

The Reading Naturalist

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THE READING NATURALIST

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Reading and District Natural History Society

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Vertebrates: Mr Hugh H. Carter,

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EDITORIAL

This is my fourth year as Editor of *The Naturalist* and although I have found it challenging at times it has provided experience in the use of the computer and given satisfaction when finally completed. Much effort has gone into checking the text and perhaps it will be free of errors, but that may be too much to expect!

Last year it was most heartening to be congratulated by several members on the content and layout of 'The Naturalist'. Of course for the content, praise goes to the contributors but the formatting is the Editor's responsibility. This year I have inserted 'space-fillers' where articles or reports do not completely fill a page. The subject matter may be trivial and I would welcome members' comments as to whether they think such items are worthwhile and if so would they like to submit something similar for forthcoming issues. Items could be of no more than 100 words and not necessarily trivial (even if mine are). The final blank page was dictated by the layout for the weather tables. Perhaps members would like a page for notes?

The Society is most grateful to Dr Russell D. Thompson who for the past ten years contributed the Weather Report, and to Mr Ken Speirs who agreed to provide the Report for 1996, which I hope will be the first of many. I must thank the writers of articles and the recorders who, as in previous years, have made their copy available in good time and have been most helpful when I have queried certain points.

Last year I commented on the number of members who sent in records. This year I am pleased to note that the number has increased by ten percent, a step in the right direction, and one that I hope will continue.

Members will see a change in the cover of "The Naturalist". The wraparound cover and its associated artwork, which have been a feature for some years past, were found to be very expensive. I would like to hear the views of members as to whether the new look is acceptable.

EXCURSIONS

Graham Saunders

I am pleased to report the choice of summer excursions was a success with over 20 members regularly attending. This was no doubt helped by the fine summer weather with only one meeting being curtailed through rain.

A spring walk through Morgastor Wood on 17th April saw 20 members enjoy a very pleasant stroll among the violets and primroses. Was it a Common Dog-violet or a Wood-violet? The late spring meant the Bluebells were only just coming into bud.

The 4th May saw Martin Sell forego his beauty sleep to rise on a frosty morning and lead four members around Theale gravel pits. The dawn chorus is a really magical experience and those attending were rewarded with Grasshopper Warbler, Nightingales and a displaying Kingfisher. Only one member travelled with Martin to the South coast, this time to Pagham Harbour, where Avocet, Purple Sandpiper, Whimbrel, Yellow Wagtail, Cuckoo, Little Egret, Swallow, Whitethroat, Grey Plover and Greenshank were recorded.

May 18th, a right miserable day, the only one of all the Saturday excursions, saw three brave souls with one umbrella trudge through the downpour. The reward, despite the late spring, was a sea of Green-winged Orchids. Many seemed fairly short, although apparently this is typical.

The coach outing to Wiltshire on 1st June was enjoyed by 37 members. The programme of fairly short coach journeys between three Wiltshire Trust N.R.'s of differing habitats proved successful. All thanks to the coach driver who negotiated some fairly narrow country lanes to take us to our destinations.

The woodland reserve, Blackmore Copse, provided a pleasant walk (sorry about getting people lost, but one tree looks very like another!). The highlight was a pond full of Water-soldiers. However very few birds were singing.

Great Cheverell Hill provided a bracing walk for those members who could walk horizontally! The Burnt Orchids were in profusion and in the sheltered spots were Marsh Fritillary butterflies.

Jones's Mill, the Vera Jeans N.R. near Pewsey, beside giving members wet feet, was an unimproved plant-rich water meadow.

Another excellent turnout of 25 members enjoyed the superb flora (and sunshine!) at Old Burghclere Quarry on 15th June. They were rewarded with the best display of White Helleborines - literally hundreds - in the area. The Fly Orchids were in their usual profusion.

June 29th found two members enjoying the pub lunch social event. They were joined by eight members to walk around Ashford Hill N.N.R. Unfortunately the cows, besides turning some of the softer areas into assault courses, seemed to have eaten most things of interest. On the ungrazed areas the display of Dyer's Greenweed was spectacular. Martin Sell found Greater Broomrape feeding on stunted Broom. Despite the ground being only just damp, Water-violets were growing in a shaded area.

Another superb day greeted the nine members on 13th July who enjoyed the sun, scenery and wildlife at Lough Down and Lardon Chase. Marbled Whites and Essex Skippers were on the wing, Clustered Bellflower, Pyramidal Orchid, Pale Toadflax, Dwarf Thistle, Restharrow and Hairy Violet were some of the flowers seen. A Sparrowhawk landed on a rabbit heap close by, surveyed the scene, then flew down the hill, hugging the ground for cover.

The afternoon meeting was followed by the Mothing Evening which attracted (besides the moths) 17 members and friends. It is always a superb evening, this year two lamps were set up on Bucklebury Common. Over 100 species were recorded, although as many again may have been eaten by the four bats flying about the lamp for most of the time! A pair of Nightjars was seen nearby.

A visit to Hampstead Norreys took place on 27th July when 21 members enjoyed a walk along the route of the old Newbury to Didcot railway line. The wild marjoram was in full flower and was well attended by a variety of butterflies and other insects. A pyramidal orchid seen on the way back was a new record for the site.

Members enjoyed a stroll around the BBONT Decoy Heath N.R. on 3rd August. The Reserve is noted for dragonflies and damselflies, many were seen also Long-winged Cone-heads and Brown Argus butterflies.

Another magnificent day on 17th August saw 21 members undertake a marathon walk at Starveall Farm, Aldworth and Compton. Much of the downland is taken over by crops but the tracks provide corridors for a surprising variety of wildlife. Of note were the five Clouded Yellows seen at various points along the walk. Male and female Chalkhill Blues were flying. Frog Orchids in flower were almost sat upon during the refreshment stop. Pale Flax, Saw-wort and Bastard-toadflax were also of note. The larva of a Humming-bird Hawk-moth seen crossing a path was of particular interest. Near the end of the walk (and near exhaustion for members!), a brief sortie into a field revealed four species of Poppy within a few feet, Common, Long-headed, Rough and Prickly. What a way to end the day!

August 31st found eight members exploring Ashley Hill. Much of the area was plantation or overgrown oak woodland with the main interest confined to the path edges. Tutsan, Lesser Skullcap, Water-pepper, Purple-loosestrife and Corn Mint were recorded and a Dark Bush-cricket was of note.

Only two stalwarts walked around Marsh Meadow and Cock Marsh on 14th September.

Ten members enjoyed a Fungus Foray at the Bramley Training Camp on 5th October. Fungi were very sparse on the ground although 33 species were recorded. It was noted that fungi were plentiful around the beginning of November!

Thanks to the members who led the walks, without whom they would not have been possible. Thanks to the members who turned up for the walks, without whom they would not have been worthwhile. Most of all thanks to Mother Nature for the marvellous weather which made them so enjoyable!

WEDNESDAY AFTERNOON WALKS.

Alan Brickstock

Once more we had a most enjoyable series of six walks, as usual organised and led by Ken Thomas. The weather was kind each time, and the turn-outs were mostly very good, ranging from six to a record equalling 19 in April. The average for the season was a healthy 13 - usually plus one or two dogs.

The first walk, at Checkendon in April, saw the highest number of people, 19, the highlight being a good show of wild Daffodils, with a total of 59 species found.

The May outing at Bradfield attracted 17 people, and exactly 100 species of plants were found, including some very good clumps of Bitter Vetch, and superb displays of Bluebells and Early-purple Orchids. An outing not to have been missed!

Sadly, there were only six of us on the June walk at Waltham-St.-Lawrence. An excellent total of 116 species were found, including the great Wilkinson Yew tree in the parish churchyard, planted by the then rector in 1635.

Another good turn-out of 18 at Gray's Green in July. Fewer species of flowers now, after prolonged dryness, but quite a lot of Common Gromwell, which we don't see too often.

The August walk in the Yattendon to Ashampstead area was notable for a number of species, including Heath Groundsel, Sharp-leaved Fluellen, Corn Spurrey, and two planted aliens, Buckwheat and *Phacelia tanacetifolia*, probably grown for birdseed. An interesting sideline on this walk was the 13th century church at Ashampstead, which has many old wall paintings, also dating from the 13th century.

Finally, the September walk at Mortimer was notable for Leopardsbane and a narrow-leaved Water-starwort, whose species needs checking.

As always these walks were enlivened with Ken Thomas' fascinating talks about local churches, buildings and characters. Many thanks to him for some interesting hours.

More people in the coming season please - these walks are too good to miss!

MEETINGS

Meryl Beek

The 1995-96 winter programme has been exceptional in the diverse approaches to natural history received through the eight lectures. Brian Baker is thanked for arranging this excellent programme.

1995

On 26th October, when 42 people were present, the work of the Kennet Otter Project was outlined by Martin Sabinet. The project aims to encourage natural recolonisation of the Kennet by improving the riverside vegetation and providing breeding and resting places for otters. The return of Berkshire otters is awaited!

Dr Islwyn Thomas, from the Defence Research Agency, described to 43 members and friends on 9th November, how images of the earth are obtained from orbiting satellites. Natural history-wise, satellites are interesting in that they show land use changes, including deforestation and desert enlargement. Satellite photographs of Reading gave members a really new perspective of their locality. (A précis of Dr Thomas' talk appears on page 8 Editor).

There was a welcome return of George Osmond on 23rd November, when 47 people were taken in imagination to the Spanish Pyrennes - at a brisk pace and laced with humour. Plants, butterflies and the magnificent landscape were well illustrated.

1996

An outstanding lecture on the Mount Roraima region, which lies on the borders of Guyana, Brazil and Venezuela, was given by Peter Brandham from Kew on 11th January to 45 people. Interesting and curious plants, including large showy orchids, saprophytes, carnivores, bromeliads and ferns, were wonderfully illustrated. Sorry if you missed it!

Martin Sell's bird lecture helped many to identify some of the more difficult and elusive "little brown jobs" on 25th January. 39 members were present. Thank you Martin!

Brian Baker stepped into the breach on 8th February, when the allotted speaker was unable to come. Brian spoke on "A Field Naturalist in the Kennet valley". High water quality there is evidenced by the wealth of stoneflies, may flies, caddis and dragonflies. A cause for concern is the diminution of reed bed habitat. 33 were present. Thank you Brian!

On 22nd February Roland Fox of the Department of Horticulture at Reading University spoke on "Diseases in the Garden" which he described systematically through seedlings, cuttings, roots, stems, leaves and flowers. The 33 present just hoped that they don't encounter all these diseases in their gardens!

On 7th March Denys Ovenden, a natural history artist, spoke enliveningly to 47 members of his work as an illustrator, with its joys and pitfalls. He brought some of his fine art work which all admired.

In addition, an innovation was a Christmas Party on 7th December, with natural history quiz games and Christmas fare. This successful venture is to be repeated next year.

The usual members' evening was held on 21st March with 41 people attending. Contributions included Alan Burt's microscopical slides of British flower seeds, Alan Brickstock's memories of the Society's excursions of 1995, Kit Brownlee's microfungi, Graham Vick's Venezuelan and Cameroon dragonflies, Martin Harvey on conservation in Berkshire and finally Shirley Townend told us in Robert Southey's words - "How the water comes down at Lodore".

A season of real enjoyment - as well as of interest and learning!

OBITUARIES

Eileen Holly

Eileen died tragically from the effects of smoke when her home, in which she had lived for virtually all her life, caught fire on 22nd December 1996. She was aged 89 and had lived life to the full.

In 1930 Eileen became an uncertificated teacher of Biology at Boyne Hill Girls School in Maidenhead. She retired in 1973, by which time she had become Deputy Head. After retiring she helped out at Gillott's School in Henley and Icknield School at Watlington. When the bus service was scaled down in the 1960's she bought a motor-bike which she rode in all weathers and only gave it up when she was 84.

She had always been interested in wild flowers, orchids in particular. The reference in V.S. Summerhayes book 'Wild Orchids of Britain' to a schoolgirl, who in June 1923 found the Ghost Orchid, *Epipogium aphyllum*, near Henley-on-Thames, was to Eileen Holly.

