Report. In 1929 he moved to the family living at Dyrham, Glos. He was President of the Somerset Ornithological section from 1930 to 1949, and Editor of its Bird Report. He wrote the Birds article in the Victoria County History of Somerset.

A. Croome Leach and **W. R. Taylor** both came to Clifton College as masters in 1921, teaching history and classics respectively, and both later became Presidents of the Ornithological Section. **Vero Copner Wynne-Edwards** (1906-1997) read zoology at Oxford, then in 1929 joined Bristol University's Zoology Department. He went on to a distinguished career, ending as Regius Professor of Natural History at Aberdeen from 1946-1974. Soon after his election to the section he lectured about his work on Starling roosts, an account of which is included in his *magnum opus* (Wynne-Edwards 1962).

Averil Morley, a talented junior member, lived with her father near Clifton Down. She reported her studies of local birds in a lecture to the Ornithological Section in 1934, an expanded version of which was published (Morley, 1934). She later became the first woman member of the BTO's Scientific Advisory Committee, Secretary of the Edward

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Grey Institute of Field Ornithology at Oxford University, a frequent contributor to *British Birds* and wife to Frank Fraser Darling.

J. Harry Savory a fine art printer and publisher at the Vandyke Press was also a keen falconer, a skilled photographer, and a notable spelaeologist who made important discoveries in the Mendip cave system (Savory, 1989). He was later Section President from 1933 to 1938 and 1945 to 1947, and gave many talks, illustrated with his own slides, including a fine series of the Avocet (one of which graced the back page of the *Times* newspaper to celebrate the return of breeding avocets in 1947).

C. J. Franklin Coombs, then a pupil at Clifton College, later graduated in medicine at Oxford and became a General Practitioner, practising medicine and ornithology in Cornwall. He became an expert on the Rook, and elucidated the action of the bird's hormone system in controlling its breeding cycle. He lectured several times to the Ornithological Section on his researches.

Howard Henry Davis farmed on a considerable scale at Little Stoke, Patchway. He was Honorary Secretary on the Ornithological Section from 1937 to 1954 and then its President. His first important paper was "Waders of the Bristol District" in the *Proceedings* for 1935, which reviewed an important group of birds previously largely ignored. (Davis, 1935) He became a council member both of the Royal Society for the Protection of Birds and of the BTO, and the contacts he established led to many notable ornithologists coming to lecture to the section, keeping its members in touch with the latest ideas. A lecture in February 1937, by a young East Anglian wildlife artist Peter Scott, had remarkable consequences. The next day Davis and Savory took him to see the wild geese wintering on the New Grounds at Slimbridge. Later Davis sent Scott a copy of his paper on the Severn geese (Davis & Tetley, 1943), and invited him to return after the war, to see the flock. They duly went on December 16th 1945 with two companions and amongst 2,000 White-fronted Geese and 70 Pinkfeet they found individuals of Greylag, Bean and Barnacle and the third and fourth British records of the Lesser Whitefront, as well as a Dark-bellied Brent Goose. This was the first known occurrence of all five British grey geese together. That day Scott vowed that this must be the site of the goose collection and study centre of which he had long dreamed. So the Severn Wildfowl Trust, later the Wildfowl Trust and now the Wildfowl

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and Wetlands Trust, came into being, with Davis as a Trustee. Davis was also for many years the BTO's Regional Representative, in which role he carried out the local organisation of numerous BTO enquiries, though in his later years he often delegated these to the Section Secretary (P. J. Chadwick from 1955 to 1957 and the writer from 1958 to 1970).

Leonard Harrison Matthews (1901-1986) was a Bristolian; from Bristol Grammar School he studied Natural Science at Cambridge, researched in Brazilian mangrove swamps, spent five years studying whales off South Georgia then joined Bristol University in 1929. In 1951 he became scientific director of the Zoological Society of London. Elected FRS in 1954 he was one of the world's leading zoologists. He was a member of the BNS from 1929 until his death in November 1986.

Kenneth B Rooke, born in 1916, was at Clifton College 1930-1935 (during which time he served as Ornithologist to the Public Schools' Exploration Society's expedition to Greenland) read Natural Science at Cambridge, then Medicine at Middlesex Hospital. After war service he became a G. P. in Cranborne and a leading Dorset ornithologist, editing the Dorset Bird Report and contributing to *British Birds* etc.

Kenneth Douglas Smith, born in 1916, was in the same house at Clifton as Rooke. After a spell in banking he joined the S African Police, then (1939) Police in Eritrea and Ethiopia. He remained in the Middle East after the war, working on locust control and using the long desert journeys involved to study the birds of the region. On retirement to this country he spent much time at Portland Bird observatory.

Richard L. Bland taught history at Clifton College from 1961, was appointed second Master in 1988, and retired in 1996. He has been active in the Ornithological Section since his arrival and served as Section President from 1996-2000. He has been Regional Representative of the BTO for the Bristol area since 1980, and has originated and energetically pursued several field projects and surveys, some of which have been mentioned above.

John Tully, a retired physics teacher, is not a member of the Society, but as the BTO's Regional Secretary has been heavily involved in many local co-operative projects as well as pursuing studies of his own, including censuses of Feral Pigeons in the City.

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Harvey Rose, a mathematician at Bristol University, has been active in Bristol ornithology since his return in 1975 from working in the USA. He has been Bird Recorder for Avon since 1976, and has held important roles in the Avon Ornithological Group as well as serving a term as Section President and holding senior offices in the Society. He has a specialised interest in wading birds.

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A CENTURY OF ORNITHOLOGICAL CHANGE.

By RL Bland
11 Percival Rd BS8 3LN

Changes in the avifauna in the past century.

In 1899, after three years work, a group of ornithologists in the BNS drew up a list of the birds of the Bristol region. It contained 193 species, and included 36 species that were not on the previous list of 1875, though it excluded 9 species and one form (White Wagtail) that had been included in 1875, largely on the grounds that the evidence for their presence was inadequate, because the records were undated. It also excluded two species that were certainly present, the Mute Swan and the Feral Pigeon, because they were considered to be feral rather than wild birds. The 1999 county list held 325 species, 93 of which were first recorded in the twentieth century. 22 of these were first found in the first half of the century and 71 in the second half. 95 of the 132 additional species are, of course, rarities, birds often blown off course, and far from their normal habitat, and their addition to the list is a consequence of the increase in the numbers of ornithologists, an improvement in their identification skills, and a great change in the optical equipment available to them. Of the 193 species of the 1899 list eight have not been seen since the 19th century. They are the Black Grouse and the Red Grouse, both of which had occasionally been recorded on Mendip, Baillon's Crake, Pallas' Sand Grouse, Sooty tern, Hawk Owl, Rose-coloured Starling, and Two-barred Crossbill. All these species had been shot on one or more occasions.

New species

The most impressive change in the century is the 41 new species that have become a more or less regular part of our avifauna. Of these new species 13 have bred, and 8 are more or less common residents. The **Canada Goose** was first recorded in 1916 when eight were shot at Bleadon. The first record at CVL was in 1956. A pair first bred in 1973, and by 1999 there were about 1000 in the county breeding at about eight sites. The first **Gadwall** was one shot at BL in 1915. They first bred at CVL in 1958 and by 1990 CVL held about 10% of the wintering population in the UK. **Ruddy Duck** first appeared at CVL, having

escaped from Slimbridge, in 1957, and bred there in 1960, though breeding has been irregular since. Numbers peak in the winter, and the highest count was 910 in February 1986. The first **Mandarin** was seen at CVL in 1974, and sightings were annual from 1986, usually at Tortworth Lake, though breeding was not proved until 1996. The largest number are seen in October, when up to 20 have been recorded. **Little Ringed Plover** were first seen at CVL in 1954, and have become a regular autumn passage migrant since, and first bred in 1977, but have only bred irregularly since. **Buzzard** was known in the 19c, but was regarded as very exceptional, and was not included in the 1899 list. It was still very uncommon in 1948, and in 1983 there were probably 50 pairs. By 1999 there were probably 200. There are three acceptable records of **Little Owl** shot in the 19c, but the first modern one was in 1907, and first breeding was recorded in 1910. Numbers probably reached a peak around 1985 and have since declined. Finally **Collared Dove** were first recorded in 1960, first bred in 1961, and numbers and distribution have increased since. There are now probably 4000 breeding pairs.

There are four other much less common species that have bred. The **Willow Tit** was only distinguished from the Marsh Tit at the start of the century, but the first proved breeding was not until 1963. Although sightings have been almost annual since, it remains an extremely rare and elusive species in the county. **Garganey** was first recorded breeding at BL in 1910, but there were few other records before 1955, and breeding was almost annual between 1960 and 1970, but has been irregular since. **Dartford Warbler** was first recorded in 1960, but was only seven times before 1996, when a pair bred. **Cetti's Warbler** was first recorded in 1975, and breeding was first proved in 1995. By 1998 there were eight singing males.