Eileen joined our Society in 1974 though she was also a member of the Henley Society. She was President for the years 1986 and 1987 and was elected a Honorary member in 1993. She was also a member of BBONT and was particularly interested in the Warburg Reserve. She travelled widely, more so after retirement, bird watching in the Orkneys and plant hunting in Europe from Spain to Bulgaria as well as on Mediterranean islands and in the United States.

As well as her interest in Natural History she enjoyed Morris and Country Dancing and was an active member of the Red Cross.

She will be greatly missed at both indoor and outdoor meetings.

Vera N. Paul O.B.E.

Frank Butcher

Frank, a member of the Society for many years, died on 13th December 1996, after more than a year's hard fight against lung and liver cancer. Although he did not have a special interest in a particular branch of Natural History, Frank very much enjoyed the Society's lectures, the walks and the excursions. In particular he appreciated the many opportunities they provided for becoming aware of the finer details of the natural world around us and the resulting satisfaction to be gained from such knowledge.

George Lucy

Joy LeMare

Joy, who died suddenly on 17th December 1996, was a member of the Society from 1973 to 1987 when she and her husband, Dr Peter LeMare left Reading for retirement in the Lake District. She was an active member of the Society and as Winter Programme Secretary from 1976 to 1981 organised a series of lectures noted for quality and range of interest. Those long-time members of the Society will remember her as a very caring person, full of energy and willing to try anything. Involved in a number of organisations concerned with people, her home with Peter was open house for overseas students and their families. Her many friends will miss Joy with her zest for life.

Heather Baker

MEMBERSHIP

It is a pleasure to offer congratulations to Dr Sean O'Leary and Miss Tasmin Hussain who were married in the Spring. It is a delight to see Michael Fletcher at meetings again after a period of serious illness. All members will wish him a speedy return to full health.

At the Annual General Meeting the Treasurer reported that membership of the Society numbered 161, two less than in 1995. The Society ended the year with a balance of £712.16.

The Society welcomes the following new members who joined during the year 1996.

Mr. Trevor Blackman

Dr. George and Mrs. Juliet Harris

Mr. Ted and Mrs. Pam Stoneham

THE PLEASURES OF POLLEN

PRESIDENTIAL ADDRESS BY MICHAEL KEITH-LUCAS

Plants disperse their pollen by many different methods. Before the flowering plants first appeared, almost all seed plants were wind-pollinated. The earliest flowering plants however were probably insect-pollinated and only secondarily did some return to wind-pollination. Wind-dispersed pollen, along with fungal spores and dust are part of the air we breathe. On every square centimetre of surface of the British Isles some 50,000 pollen grains land every year - a prodigious amount in total if you measure the area of the British Isles in square centimetres! Not only do they fall out over the land but also over the sea, and there, because of the almost indestructible nature of the outer wall of the pollen grain, they preserve in the sediment. If someone could manufacture this indestructible substance, sporopollenin, and market it as a plastic, he/she would probably become a millionaire - it is elastic, waterproof, incredibly tough, and absorbs ultra-violet radiation (so protecting the living contents while they blow about in the atmosphere). The pollen and spores which fall in the oceans give us an almost complete record of all the plants which have lived in the past which dispersed their pollen or spores by wind. One can see how they change or evolve with time, and they tell us about the range of plants that existed in the past. However, the further back we go, the less often do we have fossils of the whole plant from which the pollen or spores came, and so we may find the pollen of a whole group of plants which is now extinct with no hint of what the whole plant may have looked like - which makes this a particularly frustrating area of study!

The gymnosperms, which include the conifers and their relatives, usually had their male and female parts in separate cones, often on separate trees, as for instance the yew. This is a way of avoiding self-pollination. Flowering plants, or angiosperms, however, probably had flowers containing organs of both sexes when they first appeared, and have gone to elaborate lengths to prevent self-pollination. Those that returned to wind-pollination then separated the two sexes again, usually on the same plant, as in hazel, for example, but occasionally on different plants, as in poplars. Wind-dispersed pollen tends to be very smooth, dry and of remarkably uniform size. The dryness and smoothness stop the pollen grains from clumping, which would cause them to sediment out of the air faster. The smoothness may also be related to the fact that some wind-dispersed pollen grains gain a + charge while blowing around in dry air, while the stigma of the carpel of the female flower, gains a - charge. The pollen, if dropped in still air close to the female flower, will veer off its path towards it, as the unlike charges attract each other. Any spine or process on the surface of the pollen grain would help to dissipate this charge and prevent the pollen grain from holding its + charge. This mechanism cannot work in gymnosperms which have pollination droplets on their ovules, or between the scales of the cones, which catch the pollen. Water will not hold a charge in the same way as a dry stigma.

The size of the wind-dispersed pollen grain is uniform because if it were too small, the grains would go up into the upper atmosphere and not come down, whereas if they were too big they would sediment out of the air before reaching the female flowers. This selects a size of about 30 micrometres (about one thirtieth of a millimetre) as the optimal size. The grains need a number of thin walled areas through which a pollen tube can emerge to bring about fertilization. To reduce water loss these are usually reduced to small round pores in wind-pollinated species, often with a removable plug or operculum fitting in the pore. These pores vary in number from one in grasses to three in hazel, to a hundred in some *Chenopodiaceae* (goosefoots).

Insect-dispersed pollen doesn't need the uniformity of size on the smooth surface of wind-dispersed pollen. The pollen may be anything from 5 to 500 micrometres and is usually sticky and/or ornamented with spines or processes to help it stick to the insect's body. Some plants such as Fuchsias and Rhododendrons produce pollen grains which clump in groups of four and have long threads on the surface which tangle together, so that if the visiting bee or bird gets one group stuck on its body, all the rest follow in a long string. A bumble-bee can appear quite tied up in these strings after visiting a *Rhododendron* flower.

The pattern on the surface of the pollen serves several functions. It needs to fit with the pollinating animals surface - its hairs, legs, or tongue, for instance, such as the spines on dandelion pollen which fit with the feathery hairs on a bee's body, and it needs to fit with the stigma surface, from which it takes up water before germinating. Many flowers produce two types of stigma with different surface patterns and two types of pollen with surfaces which correspond to these different patterns. Plants with one type of stigma only produce the pollen type which corresponds with the other type of stigma which is only found on another plant. In this way the plants avoid self-pollination.

The range of pollen form in one family of flowering plants can be quite incredible, for example in the Acanthaceae. This is probably related to the great variety of insects employed by that family for their pollination. This variety enables one to be able to identify most plants down to their genus or even their species from their pollen grains alone. This ability is used in a whole range of scientific disciplines, and the rest of this talk will cover some of these uses.

Firstly in forensic science, pollen may be used to track where an individual has been. Pollen on clothing might relate to a particular site, especially if there are rare species growing there. Pollen on the surface of the soil comes largely from the plants growing on that surface, and soil on a person's shoes may therefore reveal where they have been. The different timing of flowering of different species may enable one to say when a body or object was placed in a certain location, as it will only pick up the pollen of those species which flowered after the object was placed there.

Secondly in medical research, pollen is an important allergen. That pollen is part of the air we breathe creates its own problems. The air-borne pollen is of a size that it will normally impact in the nasal passages, unlike fungal spores which tend to be an order of magnitude smaller and thus get right down into the bronchi before they impact. On landing pollen grains tend to release proteins or shorter chain peptides which act as recognition substances. On a stigma the female part of the flower can scan the pollen to see whether it produces the same proteins as itself or different ones, and will only allow the pollen with similar proteins to grow, and set up a barrier against pollen from different species. In self incompatible species this is taken a step further where pollen with identical genes is also prevented from growing, but grains with only slightly different genes are encouraged. Such outbreeding mechanisms allow for more genetic variation in the next generation, and hence more evolutionary potential. In a changing environment, it is such adaptable species which will be selected.

Coming back to the noses and lungs again, where the pollen lands in the nasal mucosa, it cannot distinguish this from the surface of a stigma and it releases its recognition substances. These are the causes of the allergic reaction produced by many people to pollen - hayfever or allergic rhinitis. Pollen tends to be released mainly during the day, so hayfever symptoms often coincide with the peak of production. Fungal spores however tend to be produced during the night and, penetrating further into the respiratory system, more often cause asthma, and this is one of the reasons asthma attacks are more common at night.

Thirdly one can tell where bees have been to collect nectar by looking at the pollen in honey. Knowing how much pollen one gets for a certain amount of nectar from each species visited enables one to calculate how much nectar came from each of the species from a count of the number of pollen grains of such present in the honey. One can tell in this way whether the honey has been adulterated with, say, corn syrup, or whether honeys from different countries have been mixed. Each geographical area tends to produce its own characteristic collection of pollen grains, for example, a honey sample containing *Aacacia*, *Eucalyptus*, *Banksia* and *Hakea* pollen would almost certainly be Australian, and the fact that the different species of *Hakea* often have narrow geographical distributions and each has such distinctive pollen would allow you to say which part of Australia it came from too.

Probably more than anything, pollen has been used for the pollen analysis of sediments and soils. As sediments such as lake muds and peat accumulate, so pollen gets incorporated into the sediments, and, if extracted, can be used to show how the vegetation has responded to changing climate, water levels, human influence and so on. By knowing when particular species arrived in this country after the last glaciation, pollen analysis can be used to date a particular layer in the sediment. This can be of great value in archaeology, though it has now been largely superseded by radiocarbon dating.

More importantly these days, pollen analysis is used to tell us about the environment of Man in the past. Pollen on the surface of soil, for instance, preserves if that soil surface is sealed in antiquity by being buried underneath a stone or a mound of soil. Oxygen is excluded by the covering structure, allowing the pollen to preserve and no further pollen can arrive after the surface has been sealed. When Silbury Hill was excavated recently, it was found that there were no grave goods, but the pollen provided valuable environmental evidence, showing the landscape had already been opened up and chalk grassland has developed in the Neolithic Period when Silbury Hill was built.

Pollen analysis has been used to demonstrate details of past events which could not be documented by any other means. In the Neolithic Period, for instance, short periods of clearance of woodland, followed by cereal cultivation, then pasture and finally returning to woodland can be detected in many pollen

diagrams, particularly from northern and western Britain. Originally these phases were thought to represent shifting cultivation, but radiocarbon dating now suggests that they were too long to be interpreted in this way. Besides, in these areas, there are abundant traces of permanent field walls around the cultivated areas, implying that the same fields were used continuously, rather than just for a short period. A more recent interpretation is that, following a prolonged period of cultivation, soil erosion and leaching led to failure of crops, starvation, a reduced population depending more on animals (hence the grazed grassland) and finally abandonment of the settlement. This may have been linked to climatic deterioration as well.

In some areas the woodlands never came back following abandonment. This was particularly true of areas with poor soils, often on hard, slow-weathering rocks. Here, after prolonged grazing, which reduced the total available nutrients, earthworms moved out and, with no deep-rooted trees or worms to bring nutrients up to the surface, a one-way downward movement of the remaining nutrients was set in motion. The leached podzolic soils which resulted then gave rise to heathland, or, in the areas with higher rainfall, blanket peat. The remains of the original forests and the early settlements can often still be found under the peat, where the waterlogging and acidity have preserved the organic remains particularly well.

Not all heaths and moorland were formed in the Neolithic Period. In the south of Britain many heathlands were formed when Mesolithic peoples first cleared the woodland, while in much of the North Yorkshire Moors the moorland did not develop until the historic period. Some of the first clearances may have been as recent as the Tudor Period.

The pollen record may not only be found in soils and sediments, but also in artificially built up layers such as the amphitheatre floor at Silchester, which revealed a steadily increasing amount of woodland in the area since the Roman Period. One factor which would explain this would be the creation of the Royal Forest of Pamber by the Normans.

In summary, pollen is not only very beautiful to look at under the microscope, but it is also remarkably useful in a wide variety of disciplines.

On **National Poetry Day**, Graham Saunders' reply to the Presidential Address and vote of thanks to the Retiring President took a form appropriate to the day.

POLLEN GRAINS

A seed drops to the ground
 The cycle of life starts around
 Rain and sun cause plants to grow
 Flowers erupt, and from male stamens flow
 Pollen grains like miniature snow

Released by wind they float about
 A few, by chance, on a lady flower alight
 Once arrived, she has no chance
 He's got her in his pollinating embrace!