The other 28 new species are visitors that are seen almost annually. 11 are divers, grebes, ducks and geese who are most often seen at Chew Lake. Eight species are uncommon waders, some of which, such as the Avocet, have increased nationally, but others may well have been present before 1899, but were unrecognised. Two species of tern, and two skuas, are now seen regularly by coastal watchers. Two raptors, Osprey and Goshawk have increased nationally this century and this is true of two of the three new passerine species, Firecrest and Black Redstart. The third, Water Pipit, is a rare migrant that is extremely difficult to differentiate from the Rock Pipit, a resident.

Change in status

There have been substantial changes in status of the 193 species that were recorded in 1899. These are not easy to judge, as phrases such as abundant, common, local, rare, did not have precise meanings in the past. Making some broad assumptions, 98 species seem to have a largely unchanged status, 35 seem to have decreased, and 60 show an increase. In other words most species have adapted readily to the huge environmental changes of the past century, and there is a broad balance between those species for whom the changes have been a positive advantage, and those that the changes have damaged.

Increasing species

Some of the most striking increases have come about because of the opening of first Blagdon Reservoir in 1897, and then Chew Lake in 1954. **Great Crested Grebe** were first seen on Blagdon in 1897, and first bred there in 1907. Numbers grew rapidly after CVL was opened, and a maximum of 83 broods were seen in 1996. Since 1970 over 600 have gathered every autumn, the third best site in the country. **Goosander** were a very rare visitor in 1899, but over 300 were seen in winter in the 1990s, and CVL was the 7th best site in the country. **Smew** was another very rare bird in 1899. Numbers grew to peak at around 15 birds in most winters in the mid-fifties, but there have been fewer since. **Tufted Duck**, **Shoveler**, and **Pochard** were all unusual birds in 1899, whereas maximum wintering totals of 800, 800, and 1500 birds are normal for the species today. **Goldeneye** and **Pintail** were also scarce but are now regular in small numbers of 100 and 50. There are 15 species, including ten species of duck, Slavonian Grebe, Bewick's Swan, Coot, and Reed Warbler, that were either very rare, or at best uncommon, in 1899, that are now a regular part of the avifauna. There are another 15 species which have clearly increased, but the causes of this are less obvious. The **Cormorant** was first proved to breed on Steep Holm in 1934, and its numbers have increased greatly in the past twenty years. **Peregrine** was a rare bird in 1899, only known to breed occasionally on Brean Down. Numbers grew up to 1940, when the MoD tried to destroy all pairs, but it only became extinct as a breeding species in the region in about 1965 after the pesticide disaster of the late 1950s, Breeding began again in 1990, and today there are up to ten pairs in the region. **Hobby** was regarded as very rare in 1899 with sightings in 1885 and 1896, but at least five pairs now breed annually. It

is possible that it was actually commoner in 1899 than appears, but numbers have certainly grown since 1950. The **Lesser Blacked-backed gull** was a scarce summer visitor in 1899. It began to over-winter in the 1940s. In 1904 12 pairs bred on Steep Holm, 600 in 1955, and breeding began in Bristol in 1972. By 1999 there were around 1300 pairs. The **Red-legged Partridge** was a new introduction in 1899, first recorded in 1879, and it did not become a regular feature of the area until after 1920. It was probably most common in the 1960s and has suffered some decline in the past decade. The **Wood Pigeon** was regarded as "generally distributed" in 1899, the same status as the Stock Dove, and was not as abundant as it is today. **Short-eared Owl** was only known from a record in 1891, whereas it is now an annual winter visitor. The **Great Spotted Woodpecker** was regarded as uncommon, and clearly inferior in abundance to the Green Woodpecker. Today it is widespread in woodlands. **Sedge Warbler** was regarded as very local, as was the **Reed Warbler**, and it is probable that suitable habitat was rare because of the thoroughness with which ditches were kept clean. The **Pied Flycatcher** was regarded as very rare, though it had bred in 1899. It is now an uncommon but regular passage migrant, and last bred in 1988. **Raven** was regarded as rare, though a pair had bred in 1897. Today there are some five breeding pairs, though it became more or less extinct as a breeding species by 1980. **Tree Sparrow** was a rare resident in 1899, but numbers grew to a maximum in c. 1960, since when they have fallen very rapidly, and are more or less back to their 1899 status. **Siskin** was a rare and local winter visitor. Nationally numbers have grown rapidly with afforestation since 1950, and wintering numbers here can on occasion be very large. There may also have been a real increase in the numbers of **Common Gull**, **Dipper**, **Garden Warbler**, **Goldfinch**, and in the regularity of **Crossbill** eruptions.