Her looks and figure fade
 Plump seeds are within her made
 A seed drops to the ground
 The cycle of life starts around

	And wot about all those	
	millions and billions	
	and trillions and zillions	
	of other	
	Pollen grains in the breeze,	
	Up yer nose and make yer sneeze	
	Hay hay fever TISHOO!	

Imaging from Space

**Précis of a talk given to the Society on 9th. November 1995 by
Dr Islwyn Thomas of the Defence Research Agency, Farnborough**

Introduction

The technique of obtaining information from a distance about an object is known as Remote Sensing. Observing objects dates back to the caveman who, in order to have a panoramic view of his surroundings would have to climb to higher ground. Two of the five human sensors are based on direct contact with the object sensed, the other three are remote, so our knowledge of the world is derived largely from a capacity for gathering information from a distance. Take our dominant sense - sight. We see because our eyes are capable of making visual sense of rays of sunlight reflected from whatever our eyes are looking at. The rays come in different wavelengths and these we interpret as different colours. Visible light is not the only form of radiation that occurs on Earth. It is just one constituent of the electromagnetic spectrum which extends from gamma rays, X rays, ultra-violet rays, visible light and infra-red rays to microwave and radio waves. All surfaces reflect sunlight but to different degrees; depending on the particular surface certain wavelengths of radiation will be absorbed and other reflected. This explains why some objects look blue, others red and so on. It also explains why different environmental features exhibit distinct and different spectral patterns.

Keeping a record of observations from space arose from photography mainly developed during the 1914 - 1918 war. As aviation developed aircraft carried cameras which took countless photographs of the various landscapes. These black-and-white prints now seem archaic when compared with modern methods. Photography is still useful in that it can provide a high resolution record but it is restricted to the visible and near infra-red wavelengths and requires return of the film to earth.

Data Transmission

Images recorded in digital form, not restricted to the photographic region of the spectrum, can be transmitted to a ground receiving station while a satellite is in orbit. These images are in a form suitable for processing systems to reveal detail in the data. Digital images are formed using electronic sensors building up a picture line by line from the forward motion of the satellite. Each line is recorded either by using large sensor arrays to record whole lines at a time, or by using a mirror vibrating at right angles to the satellite's motion which reflects radiation onto an individual sensor for each waveband. Each line of data is broken into a string of numbers representing the brightness of a spot, referred to as a picture element (pixel), on the ground. These digital data may be transmitted in real-time directly to a ground receiving station, or to a relaying satellite, or it can be recorded on board to be transmitted later when the satellite is within range of the receiving station.

Remote sensing devices which point these sensors to the Earth and wait for information to come up to them are called passive. Those that do not are called active and that classification brings us to radar. If clouds intervene no radiation from the Earth's surface will reach them. However good the resolution we come back to the cloudiness impairing regular image acquisition from satellites with passive sensors. In Britain twenty or more possibilities a year may end up as three images in any particular area. A radar based system gets round the problem by simply ignoring it - that is ignoring the visible and infra-red as sources of information. It generates its own pulsed beam of radiation which can penetrate through clouds. Radar, therefore, is an all-weather system and, because it is not dependant on sunlight, it is effective by night or day.

Types of Satellite Orbits

Satellites used for remote sensing are given one of two orbits: polar or geostationary. Satellites in polar orbits, highly inclined to the equator, pass over a wide latitude range and cover most of the globe. These are usually in sun-synchronous orbit, planned so that the Earth rotates beneath them at a rate which keeps the satellites over points approximately the same local time throughout their north-south passage. The orbit then goes from south to north over the night-side of the Earth before beginning another north to south path further west at the same local time.

A geostationary satellite's orbital period matches the rotation of the Earth so that the satellite appears over the same spot almost indefinitely.

Types of Satellite

The most widely used satellite remote sensing data are those from the Landsat which began in July 1972. The first three in the series were placed in a polar sun-synchronous orbit at about 900 km, overpassing the ground at 09.30 local time. Complete coverage of the globe was achieved in 18 days with a pixel size of 80 metres in four visible and near infra-red bands. The succeeding series Landsat 4 and 5 have a wider spectral band from visible blue to thermal infra-red, a global repeat every 16 days at an altitude of 700 km and a pixel size of 30 metres.

The first European satellite, SPOT, a mostly French satellite, was launched in February 1986, again in a near polar sun-synchronous orbit, at an altitude of 830 km. The sensor system has steerable optics, that is the instrument can look to one side or the other of the satellite ground track, with a pixel size of 10 metres. A combination of two such images enables surface topography to be displayed and measured by the use of the stereoscopic effect.

Tiros satellites in sun-synchronous orbit at approximately 830 km give close-up repeat coverage of middle and lower latitudes.

Satellites in higher geostationary orbits provide continuous low resolution coverage of almost complete hemispheres. A good example is the European Space Agency's Meteosat situated 0° N and 0° W which has produced half hourly images in the visible, water vapour infra-red and thermal infra-red bands since 1977.

The European Earth Resources Satellite (ERS1), which was launched in July 1991, carries a number of instruments including an Active Microwave Instrument which combines a Synthetic Aperture Radar operating in image or wave mode and a Wind Scatterometer, a Radar Altimeter and a Laser Retroreflector. In addition there are three further instruments; the Along Track Scanning Radiometer, the Microwave Sounder and the Precise Range and Range Rate Equipment.

Processing the Information

To reconstruct the images from the data transmitted by the satellite, the ground station decodes the binary data and allocates the appropriate tone to each pixel. The images can be displayed on a monitor screen and they will be raw and basic; thus the need for computer processing. Initially the data have to be corrected for earth curvature, earth rotation and altitude errors. The image has next to be adjusted to map co-ordinates and this is achieved by identifying features, such as headlands, dams and airfields, which are both on the image and on a map, and selected for a least-squares fit. When in this form comparison can be made between images separated by a time-lapse and changes monitored. Other enhancements, such as increasing the brightness and contrast of the individual pixels, forming colour composites, density slicing and classification are means of making the interpretation of the wealth of information within the data come within the grasp of the user.

Uses of Remote Sensed Data

The use of geostationary and polar orbiting satellites regularly transmitting their images via TV weather forecasts is now commonplace. Whilst designed primarily for meteorological applications, the acquisition frequency and easy availability of data give Meteosat some potential for the monitoring of large scale phenomena, such as changes to flooded areas. The changing water area of Lake Chad and the upper Zambezi flood plain were both investigated with some success. Weather satellites can also keep an eye on marine pollution such as oil slicks and sea surface temperatures are useful in predicting movements of fish. Combine weather data on drought with Earth resources sensing data on crop acreages and we have a base for increasing the accuracy of harvest-yield predictions.

Geology has been one of remote sensing's most fruitful fields, for satellites are perfectly placed to supply data contributing to a quick, economical and comprehensive appraisal of geological structure. Multi-band sensing can reveal faulting and lineaments, the distribution of mineral-rich zones and vegetation effects associated with underlying base-metal deposits or leakage of volatiles from oil fields.

There is also land-use mapping, soil mapping and terrain analysis. In many developing countries the relatively low cost of remote sensing has transformed the approach to these. The same goes for crop monitoring damage assessment such as flooding and storms, snow and vegetation growth monitoring and the detection of soil moisture conducive to local breeding.

The 16 day cycle of Landsat coverage enables the monitoring of crops as they mature or are affected by disease. Changes in land use such as urban development over the years can be analysed. Techniques are being developed to assess damage to forests by acid rain.

With better quality data from the SPOT satellite, civil engineers and geologists can make use of the information to avoid expensive mistakes, such as the laying out of a road across soil which is likely to move. Satellites are also used to study sediment swirling through and settling above the Thames Barrier. More recent studies include the monitoring of sand and gravel workings, surveying waste disposal sites and the loss of countryside to urban development.

The radar based ERS1 data, though more difficult to interpret, are being used to survey the oceans and sea ice to provide data for climatic modelling and to help answer questions about ocean-atmospheric interaction. It will also give information on ocean circulation and the mass balance of the Antarctic and Arctic ice sheets and will be able to detect pollution. The data are also used in forestry, geology and agricultural studies. It has the capability of showing railway lines particularly well.

Editor's note.

Dr Thomas' talk was accompanied with slides well illustrating the terrestrial patterns and features that were described. Many were local to the Reading area and showed the precision which can be achieved even down to individual properties.

THE CLOUDED YELLOW : A COLONY IN BERKSHIRE

David Young

The Clouded Yellow butterfly, *Colias croceus* (Geoff.), is well known as being a migrant species to the British Isles. Its natural habitats are in the warmer regions of southern Europe and North Africa where it is continually brooded, for the butterfly has no real hibernating phase which would allow it to successfully survive the cold or damp winters of more northern regions save in quite exceptional circumstances. In this respect it is less adaptable than its near relation the Pale Clouded Yellow, *C. hyale* (L.) where there is some evidence of successful hibernation, even in Britain, in exceptionally mild or dry winters.

The number of Clouded Yellows which reach our shores varies enormously from year to year and the entomological records faithfully record the years of exceptional numbers, 1947 and 1983 being the most recent. Migrants usually arrive along the east and south coasts, from Norfolk around to Cornwall, but this is not always so. I remember seeing, with some surprise, a Clouded Yellow flying up a wind and wave swept cliff on the Isle of Skye in May 1992. In that year at least some of the migrants took a route up through Ireland and on into Scotland and there were many subsequent records of both migrants, and local breeding, from all over Ireland, Scotland and the Isles.

The Clouded Yellow is a bright and cheerful sight to all those with an interest in butterflies or natural history in general. To the entomologist its interest lies, additionally, in the various colour forms exhibited by the female. In the normal, or type, form the ground colour of the wings is a bright orange-yellow marginally darker than that of the male. In the form *helice* Hubner the ground colour is normally a creamy-white. In both forms of the female there is variation in the size of the yellow blotches in the dark marginal band to both the fore and hind wings. However the situation is somewhat more complicated, at least as far as some text books are concerned, for in form *helice* the ground colour can vary from lemon yellow through to pure white. The lemon variety was named ab. *helicina* by Oberthur whilst the pure white form was named ab. *alba* by Lempke, both eminent entomologists of their day. However there seems to be a complete graduation between the pale lemon ground colour and the white and Ford (1945) argues that there is no justification in naming arbitrary stages within a natural series of variation. No doubt he is right and many modern authoritative works illustrate all colour forms as being form *helice*.

With its bright coloration, and active flight, it is not surprising that the Clouded Yellow gained the attention of the earliest entomologists. It was first figured by Mouffet and others in the *Theatrum Insectorum* published, in Latin, in 1634 and regarded as the first work on British lepidoptera. It must

have been a puzzling insect to those early entomologists who had no understanding of migration to explain its irregular occurrence in a given locality. Still more puzzling to them must have been the even rarer sighting of the pale form of the female Clouded Yellow for the concept of genetics and polymorphism was still to arrive on the scientific scene. With poor communications, and few fellow entomologists with whom to compare notes, confusion clearly reigned and the Clouded Yellow became the proud owner of several vernacular and scientific names over the ensuing centuries. Care needs to be taken when interpreting old records for as recently as 1896 Kirby regarded *hyale* as being the correct name for the Clouded Yellow and others will have followed his example. Add to this the difficulty in distinguishing in flight between the pale form of the female Clouded Yellow and the female Pale Clouded Yellow, and even between the lemon yellow form of the female Clouded Yellow and the male Pale Clouded Yellow, and one begins to consider taking up bird watching as an easier option. To add insult to injury in 1948 Berger, a Belgian entomologist, demonstrated that the Pale Clouded Yellow was in fact two species, The Pale Clouded Yellow and *C. alfarcariensis* (Berger's Clouded Yellow or The New Clouded Yellow depending on which book you are reading) both of which reach Britain as rare migrants and which are virtually impossible to distinguish from each other, and with some forms of the female Clouded Yellow whilst in flight. Suffice to say that any records of The Pale Clouded Yellow or Berger's Clouded Yellow, without a voucher specimen, have to be regarded as somewhat suspect these days.

In the migratory phase the Clouded Yellow has a fast and persistent flight but once this has passed, whilst retaining a strong flight, it becomes much more territorial in its habits. In most years migrants seem to settle down to domestic bliss soon after their arrival in Britain with few dispersing inland. Thus whilst the butterfly is a regular migrant to Britain it is most irregular in its appearance as far as Berkshire is concerned. In his excellent book "The Butterflies & Moths of Berkshire" Brian Baker summarises the records for Berkshire and in only 1928, 1938, 1941, 1947, 1949, 1983 and 1986 are there reasonable numbers recorded. Back copies of "The Reading Naturalist" show two sightings in 1987 and no records since. This probably does not show the true position, for colonies and individuals could easily live unnoticed in a corner of a field somewhere, but it is indicative of a comparative scarcity in recent years.

It was, therefore, a pleasant surprise to discover a flourishing colony of this attractive insect in a large field of Lucerne, apparently straddling the border between the parishes of Padworth and Ufton Nervet, map reference SU 66/62 and 67/62. A worn female Clouded Yellow was seen in this area on 27th July, with a second specimen seen on 4th August. These are likely to have been primary migrants rather than the offspring of earlier migrants which arrived with, and just after, the massive migrations of the Painted Lady, *Cynthia cardui* (L.), in late May and early June and which rapidly became such a feature of the summer months.

A visit to this field on 17th August showed a strong colony of 50 flying in hot sunshine and including two form *helice* (creamy white ground colour) one fresh and newly emerged and one very worn. Most specimens were in fresh condition and will have resulted from ova laid some six or seven weeks earlier. The following day the count rose to seventy and, again, included two form *helice* one freshly emerged and one worn. The two worn *helice*, and one worn type female, were retained for breeding. The Clouded Yellows were very active in the sunny conditions but showed a marked tendency to be very territorial within the area of the field. There was no sign of dispersal from the field. The colony was kept under constant observation through August, September, October and into November. during which time the population level fell back slowly in numbers to around forty at the end of September, around twenty five in early October and approximately fifteen at the end of that month. There was plenty of evidence of further local breeding (fresh specimens or those still drying their wings) to replace natural losses. The butterfly remained distinctly territorial, different areas within the field becoming the most favoured as the ebb and flow of gains and losses continued. No more *helice* were seen until 13th October when the colony stood at approximately twenty five individuals and included four *helice* (two lemon yellow *helicina* and two creamy white *helice*). Over the next five days the population seemed to stabilise at approximately thirty and produced a further six *helice* (two *helicina*, two *alba* and two normal *helice*). In the continuing warm autumn weather breeding continued with three pairs being seen *in copula* on 13th October, two on 14th and one on 16th October. A further *helice* was noted on 25th October amongst the seventeen butterflies counted but there were some signs of dispersal aided, or caused, by strong winds. Despite strong gales and heavy rain during the last week, notably over 27th and 28th of the month, the colony continued to survive and fifteen were counted in sunshine on the morning of 1st November. With decreasing temperature during October they became generally less active on the wing and more inclined to rest on the footpath in the lee of a hedge or to bask in the sunshine angled at 180 degrees to the sun's rays. The last sightings of the butterfly was on the 3 November when six were counted. The following days brought strong winds and heavy rain, followed

by the first frosts of the winter and, doubtless, the adult insects died off during this period although larva may have persisted for some time.

The three worn females taken for breeding on 17th and 18th August were placed in a cage containing growing Lucerne and put in a sunny position, the butterflies being fed with a solution of honey and sugar on a wad of cotton wool. In such conditions the female will lay eggs freely. Frowhawk records that one female laid approximately 500 eggs over a period of eight days. The three females laid a total of seventy, which hatched in 5 to 7 days. The larvae fed, and grew rapidly, on the growing foodplant, being transferred to cut foodplant in the last instar. Most pupated on the sides of the cage or on the netting cover. There were no losses during the breeding cycle and 70 butterflies emerged as follows:

24th September	1 male		
25th	3 males	1 female	(1 type)
26th	2 males	2 females	(2 type)
27th	11 males	9 females	(9 type)
28th	5 males	1 female	(1 type)
29th	11 males	6 females	(5 type and 1 <i>helice</i>)
30th	1 male	5 females	(3 type and 2 <i>helice</i>)
1st October	1 male	4 female	(5 type)
2nd	2 males	4 females	(4 type)
3rd	1 male		

Totals	38 males	32 females	(29 type and 3 <i>helice</i>)

Most of the butterflies were released back into the colony on the 28th September and 1st October. The ratio of male:female is statistically 50:50 which is to be expected but contrasts with casual observations in the field when males seem to greatly outnumber females. There seems to be a tendency towards males emerging before the bulk of the female population and this is common to most species of butterfly in natural conditions. The bred *helice* were all of the pale lemon yellow *helicina* form and represented 9.3% of the total females bred. Most authoritative text books quote between 5% and 15% as being the rate of occurrence of *helice* in wild populations. This is an interesting range as it is far too high and regular for *helice* to be a "genetic freak" but there must be a strong limiting factor preventing *helice* from achieving the 1:3 ratio that might otherwise be expected. However my breeding programme was highly unscientific if only because I was unable to keep the females, and their offspring, separate and to have the opportunity to continue selective pairings. Thus I shall not be including these results in any post retirement Ph.D thesis that I may otherwise feel compelled to write.

References

- The Butterflies and Moths of Berkshire, B.R.Baker, Hedera Press (1994)
 The Moths & Butterflies of Great Britain & Ireland, (vol. 7:1), Harley Books (1989)
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Editor's Space-filler

In 1982 my wife and I visited the island of Cos in the Aegean and there we saw and purchased a small marble carving of Athena's little owl as portrayed on the ancient coins of Athens. Since then we have bought small owl ornaments from various countries and as a matter of interest have looked up the word for an owl in the language of those countries. Below is a list of 11 European countries and 11 words. Perhaps members would like to try matching word to country. As a reward for the first correct answer received I promise to include the member's space-filler in the next issue of 'The Naturalist'!

France, Germany, Greece, Ireland, Italy, Malta, Norway, Portugal, Spain, Turkey, Wales.

gufo, ugle, coruja, κουκουβация, eule, buho, ulchabhán, kokka, tylluan, hibou, baykuş.

The Monkey Orchid at Hartslock Nature Reserve

Christopher M. Raper

(Hartslock Volunteer Reserve Manager)

Many of you will be familiar with the Hartslock N.R. near Goring and with the Monkey Orchids that grow there. Over the years there have been very few published statistics about the site or the orchid colony.

Hartslock N.R. is a small reserve (4.5 acres - 11 hectares) but because of its very special flora and fauna it has a permanent summer warden living in a caravan on-site. Most people who visit assume that the warden is there to act as a 24 hour guard on the rare plants but, thankfully, nowadays we suffer very little malicious damage - unless you include mice, rabbits, deer and snails! The most important task the warden performs is the statistical monitoring of the rare plants and animals. Monitoring takes the form of regularly measuring and mapping rare plants and recording invertebrates on regular transects around the reserve.

I have been involved with Hartslock for at least 7 years (I forget exactly when I started visiting!) and every year I have taken on more and more jobs until now I have adopted the title of Volunteer Reserve Manager.

For the last two years I have been collating and computerising all the information that has been gathered by wardens and visitors, for the creation of a centralised database. From this the information can be cross-checked to ensure there are as few mistakes as possible. It will enable a better analysis to be made and hopefully we can learn from any trends that are shown.

The tables which follow are a copy of one of the reports that I submit every year as part of the summer warden's report. It may contain details that are of limited interest to the casual observer but it is included in its entirety.

The Wardens for the period covered are listed below:

1977	Trevor Williams
1978	Graham Bellamy
1979	Sue Everett
1980/81	Graham Bellamy and the Peter Davis Group
1982/83	Peter Davis and his Sixth Form Group
1984	Andrew Mitchell
1985	Vacant
1986	Barry Scampion
1987	Danny Alder and Andrew Rampton
1988	Daryl Kempter
1989	Alice Coleman
1990	Matthew Ellis
1991/92/93	Simon Holden
1994	Adrian Petyt
1995	Becca Flintham
1996	Felicity Hayes and Sean Grundy

As a footnote, if you would like to help out at Hartslock in any capacity or would like more information please give me a call on **0118 984 3574**. We are always in need of people to help to show visitors around in the summer. For the more energetic there is a monthly work party to undertake physical tasks around the reserve.

Analysis of Hartslock N.R. Warden's Reports 1977-1986

Year	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Wardening Period										
Start date	17 May	13 May	19 May	18 May	16 May	17 May		15 May		19 May
Finish date	19 Jun	25 Jun	1 Jul	29 Jun	28 Jun	18 Jun		19 Jul		15 Jul
Duration	33	43	43	42	43	32		65		57
Flowering period										
Start date	19 May	20 May	28 May	18 May	16 May					19 May
Finish date	30 May	3 Jun		29 Jun	28 Jun					21 Jun
Duration	11	14		42	43					33
Weather summary										
Maximum temperature °C										
Date of maximum										
Minimum temperature °C										
Date of minimum										
Wettest day										
Rainfall that day mm										
Total rainfall mm										
Number of wet days										
Plant statistics										
Flowering plants	3	11	25	12	16	14	14	16	28	39
Aborted / failed plants				2						4
Vegetative plants	5	13	13	10						21
Total number of plants	8	24	38	22		14		16	28	60
Newly recorded plants										39
Number that flowered										21
Show plant(s)										
% flowering	38	46	66	55						65
% failures	0	0	0	17						10
% plant increase		67	37	- 73						53
% flower increase		73	56	- 108						28
Seed pods by hand		87								163
Seed pods naturally										60
Total seed pods		87								223
Pods per spike		7.91								6.37
Visitors to the reserve										
Locals										
Naturalists										
General public										
Total visitors				142						
During flowering period									330	510

Analysis of Hartslock N.R. Warden's Reports 1987-1996

1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Year
Wardening Period										
11 May	8 May	24 Apr	30 Apr	28 Apr	11 Apr	11 Apr	11 Apr	18 Apr	20 Apr	Start date
18 Aug	24 Sep	18 Aug	2 Sep	17 Aug	28 Aug	27 Aug	19 Aug	13 Aug	10 Aug	Finish date
99	139	116	125	111	139	138	130	117	112	Duration
Flowering period										
14 May	5 May	7 May	9 May	19 May	15 May	1 May	2 May	4 May	20 May	Start date
24 Jun	26 Jun	13 Jun	24 May	16 Jun	30 May	6 Jun	20 Jun	14 Jun	16 Jun	Finish date
41	52	37	15	28	15	36	49	41	27	Duration
Weather summary										
	24.4	33.0	35.0	26.5	28.0	26.5	30.0	34.0	29.5	Maximum temperature °C
	6 Aug	27 Jul	4 Aug	29 Jul	29 Jun	5 Jul	25 Jul	3 Aug	23 Jul	Date of maximum
	0	2	4	0	0.5	1	1	-3	-0.5	Minimum temperature °C
	20 May	2 Jun	19 May	1 May	15 Apr	5 May	24 May	19 Apr	4 May	Date of minimum
	3 Jul	25 May	19 Aug	29 Apr	29 May	20 May	28 Jul	31 May	7 Jul	Wettest day
	5.7	5.9			30.9	15	21	17	32	Rainfall that day mm
			123.6	191.3				135.5	202.7	Total rainfall mm
	59	25	35	52	61	63	50	30	33	Number of wet days
Plant statistics										
28	35	14	5	12	11	19	66	72	68	Flowering plants
9		4	3	1			2	20	19	Aborted / failed plants
31	11	52	53	56	59	41	28	51	61	Vegetative plants
59	46	66	58	68	70	60	94	123	129	Total number of plants
8	7	19	4	12	3	54	43	47	18	Newly recorded plants
3	7	0	2	4	2	8	32	20	6	Number that flowered
	40,41,42						All	All	All	Show plant(s)
47	76	21	9	18	16	32	70	59	53	% flowering
32	0	29	60	8	0	0	3	28	28	% failures
-2	-28	30	-14	15	3	-17	36	24	5	% plant increase
-39	20	-150	-180	58	-9	42	71	8	-6	% flower increase
3	1	0	1	19	18	29	2	0	0	Seed pods by hand
12	65	9	0	21	19	40	206	128	94	Seed pods naturally
15	66	9	1	40	37	69	208	128	94	Total seed pods
0.79	1.89	0.90	0.50	3.64	3.36	3.63	3.25	2.46	1.92	Pods per spike
Visitors to the reserve										
		79	456	423	644	884	294			Locals
		322	264	360	342	620	247			Naturalists
		288	278	289	276	316	357			General public
569	775	689	998	1072	1262	1820	898	765	997	Total visitors
331	419	362	135	365	221	709	470	369	235	During flowering period

THE RECORDERS REPORT FOR BOTANY 1996

Betty M. Newman

About 500 records were received from members this year, spread quite widely over our collecting area within a 20 mile radius of Reading. Looking at the Society's records as a whole, the country to the south and east of Reading has been least well covered. That area is less attractive for walking, but perhaps special efforts could be made in the next three seasons so that we end the 20th century with as complete a coverage as possible of our approximately 1200 square miles.