Declining species

Among declining species, there are 26 whose status has clearly changed significantly.

Seven species that bred regularly in 1899 have become effectively extinct, and their decline has been national. **Corncrake** were already declining in 1899, as agricultural techniques developed in the 1880s were destroying their habitat. There are no known breeding records for the 20th century. They were seen on migration annually until 1966, and the last sighting was in 1990. The **Wryneck** was also already in decline

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in 1899. It last bred in 1895, but is still seen roughly every other year on autumn migration. **Woodlark** bred regularly on south facing bracken-covered slopes, and five sites were known in 1945, but the last breeding record came in 1955 and it is now an occasional autumn migrant. The decline of the **Nightjars** may have begun from the 1920s, and there were 30 pairs in 1950 but none by 1975. A recovery began after 1995. The **Cirl Bunting** was a rare resident in 1899, but its numbers grew to a maximum in about 1950, but it last bred in 1985. The **Red-backed Shrike** was always local, and began to decline in the 1930s. The last breeding record was in 1952, though a pair may also have bred in 1975. The last sighting was in 1994 on Steep Holm. The **Marsh Warbler** nested annually in the 1890s, but it last bred at Saltford in 1919, and the last sighting was one trapped at CVL in 1994.

There are another seven species which have declined very steeply as breeding species but whose decline is more recent. **Whinchat** were widely distributed in 1899, and just as common in 1948, but the last nesting record was in 1978. **Redstart** nested locally especially in pollard willows. In 1972 a dozen breeding pairs were known, but that fell to one in 1982, and in recent years a single pair has been known in Lower Woods. **Hawfinch** were also local, but still known from half a dozen localities in 1948. The last definite breeding record was in 1983. **Yellow Wagtail** nested in marshy land in 1899 and their status was similar in 1948. The last breeding evidence came in 1991, though reasonable numbers are still seen on migration. The **Tree Pipit** is another summer migrant that used to breed regularly and was as widespread in 1948, but which has now virtually disappeared as a breeding species and is known mainly as a migrant. **Turtle Dove** was widely distributed in summer in both 1899 and 1948, but was only proved to breed in two areas in the New Atlas, 1989-92. The **Grey Partridge** was very common in 1899, and its status was unchanged in 1948, but today only a few survive on the Cotswolds and south west of Bath.

Five species seem to be following in the same direction as the previous list, but all still have a breeding presence in the county. The **Lesser Spotted Woodpecker** seems to have been quite common in 1899, but was less frequent than the Great Spotted by 1948, and, after a brief increase in the mid seventies associated with Dutch Elm Disease it is now very rarely seen, though breeding was proved in 1995. The **Barn Owl** was widely distributed in 1899, and the same in 1948, but its

numbers fell steeply after the 1981/2 winter, before a slight recovery in the 1990s. **Spotted Flycatchers** were a common summer visitor, but their numbers have dwindled steadily in the past fifty years, possibly related to the drought in the Sahel, and the best estimate today is 100 breeding pairs. **Lapwing** were widespread nesting on farmland, but by 1948 had already begun to decrease considerably. In 1982 279 breeding pairs were counted, and by 1998 this had fallen to an estimated maximum of 150 pairs. **The Nightingale** was regarded as widely distributed in 1899 and in 1948. The maximum recent count was 53 singing males at 20 sites in 1980, but numbers had fallen to 15 singing males by 1999.

Finally there are seven species of common and widely distributed birds whose populations have fallen steeply in the past twenty years of the century, and though some have clearly been affected by farmland changes, the cause of the change in others is uncertain. They are **Cuckoo**, which is not easily monitored, **Skylark**, **Song Thrush**, **Marsh Tit**, **Linnet**, **Bullfinch** and **Yellow hammer**. To this list should be added **Starling** and **House Sparrow**, two species once simultaneously so ubiquitous and so adapted to human conditions that no-one bothered to count them. The true scale of their decline is substantially unknown though, in terms of absolute numbers of birds, it may be far greater than the sum of all the other species put together.