One of the records received this year, *Pilosella flagellaris flagellaris* found at Bucklebury, is a first for the Society.

The selection of records sent in by members is arranged according to the "List of Vascular Plants of the British Isles" by D.H. Kent 1992. Where a family name has changed the older name is in brackets after the modern one. An alien taxon is indicated by an asterisk (*) and the English names are from "English Names of Wild Flowers" by Dony, Jury and Perring 1986.

EQUISETACEAE

Equisetum sylvaticum L. **Wood Horsetail**
Fox and Hounds pit, Reading, 11.6.96 (AB).

Equisetum telmateia Ehrh. **Great Horsetail**
Spencers Wood, 5.8.96 (C&RG).

ASPLENIACEAE

Phyllitis scolopendrium (L.) Newman **Hart's-tongue**
Bradfield area, 15.5.96 (AB); Spencers Wood, 5.8.96 (C&RG).

Asplenium adiantum nigrum L. **Black Spleenwort**
Eversley church, 25.8.96 (C&RG).

BLECHNACEAE

Blechnum spicant (L.) Roth **Hard Fern**
Gorrick Plantation, S of Wokingham, 16.7.96 (C&RG).

NYMPHAEACEAE

Nymphaea alba L. **White Water-lily**
Stratfield Saye, 14.5.96 (AB).

RANUNCULACEAE

Helleborus viridis L. **Green Hellebore**
Bix, 28.5.96 (AB).

Eranthis hyemalis* (L.) Salisb. **Winter Aconite
Large stand at Swallowfield churchyard, 2.2.96 (C&RG).

Ranunculus lingua L. **Greater Spearwort**
Three Firs Pond, Burghfield Common, 16.7.96 (C&RG).

Ranunculus omiophyllus Ten. **Round-leaved Crowfoot**
Bramshill Plantation, 23.5.96 (C&RG).

FUMARIACEAE

Ceratocapnos claviculata (L.) Liden **Climbing Corydalis**
Bucklebury Lower Common, 13.4.96 (MWS).

URTICACEAE

Parietaria judaica L. **Pellitory-of-the-wall**
Swallowfield churchyard, 9.8.96 (C&RG).

CHENOPODIACEAE

Chenopodium ficifolium Smith **Fig-leaved Goosefoot**
Bucklebury, corner of field by Shallow Ford, 7.10.96 (MWS).

CARYOPHYLLACEAE

Spergularia rubra (L.) J.S. Presl & C. Presl **Sand Spurrey**
Hockett Field, near Bucklebury, by entrance, 15.9.96 (MWS).

POLYGONACEAE

Fagopyrum esculentum* Moench **Buckwheat
Aldworth/Churn area, 17.8.96 (AB).

CLUSIACEAE (HYPERICACEAE)

Hypericum montanum L. **Pale St John's-wort**
Ashampstead Common, footpath round S clearing, 20.8.96 (MWS).
The Society first had a record here in 1964.

MALVACEAE

Malva moscata L. **Musk Mallow**
Bader Way, Woodley, 12.7.96 (C&RG); Hampstead Norreys, 27.7.96; Yattendon/Ashampstead area, 21.8.96 (AB).

VIOLACEAE

Viola palustris L. **Marsh Violet**
Padworth Gully, Padworth Common, 25.5.96 (KHG).

BRASSICACEAE (CRUCIFERAE)

Rorippa sylvestris (L.) Besser **Creeping Yellow-cress**
Ashenbury Park, Woodley, 24.7.96 (C&RG).

Cochlearia danica L. **Danish Scurvy-grass**
M4 underpass at Bottingham Shaw, NW of roadside N of M4 (MWS).
A shore plant now spreading along salt-treated roads.

PRIMULACEAE

Primula veris L. and *P. veris* x *vulgaris* = *P. x polyantha* Miller **Cowslip and False Oxlip**
Growing together (no *P. vulgaris* present) at Bramshill Plantation, 23.5.96 (C&RG).

Lysimachia punctata* L. **Dotted Loosestrife
Near Three Firs Pond, Burghfield Common, 21.7.96 (C&RG).

CRASSULACEAE

Sedum telephium L. **Orpine**

Checkendon, 17.4.96; Greys Green, 17.7.96 (AB); Riseley, 10.9.96 (C&RG).

SAXIFRAGACEAE

Chrysosplenium oppositifolium L. **Opposite-leaved Golden-saxifrage**

Padworth Gully, Padworth Common, 25.5.96. Dominant over an area of several square metres (KHG).

ROSACEAE

Agrimonia procera Wallr. **Fragrant Agrimony**

Burnhill Common, abundant on concrete area at roadside. Many flowering spikes had fasciate tips, 19.7.96 (MWS).

Aphanes inexpectata Lippert **Slender Parsley-piert**

Cold Ash, environs of St Marks church, 3.6.96 (MWS).

Rosa tormentosa Smith **Harsh Downy-rose**

Ashridge Wood, clearing. Near E end of N edge of clearing, 22.6.96 (MWS).

Sorbus torminalis (L.) Crantz **Wild Service-tree**

Rushall Copse, N of track. Six coppiced stools at bend in path, growing spindly trunks, 10.8.96; Round Copse, S of lane near track, 30.11.96 (MWS).

FABACEAE (LEGUMINOSAE)

Ornithopus perpusillus L. **Bird's-foot**

Chapel Row, playing field, 3.6.96; Hermitage, Holy Trinity churchyard near the Cross, 4.6.96 (MWS).

Lathyrus nissolia L. **Grass Vetchling**

Red Hill, E bank of minor road N and S of M4, 27.6.96 (MWS).

Medicago arabica (L.) Hudson **Spotted Medick**

Garden weed in Harcourt Drive, Earley, 6.5.96 (C&RG).

Trifolium striatum L. **Knotted Clover**

Hermitage, Holy Trinity churchyard, near the Cross, 4.6.96 (MWS).

Trifolium arvense L. **Hare's-foot Clover**

Decoy Heath N.R., 3.8.96 (AB).

VISCACEAE

Viscum album L. **Mistletoe**

The Vyne, 27.3.96; Windsor Great Park, 28.3.96; Thames Street, Sonning 26.5.96 (C&RG).

EUPHORBIACEAE

Euphorbia cyparissias L. **Cypress Spurge**

Basildon Park, 17.5.96 (C&RG).

GERANIACEAE

Geranium lucidum L. **Shining Crane's-bill**

Falstaff Avenue, Earley, 27.5.96; ASDA car park, 28.5.96 (C&RG).

APIACEAE (UMBELLIFERAE)

Sison amomum L. **Stone Parsley**

Rushall Manor Farm, near Bradfield, footpath from pond W to wood, 10.8.96 (MWS).

MENYANTHACEAE

Nymphoides peltata Kuntze **Fringed Water-lily**

Fox and Hounds pit, Reading, 11.6.96 (AB).

BORAGINACEAE

Anchusa azurea* Miller **Garden Anchusa

Waste ground by Tesco, Reading, 13.7.96 (C&RG).

Anchusa arvensis (L.) M. Bieb. **Bugloss**

Bader Way, Woodley, 12.7.96; Welshmans Road, Mortimer West End, 21.7.96 (C&RG).

Cynoglossum officinale L. **Hound's-tongue**

Bottom Wood, Mapledurham, 17.6.96 (C&RG). It was recorded here by the Society in 1900.

LAMIACEAE (LABIATAE)

Salvia verbenaca L. **Wild Clary**

Culham Cut, 21.6.96 (C&RG).

PLANTAGINACEAE

Plantago coronopus L. **Buck's-horn Plantain**

Abundant on verge between Savacentre and M4; near M4 underpass at Bottingham Shaw, on NW of roadside N of M4, 26.4.96 (MWS); The Holies, 18.6.96 (AB).

SCROPHULARIACEAE

Verbascum virgatum Stokes **Twiggy Mullein**

Electricity Station on Welshmans Road, Mortimer West End, 16.7.96 (C&RG).

Verbascum nigrum L. **Dark mullein**

Shiplake College, hundreds of flowering plants in a small area that had been cleared of scrub, 29.6.96; waste ground by Tesco, Reading, 13.7.96 (C&RG); Bix, 28.5.96; The Holies, 18.6.96 (AB).

Veronica scutellata L. **Marsh Speedwell**

Decoy Heath N.R., 3.8.96 (AB).

Pedicularis sylvatica L. **Lousewort**

Bramshill Plantation, 23.5.96 (C&RG).

CAMPANULACEAE

Campanula persicifolia* L. **Peach-leaved Bellflower

Riseley, along public footpath well away from houses, 10.8.96 (C&RG).

Campanula rotundifolia L. **Harebell**

Bearwood churchyard, uncommon in this area, 7.8.96 (C&RG); Aldworth/Churn area, 17.8.96 (AB).

Legousia hybrida (L.) Delarbre **Venus's-looking-glass**

Cherry Bank Farm, near Compton. Along N edge of wheatfield in eastmost (top) 40 yards, 2.8.96 (MWS).

VALERIANACEAE

Valerianella locusta (L.) Laterr. **Common Cornsalad**

Car park of Decoy Heath N.R., 7.5.96 (KHG); grounds of Royal Berks. Hospital by Redlands Road, 8.5.96; Basildon Park, 17.5.96 (C&RG).

Valerianella carinata Loisel. **Keeled-fruited Cornsalad**

Upper Bucklebury, 43 Berry's Road, 3.6.96 (MWS).

Valerianella dentata (L.) Pollich **Narrow-fruited Cornsalad**

Cherry Bank Farm, near Compton, in wheatfield, 28.7.96 (MWS).

ASTERACEAE (COMPOSITAE)

Picris hieracioides L. **Hawkweed Oxtongue**

The Holies, 22.8.96 (MWS).

**Pilosella flagellaris* (Willd.) Sell & C. West subsp. *flagellaris*

Bucklebury Lower Common, by roadside near the Scout camp, 7.9.96. Compared with specimens in the herbarium at Plant Sciences, Reading University (MWS).

The first record received by the Reading and District Natural History Society of this introduced species, which according to Stace was first recorded in 1869.

Gnaphalium sylvaticum L. **Heath Cudweed**

Greys Green, 17.7.96 (AB).

Inula conyzae (Griess.) Meikle **Ploughman's-spikenard**

Bottom Wood, Mapledurham, 23.7.96 (C&RG); Ashampstead Common, footpath round S clearing, 20.8.96; The Holies, 22.8.96 (MWS).

Erigeron acer L. **Blue Fleabane**

Ashampstead Common, footpath round S clearing, 20.8.96 (MWS).

Chrysanthemum segetum L. **Corn Marigold**

Finchampstead, 30.7.96 (C&RG); Lakeside, Earley, July (MB).

Galinsoga parviflora* Cav. **Gallant Soldier

S of Wokingham, 16.7.96 (C&RG).

ALISMATACEAE

Sagittaria sagittifolia L. **Arrowhead**

River Blackwater by Thatchers Ford, 9.8.96 (C&RG).

HYDROCHARITACEAE

Stratiotes aloides L. **Water-soldier**

Three Firs Pond, Burghfield Common, 10.6.96 (C&RG).

POTAMOGETONACEAE

Potamogeton polygonifolius Pourret **Bog Pondweed**

Decoy Heath N.R., 3.8.96 (AB).

JUNCACEAE

Juncus tenuis* Willd. **Slender Rush

Fence Wood, path S from small pond, 21.7.96 (MWS).

Luzula sylvatica (Hudson) Gaudin **Great Wood-rush**

Coombe Wood SSSI, 5.6.96 (MWS).

CYPERACEAE

Cyperus longus L. **Galingale**

Rushall Manor Farm, near Bradfield, by pond margin, 10.8.96; Bucklebury Lower Common, pond at Beenham turning, 19.8.96 (MWS).

Carex vesicaria L. **Bladder-sedge**

Hillfoot, near Bucklebury, pond by the Pound, 8.10.96 (MWS).

Carex strigosa Hudson **Thin-spiked Wood-sedge**

Coombe Wood SSSI near Yattendon, 5.6.96 (MWS).

TYPHACEAE

Typha angustifolia L. **Lesser Bulrush**

Hillfoot, near Bucklebury, pond by the old Pound, 8.10.96 (MWS).

LILIACEAE

Polygonatum multiflorum (L.) All. **Solomon's-seal**

Sulhamstead, 26.4.96 (C&RG).

Ornithogalum pyrenaicum L. **Spiked Star-of-Bethlehem**

Ashridge Wood, in a clearing, 2.6.96; Spring Plantation, on NW side of road N of M4, a few flower spikes, not as many as last year, 22.6.96; Red Hill, by footpath up W bank of minor road S of M4, 27.6.96 (MWS).

Allium vineale L. **Wild Onion**

Bader Way, Woodley, 12.7.96 (C&RG).

ORCHIDACEAE

Epipactis purpurata Smith **Violet Helleborine**

Bucklebury Lower Common, 7.7.96 and 5.8.96. Roadsides E of lay-by, two nodding flower spikes plus four more mown off (MWS).

Orchis mascula (L.) L. **Early-purple Orchid**

Bradfield area, 15.5.96 (AB).

Orchis morio L. **Green-winged Orchid**

Headley gravel pit, 18.5.96 (AB).

Correction: The record of *Menyanthes trifoliata* L. **Bogbean** at Three Firs Pond, Burghfield Common, 5.9.95 was an error (C&RG).

CONTRIBUTORS

Thanks are due to the following contributors:

Alan Brickstock (AB), Maureen Baggaley (MB), Colin & Renée Grayer (C&RG), Kenneth Grinstead (KHG), Malcolm Storey (MWS)

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THE RECORDER'S REPORT FOR FUNGI 1996.

Alan Brickstock

As a summary of this year, I can do no better than quote (again!) my summary from 1989:

'1989 was yet another 'odd' year - is any year 'normal'? After a prolonged hot dry season, many species were very few and far between, and diligent searching was required on all our forays. Families such as *Russula*, *Lactarius* and *Tricholoma* were often almost absent'.

If you change the date, this applies exactly to 1996, which has again been a very strange season, even worse than 1995! After the long hot, dry spell, many species that are normally common or abundant were sparse or totally absent from most of our local woodlands, with almost all species being few and far between. Many of the species found have been represented by only a handful of specimens. Even things like Earth balls have proved to be uncommon.

Conifer woods in particular seem to have been the most affected. The False Chanterelle, *Hygrophoropsis aurantiaca*, normally seen in hundreds or even thousands, has hardly been seen at all, a few specimens appearing in mid to late November. There have been very few specimens of *Gymnopilus penetrans*, and with only one or two slight exceptions, *Russulas* of all kinds have been almost non-existent.

The total number of species for the Reading area this year was 419, compared with 501 for 1995, a drop of 16 per cent, which does not convey the scarcity of fungi we have found almost everywhere. (The total for this year does include a few Rusts and Mildews).

As always with seasons which are poor in terms of the common species, diligent searching led to many uncommon species being found, with quite a few which I have not recorded in the area before.

Many of the species have been identified, after diligent work, by a number of people, but most especially by Henry Beker, Paul Cook and John Wheeley, and I am most grateful for all their efforts, without which a list such as this could not have been compiled.

Some of the more interesting records are selected below:

GILL FUNGI

Amanita phalloides (Vaill. ex Fr.) Secr.
Harpsden, 15.09.96 (RFG). A colony containing several dozen specimens.

Cantharellus tubaeformis Fr.
Kingwood Common, 10.11.96 (RFG).

Clitocybe lignatilis (Pers. ex Fr.) Karst.
Virginia Water, 19.10.96 (AB).

Conocybe pubescens (Gill.) Kühn.
Padworth Common, 25.05.96 (JW).

Cortinarius rigidus Fr.
Ufton Nervet, 29.09.96 (RFG).

Cortinarius splendens Henry
Witley Common, Surrey, 27.10.96 (RFG).

Entoloma conferendum (Britz.) Noordel.
Ufton Nervet, 29.09.96 (JW).

Entoloma conferendum var. *pusillum* (Velen.) Noordel.
Ufton Nervet, 29.09.96 (JW).

Galerina clavata (Vel.) Kühn.
Frilsham church, 07.10.96; Bucklebury Church, 07.10.96 (MWS).

Hemimycena tortuosa (Orton) Redhead
Warburg Reserve, 20.04.96 (PC).

Hemipholiota myosotis (Fr. ex Fr.) Bon (*Hypholoma myosotis*)
Ufton Nerve, 29.09.96 (JW).

Hypholoma sublateritium (Fr.) Quél.
Virginia Water, 19.10.96; Kingwood Common, 10.11.96; Sulham Woods, 11.11.96 (AB).

Inocybe cincinnata (Fr.) Quél.
Longmeadow plantation (SU 593721), 08.10.96 (MWS).

Inocybe lanuginosa (Bull. ex Fr.) Kummer
Ufton Nerve, 29.09.96 (RFG).

Laccaria tortilis (Bolt. ex S.F.Gray) Cke.
Longmeadow plantation (SU 593721), 08.10.96 (MWS).

Lepiota bucknallii (Berk. & Br.) Sacc.
Warburg Reserve, Bix, 02.11.96 (AB).

Melanoleuca arcuata (Fr.) Sing.
Lackmoor Wood, 20.10.96 (GC).

Melanoleuca poliroleuca (Fr.) Kühn. & Maire
Holly Wood, 07.10.96; Moor Copse, 11.10.96; Upper Bucklebury, 26.10.96 (MWS).

Mycena adonis (Bull.) S.F.Gray
Moor Copse, 13.10.96 (AB).

Mycena corynephora Mass.
King's Copse, 10.10.96 (MWS). On fallen mossy willow trunk.

Mycena olivaceomarginata (Mass.) Mass.
Hermitage churchyard, 07.10.96; Frilsham churchyard, 07.10.96 (MWS).

Naucoria luteofibrillosa (Kühn.) Kühn. & Romagn.
Longmeadow plantation (SU 593721), 08.10.96 (MWS). Under Alder.

Naucoria striatula Orton
Longmeadow plantation (SU 593721), 08.10.96 (MWS). Under Alder.

Mycena sepia J.Lange
Lackmoor Wood, 20.10.96 (GC).

Pluteus nanus (Pers. ex Fr.) Kummer
Whiteknights, 27.05.96 (JW).

Pluteus umbrosus (Pers. ex Fr.) Kummer
Bramley Camp, 05.10.96 (AB).

Russula brunneoviolacea Crawshay
Witley Common, Surrey, 27.10.96 (AB).

Russula chloroides (Kromb.) Bres.
Bucklebury Lower Common, 27.09.96 (MWS).

Russula xerampelina var. *fusca* Melzer & Zvara
Kingwood Common, 10.11.96 (AB).

Tephrocybe anthrocophila (Lasch) Orton
Burnt Platt, 10.11.96 (JW).

BOLETI

Boletus albidus Roques
Miles Green, 25.08.96 (MWS). Under Hazel.

Boletus luridus Schaeff. ex Fr.
Fence Wood, Hermitage, 18.08.96 (AB).

Boletus parasiticus Bull. ex Fr.
Virginia Water, 19.10.96 (AB).

Tylopilus felleus (Bull. ex Fr.) Karsten
Ufton Nervet, 29.09.96 (JW).

APHYLLOPHORALES

Amylostereum laevigatum (Fr.) Boidin
Warburg Reserve, 20.04.96 (PEC).

Botryobasidium aureum Parm.
Warburg Reserve, 20.04.96 (AH).

Botryobasidium subcoronatum (v Höhn. & Litsch.) Donk
Kingwood Common, 10.11.96 (PEC). On deciduous wood.

Dendrothele acerina (Fr.) Lemke
Warburg Reserve, 20.04.96 (PEC).

Ganoderma pfeifferi Bres.
Bucklebury Lower Common, 19.08.96; 10.10.96 (MWS).

Grandinia nespori (Bres.) Cejp
Warburg Reserve, 20.04.96 (PEC).

Henningsomyces candidus (Pers. ex Schleich.) Kuntze
Warburg Reserve, 20.04.96 (AH).

Megalocystidium leucoxanthum (Bres.) Boidin
Burnt Platt, 10.11.96 (PEC). On beech twig.

Meruliopsis corium (Fr.) Ginns
Warburg Reserve, 20.04.96 (PEC).

Mucronella calva v. *aggregatum* (Fr.) Pil.
Burnt Platt, 10.11.96 (PEC). A dense mass of tiny white spines, on pine.

Phanerochaete filamentosa (Berk. & Curt.) Burdsall
Burnt Platt, 10.11.96 (PEC). Cream to orange/brown resupinate, on beech. Margin distinctly bounded.

Phanerochaete sanguinea (Fr.) Pouz.
Kingwood Common, 10.11.96 (PEC). Yellowish resupinate, with red patches. On oak branch.

Phellinus ribis (Schum ex Fr.) Karst.
Moor Copse, 13.10.96 (TG). On the trunk of Spindle.

Piloderma croceum Erikss. & Hjortst.
Burnt Platt, 10.11.96 (RFG). Extensive mass of bright yellow mycelium in pine debris.

Scopuloides rimosa (Cke.) Jül.
Warburg Reserve, 20.04.96 (PEC)

Sistotrema sernanderi (Litsch.) Donk
Kingwood Common, 10.11.96 (PEC). On an oak branch.

Tomentellopsis echinospora (Ellis) Hjorst.
Kingwood Common, 10.11.96 (PEC). A yellowish resupinate, with cobwebby surface. On birch log.

Typhula erythropus Pers. ex Fr.
King's Copse, 10.10.96; Horsemoor Copse, 11.10.96, 11.10.96 (MWS). On Ash petioles.

GASTEROMYCETES

Geastrum sessile (Sow.) Pouz.
Maidenhead Thicket, 12.10.96 (AB).

HETEROBASIDIOMYCETES

Femsjonina pezizaeformis (Lév.) Karst.
Kingwood Common, 10.11.96 (PEC). An egg-yolk yellow, cup-shaped fungus.

Myxarium subhyalinum (Pearson) Reid
Kingwood Common, 10.11.96 (PEC)

Tremella encephala Pers.
Burnt Platt, 10.11.96 (PEC). Yellowish or pinkish opalescent 'blobs'.

Tremella lutescens Pers. ex Fr.
Burnt Platt, 10.11.96 (PEC). White form of *T. mesenterica*. On beech branch.

RUSTS

Puccinia malvacearum Mont. '**Hollyhock Rust**'
Black Barn, 08.10.96 (MWS).

Ustilago longissima (Sow. ex Schl.) Meyen
Frlsham Manor Farm, 07.06.96 (MWS).

Ustilago violacea (Pers.) Fuckel '**Carnation Anther Smut**'
Moor Copse, 21.09.96 (MWS).

ASCOMYCETES

Anthrocobia maurilabra (Cke.) Boud.
Longmeadow plantation (SU 593721), 08.10.96 (MWS). On bonfire site.

Anthrocobia melaloma (A&S. ex Fr.) Boud.
Scotland (SU 561697), 23.11.96; Miram's Copse (SU 579730), 30.11.96 (MWS). On pine bonfire site.

Bertia moriformis (Tode ex Fr.) de Not.
Kingwood Common, 10.11.96 (PEC). Looks like a mass of minute Blackberries.