Conclusion

There is no doubt that overall the avifauna is more complex than it was a century ago. Only eight species on the 1899 list have not been seen in the present century, and only another seven have entirely ceased to breed. 47 species have shown some form of decline. 99 species seem unchanged in status, 60 have increased and 41 are new this century. It is very probable that complex changes of this sort are an entirely normal response to an environment that has changed dramatically and continuously over the past 2000 years. The avifauna of 1899 was adapted to a landscape and agricultural technology that have largely vanished. Birds have been around, adapting to a changing world, for 70 million years, and have shown an astonishing capacity to evolve new forms to exploit new environmental niches, and to adapt to the conditions mankind has recently created. Change is the only constant of life on earth, and, much as we may regret the decline of the familiar birds of our youth, we welcome the newcomers.

The next hundred years

And what of the future? The changes in the avifauna will depend upon changes in habitat. Over the next century it is likely that urbanisation will spread over much of the county, with a wealthier human population demanding larger houses with more grounds. The urban proportion will grow from the present 20% to perhaps 60% of the area. Agriculture will continue to shrink, the poorer land being sold for housing, sports fields and golf courses, and in the longer run it seems probable that both milk and meat will be created artificially in factories, so that the only agriculture left will be either an extension of horticulture, or organic farming. Genetic modification of crops may end the practice of drenching the land with fertilisers and poisons, and only the very best land will give the sort of return that will make farming worthwhile. Some of the unwanted land will become nature reserves. Perhaps 20% of the region's area will still be agriculture, and 10% nature reserves. This compares with the position today in which 75% of the area is farmland. The future of woodland is more uncertain. Wood products of all kinds are increasingly likely to be created artificially, so that wood itself will cease to have an economic value. On the other hand its amenity and wildlife value will become ever more important, and for that reason the woodland area is likely to grow, perhaps doubling from the present five to ten percent of the area. There will be no more big reservoirs, though probably many more fish ponds, but at some point about fifty years from now, when gas has run out, and assuming the trick of controlling the fusion reaction has not been mastered, the Severn Barrage will be built, and a huge lake of increasingly fresh water, fringed with vast reed-beds, will be created. It will be managed with exemplary efficiency to provide for the varied interests of the whole region. Global warming will ensure that birds breed earlier, migrants arrive earlier and stay longer, and that more species find they can over-winter successfully. It may also result in the flooding of the levels, and these may become salt-marsh, as the policy of managed retreat is adopted on a massive scale, given the uselessness of the land for agriculture.

Assuming the habitat changes forecasts are of the roughly the right size, there will be an increase in numbers of garden birds as suburban densities are higher than either woodland or farmland, an expansion of woodland birds, steep declines in purely farmland birds such as Skylarks and Rooks, but a recovery in seed-eating finches as plants and

insects return to neglected areas of land. Partridge, Tree Sparrow and Corn Bunting will become extinct. If the Severn Barrage is built and properly managed there will be a huge increase in water birds, and wader passage migrants, though the Dunlin and other wintering waders, dependant upon the old saline mud-banks, will go. The reed fringes should support a large population of Bittern, Bearded Tit, Marsh Harriers, Osprey, Little Egrets, Cormorant, and Heron. Dalmatian Pelican might be introduced, and terns encouraged to breed on sand islands. We might even manage to tempt the Marsh Warbler back. As ornithology will be a substantial wealth creator, there will be several institutions developed along the lines of Slimbridge, associated both with the barrage lake, and with ancient woodland, which will be increasingly managed to ensure the return of Wood Warbler, Redstart, Nightjar, Lesser-Spotted Woodpecker, Pied Flycatcher and perhaps Red-backed Shrike. As all shooting will have been banned as part of the general progress of civilisation, the Pheasant will be in steep decline, but raptors of all species will increase. However winter visitors will also decline steeply, as they will no longer need to come so far west and south, and we will probably lose Fieldfare, Redwing, and Brambling, and have smaller populations of wintering duck. Salt-water species such as Gannets, Skuas, the Petrels and the Auks will become exceedingly rare, though they will be blown into the Great Severn Lake after storms.

The county list will grow because of the impact of global warming on European populations, and stormier conditions will lead to more unusual migrants. There will be new populations of escaped species, particularly ducks and geese, but also Rose-ringed Parakeets, and perhaps Canaries. These populations will be monitored by a growing army of ornithologists, whose technical equipment will become ever more sophisticated. Birds will carry chips, not rings, and their movements will be automatically plotted from satellites. The Avon Bird Report will be published electronically, updated on a weekly basis, and the records integrated with the Pan-European Bird-net, which will illustrate the daily details of the continent's avifauna.

Looking at the process of change in the past century, it seemed to me that it would have been possible in 1900 to predict the situation in 1950, but that changes since then were essentially unpredictable in 1900. Thus I hope that in 2049 someone will read this article, and laugh at my blindness.

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