Ciboria amentacea (Balbis. ex Fr.) Fuckel
Padworth Common, 25.05.96 (JW).

Colpoma quercinum (Pers.) Wallroth
Warburg Reserve, 20.04.96 (AB); Padworth Common, 25.05.96 (HB).

Epichloe typhina (Pers. ex Fr.) Tul.
Cherry Bank Farm (SU 532794), 28.07.96 (MWS). On live Cocksfoot.

Hymenoscyphus scutula (Pers. ex Fr.) Phillips
Upper Bucklebury, 26.10.96 (MWS). Under Ivy.

Eutypha acharii Tulasne
Warburg Reserve, 20.04.96 (PEC).

Polydesmia pruinosa (Berk. & Br.) Boud.
Burnt Platt, 10.11.96 (PEC). Growing on *Hypoxylon multifforme*.

Rutstroemia firma (Pers.) Karst.
Kingwood Common, 10.11.96 (PEC). On an oak branch.

Viennotidea fimicola (Marchal) Cannon & Hawkesworth
Kingwood Common, 10.11.96 (PEC). On deer dung.

CONTRIBUTORS

Henry Beker (HB), Alan Brickstock (AB), Paul Cook (PEC), Gordon Crutchfield (GC), Ted Green (TG), Alick Henrici (AH), Reading Fungus Group foray (RFG), Malcolm Storey (MWS), John Wheeley (JW).

Editor's Space-filler

A tale of two Reserves

First the good news. During the year the Wiltshire Wildlife Trust purchased, with help from various sources including the Heritage Lottery Fund, Clattinger Farm near Cricklade in the north of the county. It is the fourth largest area of lowland hay meadow in England. It has never been ploughed and contains a wealth of flower species including several rarities. The insect fauna associated with such a flora is also of considerable interest.

The Magazine "British Wildlife" has mentioned in recent issues the situation regarding Braunton Burrows on the coast of North Devon. One of the oldest of the National Nature Reserves, it has now lost its NNR status as English Nature has been unable to secure an effective conservation management agreement with the owners.

Braunton Burrows have very special memories for me as I lived or spent time in nearby Barnstaple from 1935 to 1967.

As a schoolboy they were within easy cycling distance on one of North Devon's very few flat roads. During wartime with few cars about it was a pleasure on a summer evening to ride down to the seaside. Such times are long gone and cannot be visualised by today's youngsters.

In the late 1950's when I renewed my interest in natural history and began close-up flower photography, by chance, I had the privilege of being shown the vivid crimson-red form of the Early Marsh Orchid, (*Dactylorhiza incarnata* ssp *coccinea*) by Dr. Elliston Wright. The Lundy Cabbage (*Coincya wrightii*), a species endemic to Lundy Island off the north-west coast of Devonshire, was discovered by Dr Wright in the earlier years of the century.

In the first year that the Fen Orchid (*Liparis loeselii*) was found at the Burrows I was lucky to be taken to see the plants by Dr. Willis of Bristol University. Some years ago when the Society visited Kenfig Common, another site for the Fen Orchid, plants were present in some numbers but none were found by any of the party. Hence my good fortune at Braunton in meeting someone who offered to act as my guide, for to have found these small green-flowered plants that only occupied an area of about one square foot in an area of some six square miles would have been no easy task!

The Burrows are noted for some particularly rare species and there are many that one might expect to see in a coastal dune habitat. I first photographed the Marsh Helleborine (*Epipactis palustris*) in the dune slacks, growing in vast numbers and so closely spaced that one had to tread carefully so as not to step on them.

On my last visit two years ago there were a number of cars in the parking areas that have been provided, also boardwalks to allow visitors to make their way to the sea without trampling all over the dunes. The boardwalks were well used by most of the visitors who did not appear to be interested in natural history but only in getting onto the sands beyond the Burrows.

THE RECORDER'S REPORT FOR ENTOMOLOGY 1996

Brian R. Baker

The order and nomenclature used in this report are those given in Kloet and Hincks (1964-1978), supplemented by Bradley and Fletcher (1979, 1986).

EPHEMEROPTERA : MAYFLIES

Ephemera lineata Eaton

Kiln Ride, Upper Basildon, 17.6.96, two, 22.7.96, one (MCH); Matlock Road, Caversham, 14.7.96, one and its cast skin (BRB); The Holies, 19.7.96, 50 adults (MCH); Basildon Park, 2.8.96 one (MCH); Hartslock N.R., 5.8.96, 40 adults (MCH); Hargrave Road, Maidenhead, 19.7.96, about 20 (MVA).

ODONATA : DRAGONFLIES

Pyrrhosoma nymphula (Sulzer) **Large Red Damselfly**

Decoy Heath N.R., 7.5.96, three males were seen away from water, west end of the Reserve, 15.6.96, frequent throughout the Reserve (KHG).

Ischnura elegans (Van der Linden) **Blue-tailed Damselfly**

Decoy Heath N.R., 15.6.96, small numbers at several of the wet areas (KHG).

Coenagrion puella (L.) **Azure Damselfly**

Decoy Heath N.R., 15.6.96, scattered throughout the Reserve (KHG).

Calopteryx virgo (L.) **Beautiful Demoiselle**

Stream south of Decoy Heath N.R., 18.6.96, a number of males by the stream side (KHG).

Cordulegaster boltonii (Donovan) **Golden-ringed Dragonfly**

Decoy Heath N.R., 15.6.96, one female resting on open ground between the wet areas (KHG).

Anax imperator Leach **Emperor Dragonfly**

Decoy Heath N.R., 15.6.96, a pair flying over the larger pond on the Reserve (KHG).

Cordulia aenea (L.) **Downy Emerald**

Decoy Heath N.R., 15.6.96, several flying over the larger pond (KHG); Oval Pond, Padworth, 18.6.96, many flying over the pond (BRB).

Somatochlora metallica (Van der Linden) **Brilliant Emerald**

Stream south of Decoy Heath N.R., 18.6.96, probably a single insect flying in trees and over the water (KHG).

Orthetrum coerulescens (Fabr.) **Keeled Skimmer**

Decoy Heath N.R., 15.6.96, two flying and settling by shallow water, west end of the Reserve (KHG).

Libellula depressa L. **Broad-bodied Chaser**

Decoy Heath N.R., 15.6.96, frequent around the larger pond (KHG)

Sympetrum sanguineum (Müller) **Ruddy Darter**

Moor Copse N.R., 24.8.96, two males (MCH).

PLECOPTERA : STONEFLIES

Brachyptera risi (Morton)

King's Copse near Jennetts Hill, 24.6.96, stream near footpath crossing (MWS).

Amphinemura standfussi Ris.

Holly Wood near The Slade, 23.6.96, stream near garden, swept off aspen suckers (MWS); King's Copse near Jennetts Hill, 24.6.96, stream near footpath crossing (MWS).

Nemurella inconspicua (Pict.)

King's Copse near Jennetts Hill, 24.6.96, stream near footpath crossing (MWS).

Nemoura cinerea (Retz.)

Coombe Wood SSSI near Frilsham, 5.6.96, track between Compartments 2 and 4 (MWS); Holly Wood near The Slade, 23.6.96, stream near garden, swept off aspen suckers (MWS).

Perla bipunctata Pict.

King's Copse near Jennetts Hill, 24.6.96, in flight by stream near footpath crossing (MWS).

ORTHOPTERA : CRICKETS, BUSH-CRICKETS, GRASSHOPPERS, GROUND-HOPPERS

Metrioptera roeselii (Hagenbach) **Roesel's Bush-cricket**

Bucklebury Common, 8.8.96, one male, auditory record (MCH); road by Coxland Cottages, Pang Valley, 15.9.96, ten adults, auditory record (MCH); near Mazelands Farm, Pang Valley, 15.9.96, five adults, auditory record (MCH).

Tetrix subulata (L.) **Slender Ground-hopper**

Longmeadow Plantation, (SU 594721), 12.5.96, one female swept from *Juncus* growing on mud near river bank (MCH); Park Wood, Moor Copse N.R., 21.9.96, three adults (MCH).

DICTYOPTERA : COCKROACHES

Ectobius panzeri Stephens **Lesser Cockroach**

Crowthorne Bypass, 6.9.96, one adult, first Berkshire vice county record (D. Sussex, confirmed J. Widgey, record per MCH).

HEMIPTERA : PLANT BUGS, WATER BUGS, LEAF HOPPERS, APHIDS

Dolycoris baccarum (L.) **Sloe Bug**

Bradfield, 15.5.96, numerous among sloe bushes near River Pang (BRB, KHG).

Hydrometra stagnorum (L.) **Water-measurer**

Moor Copse N.R., 21.9.96, river corridor near main bridge (MWS).

LEPIDOPTERA : BUTTERFLIES AND MOTHS

Micropterix tunbergella (Fabr.)

Longmeadow Plantation, (SU 594721), 12.5.96, one swept (MCH).

Ectodemia quinquella (Bed.)

Dinton Pastures Country Park, 7.7.96 (I. Sims per MCH).

Zeuzera pyrina (L.) **Leopard Moth**

Tilehurst, common at mercury vapour light (DAY); Hartslock N.R., 5.8.96 (CMR); Emmer Green Surgery, 7.8.96 (JHFN).

Phyllonorycter platani (Stdgr.)

Reading, 31.10.96, leaf mines in *Platanus*, second Berkshire vice county record (NMH); Reading, near the Railway Station, 1.11.96 (BRB, JIR).

Phyllonorycter leucographella (Zell.)

Reading, near the Railway Station, 1.11.96, leaf mines in *Pyracantha*, second Berkshire vice county record (BRB, JIR)

Synanthedon sphecoformis (D.&S.) **White-barred Clearwing**

Snelsmore Common, 19.6.96, bred from *Betula* stem (MCH).

Bembecia scopigera (Scop.) **Six-belted Clearwing**

Hartslock N.R., 5.8.96 (CMR).

Margaritia sticticalis (L.)

Hartslock N.R., 5.8.96, (MCH); Martin Harvey writes " this species migrated into Berkshire in 1995 and it is interesting to speculate whether the 1996 records are from further migrants or descendants of the 1995 influx".

Sitochroa palealis (D.&S.)

The Holies, 4.8.96, one (MCH); Hartslock N.R., 5.8.96, one at mercury vapour light (MCH); Aston Upton, 13.8.96, two at mercury vapour light (DAY); near Lowbury Hill, 17.8.96, two resting on seed heads in hot sunshine (BRB, MWS).

Phlyctaenia perlucidalis (Hubn.)

Bucklebury Common, 13.7.96, one at mercury vapour light (DAY).

Mecyna flavalis flaviculis Caradja

Hartslock N.R., 29.7.96, two, 3.8.96, one (CMR); The Holies, 4.8.96, one. First Berkshire vice county record (MCH).

Pempeliella diluta (Haw.)

The Holies, 19.7.96 (MCH).

Colias croceus (Geoff.) **Clouded Yellow**

Near Upton Nervet, 27.7.96 (DAY), see article "The Clouded Yellow: A Colony in Berkshire" page (BRB); Coxland Cottages, (SU 568735), 9.6.96 (MWS); Decoy Heath N.R., 3.8.96, two (LM); Tesco's Grounds, Reading, 5.8.96, two (BRB); Peppard Road, Reading, 17.8.96 (LC); Roden and Churn Downs, 17.8.96, several seen on the Society's walk (BRB, MWS); Lardon Chase, 18.8.96 (BTP).

Quercusia quercus (L.) **Purple Hairstreak**

Wellington Country Park, larvae common on the oaks (DAY); California Country Park, 16.6.96. a wood ant noted dragging a pupa of this hairstreak along the ground (BRB).

Cynthia cardui (L.) **Painted Lady**

This immigrant visited Britain in unprecedented numbers in 1996 and an immense native brood appeared in August with many being seen in our recording area. Early records: Burghfield Common, 31.5.96 (DAY); Matlock Road, Caversham, 31.5.96 (HGB); Crawshay Drive, Emmer Green, 5.6.96 (JHFN). Larvae on thistles: Earley, 8.7.96 (BTP); Bucklebury Common, 13.7.96 (LM); Pamber Forest, 16.7.96 (BRB). The butterflies were still flying well into October.

Idaea vulpinaria atrosignaria Lempke **Least Carpet**

Hargrave Road, Maidenhead, 19.7.96, one (MVA); Vicarage Cottages, Mortimer West End, 20.7.96, one, 21.7.96, one (GJD). New v.c.22 records.

Orthonama obstipata (Fabr.) **The Gem**

Hargrave Road, Maidenhead, 15.9.96 (MVA).

Catarhoe rubidata (D.&S.) **Ruddy Carpet**

Aston Upton, 20.7.96, one at mercury vapour light (DAY). A notable record, not recorded in v.c.22 since 1955 (BRB).

Catarhoe cuculata (Hufn.) **Royal Mantle**

Kiln Ride, Upper Basildon, 22.7.96, one at mercury vapour light (MCH).

Chloroclysta siterata (Hufn.) **Red-green carpet**

Harcourt Drive, Earley, 14.10.96, then regular in the garden (NMH).

Colostygia olivata (D.&S.) **Beech-green Carpet**

Hartslock N.R., 5.8.96, one at mercury vapour light (MCH). Not recorded in v.c.22 since 1973 and then only as a single specimen (BRB).

Macroglossum stellatarum (L.) **Humming-bird Hawk-moth**

Near Lowbury Hill, 17.8.96, a larva found by Jocelin Whitfield, photographed by several members then bred, emerging 14.9.96, (BRB); Matlock Road, Caversham, 18.8.96 (BRB); Ramsbury Drive, Earley, 20.8.96 (BTP); Ashridge Wood, 23.8.96 (MWS); Bedford Close, Newbury, 24.8.96, 28.8.96, 7.9.96, two, 8.9.96, 9.9.96, 11.9.96 two, 15.9.96, all seen at *Buddleja* in the garden (NC); Tilehurst, 15.9.96 (DAY).

Hyles lineata livornica (Esper) **Striped Hawk-moth**

Westdene Crescent, Caversham, 5.9.96, a female brought to the Recorder by Mr Geoffrey Emmett who had been cutting grass and had unfortunately thereby removed the fore and hind wings from one side (BRB).

Cucullia lychnitis Rambur **Striped Lychnis**

Crawshay Drive, Emmer Green, 25.6.96, bred from a two-year-old pupa (JHFN); The Holies, 4.8.96, 11 larvae found from 500 flower spikes of *Verbascum nigrum* (MCH); near Bisham, larvae on *Verbascum nigrum*, 40 on 28.7.96, 11 on 13.8.96, 5 on 15.8.96 (MVA).

Spodoptera exigua (Hubn.) **Small Mottled Willow**

Harcourt Drive, Earley, 7.6.96, 8.8.96, 12.8.96, and 27.10.96 (NMH). These trap records suggest primary immigration in June and British generations in August and October.

Heliothis peltigera (D.&S.) **Bordered Straw**

Wallingford, 8.6.96, three (DAM); Harcourt Drive, Earley, 7.6.96, two, 9.6.96, four, 8.8.96 (NMH); Matlock Road, Caversham, 11.6.96, one on lit window (BRB); Hartslock N.R., 5.8.96 (CMR); Tilehurst, 10.6.96, 11.6.96, 18.8.96 (DAY); Aston Upthorpe 17.6.96 (DAY); Upper Bucklebury, 7.8.96, one feeding at *Buddleja* in the afternoon (MCH); Bedford Close, Newbury, 16.9.96, one very fresh specimen at kitchen window (NC). The same comments as for *S exigua* (above) apply to this species, the pale yellow June specimens being primary immigrants and the darker August/September specimens having bred in Britain (BRB).

Pyrrhia umbra (Hufn.) **Bordered Sallow**

Harcourt Drive, Earley, 22.7.96 (NMH).

COLEOPTERA : BEETLES

My thanks go to HHC for the usual preselection of records from the comprehensive list submitted by TDH.

TDH writes " please note that the following two previous records should be corrected".

1. *Atomaria atricapilla* Stephens

Leighton Park, Reading, 7.6.94, in flight interception trap set up on lawn beside a ditch in parkland (Reported in The Reading Naturalist No. 48). This was misidentified; the record stands for *Atomaria rubella* Heer, syn. *A. berlinensis* Kraatz. This species is flightless so must have crawled into the flight interceptor trap gutter.

2. *Leperisinus varius* Fabricius

Leighton Park, Reading, 9.4.92, one specimen clinging to my shirt after I had just returned from a cycle ride to Pamber Forest. This record stands for *Leperisinus orni* Fuchs. All my other records for *L. varius* are valid, having been rechecked.

Hygrotus decoratus Gyllenhal

Leighton Park, Reading, 2.8.95, attracted to mercury vapour light, overlooking extensive lawn in parkland (TDH). Two old (1958) local records by A. Price (HHC).

Gyrinus suffriani Scriba

Cothill Fen NNR, Abingdon, Oxon, 23.6.95, one male by dipping with a net into a shallow pool in a fen (TDH). New record (HHC).

Helophorus strigifrons Thomson C G

Leighton Park, Reading, 7.8.95, one male under clod of dried mud in dried up pond within copse of deciduous trees, in parkland (TDH). New record (HHC).

Cercyon convexiuscula Stephens

Near Hall Farm, Shinfield, Reading, 21.8.95, obtained by grubbing amongst reed litter at base of reeds at margin of dried up pond (TDH). One old record, Wicken Fen (HHC).

Enochrus coarctatus (Gredler)

Cothill Fen NNR, Abingdon, Oxon, 23.6.95, one male by dipping with a net into a shallow pool in a fen (TDH). One old local record, two old non-local records (HHC).

Plegaderus dissectus Erichson

Whiteknights, Reading, 5.8.95, bred from pieces of *Ganoderma adspersum* which were found on well decayed log in parkland (TDH). One recent record (HHC).

Hydraena testacea Curtis

Pamber Forest, near Silchester, Hampshire, 29.10.95, dipping a net into a gravel bottomed brook in oak woodland (TDH). Two old non-local records (HHC).

Ptenidium gressneri Erichson

Leighton Park, Reading, 25.8.95, in wood mould under tufts of *Volvariella bombycina* in a rot hole in horse chestnut in parkland (TDH). New record (HHC).

Cyrtusa pauxilla (Schmidt W. L. E.), syn. *Liocyrtusa minuta* (Ahrens)

Leighton Park, Reading, 10.7.95, attracted to mercury vapour light overlooking extensive lawn within parkland (TDH). One old record (HHC).

Anisotoma orbicularis (Herbst)

Whiteknights, Reading, 2.7.95, one emerged from birch logs, collected from a deciduous wood on 8.2.95, then taken home and kept in a sealed aquarium (TDH). New record (HHC).

Amphicyllis globus (Fabricius)

Pamber Forest, near Silchester, Hampshire, 7.6.95, one male obtained by general sweeping in open ride in oak woodland (TDH). One old record (HHC).

Nemadus colonoides (Kraatz)

Leighton Park, Reading, 25.8.95, in wood mould under tufts of *Volvariella bombycina* in a rot hole in horse chestnut in woodland (TDH). One old record (HHC).

Mycetoporus splendidus (Gravenhorst)

Leighton Park, Reading, 22.8.95, one male attracted to mercury vapour light overlooking extensive lawn within parkland (TDH). Three old records (HHC).

Oligota parva Kraatz

Leighton Park, Reading, 17.12.95, obtained from trap set on 11.8.95 (piece of cheese wrapped up in mouldy grass cuttings enclosed in a perforated tin) placed inside a rat burrow at base of sycamore tree in parkland (TDH). New record (HHC).

Oligota pumilio Kiesenwetter

Leighton Park, Reading, 17.9.95, obtained by shaking sycamore leaves, picked up from ground beside a ditch in a tree-lined hedge at edge of parkland, over a tray (TDH). One old non-local record (HHC).

Gyrophaena joyiodes Wüsthoff

Whiteknights, Reading, 16.7.95, obtained by shaking fruit bodies of *Pleurotus cornucopiae*, growing on an oak log in deciduous wood, over a sheet (TDH). New record (HHC).

Falagria concinna Erichson

Leighton Park, Reading, 2.8.95, attracted to mercury vapour light overlooking extensive lawn within parkland (TDH). New record (HHC).

Gnypeta carbonaria (Mannerheim)

Leighton Park, Reading, 22.8.95, one male attracted to mercury vapour light overlooking extensive lawn within parkland (TDH). One old local record (HHC).

Atheta elongatula (Gravenhorst)

Leighton Park, Reading, 12.7.95, one male attracted to mercury vapour light overlooking extensive lawn within parkland (TDH). One record without data (HHC).

Atheta malleus Joy

Leighton Park, Reading, 15.7.95, one male attracted to mercury vapour light overlooking extensive lawn within parkland (TDH). New record (HHC).

Atheta obtusangula Joy

Eversley Common, Hampshire, 15.7.95, one male obtained by grubbing amongst gravel and sand on gravel bank of narrow acid stream in deciduous wood (TDH). New record (HHC).

Atheta dadopora Thomson C. G.

Whiteknights, Reading, 24.9.95, extracted by means of a Tullgren funnel from clump of *Polyporus squamosus* which had fallen to the ground from the top of a diseased beech tree in woodland (TDH). New record (HHC).

Atheta xarthopus (Thomson C. G.)

Leighton Park, Reading, 18.9.95, one male found running over underside of stone which lay beside compost heap in garden (TDH). New record (HHC).

Atheta ravilla (Erichson)

Leighton Park, Reading, 31.12.95, found inside trap set on 11.8.95 (piece of cheese wrapped up in mouldy grass cuttings enclosed in a perforated tin) placed inside a rat burrow at base of sycamore tree in parkland (TDH). New record (HHC).

Aleochara sparsa Heer

Leighton Park, Reading, 17.12.95 and 10.1.96, specimens obtained from trap set on 11.8.95 (piece of cheese wrapped up in mouldy grass cuttings enclosed in a perforated tin) placed inside a rat burrow at base of sycamore tree in parkland (TDH). Two old records, Tubney, Reading (HHC).

Selatosomus incanus (Gyllenhal)

Cothill Fen NNR, Abingdon, Oxon, 23.6.95, resting on leaf of Creeping Thistle in a fen (TDH). Six old records (HHC).

Malthinus frontalis Marsham

Leighton Park, Reading, 10.7.95, attracted to mercury vapour light, overlooking extensive lawn in parkland (TDH). New record (HHC).

Dorcatoma dresdensis Herbst

Near Shinfield, Reading, 27.6.95, on fruit bodies of *Phellinus igniarius* on dead fallen willow at edge of copse of deciduous trees in marshy area (TDH). New record (HHC).

Dorcatoma serra Panzer

Leighton Park, Reading, 31.7.95, one male, 1.8.95, one female, attracted to mercury vapour light, overlooking extensive lawn in parkland (TDH). New record (HHC).

Meligethes bidens Brisout

Near Gatehampton Manor, near Goring, Oxon, 23.5.95, inside corollas of *Ranunculus* sp. on calcareous grassland which included *Clinopodium vulgare*, its food plant (TDH). New record. (HHC).

Meligethes brunnicornis Sturm

Pamber Forest, near Silchester, Hampshire, 16.6.95, obtained by shaking inflorescence of *Stachys sylvatica* on verge of track in oak woodland (TDH). New record (HHC).

Meligethes difficilis Heer

Leighton Park, Reading, 5.6.95, on corollas of *Lamium album* in garden (TDH). New record (HHC).

Meligethes lugubris Sturm

Near Gatehampton Manor, near Goring, Oxon, 23.5.95, one male inside corolla of *Ranunculus* sp. on calcareous grassland which included *Thymus* sp, its food plant (TDH). New record (HHC).

Meligethes planiusculus (Heer)

Hitchcopse Pit, near Cothill, Oxon, 23.6.95, obtained by sweeping a stand of *Echium vulgare* growing in a disused sand pit (TDH). Two old records (HHC).

Meligethes viridescens (Fabricius)

Pamber Forest, near Silchester, Hampshire, 16.6.95, obtained by shaking inflorescence of *Stachys sylvatica* on verge of track in oak woodland (TDH). Six old records (HHC).

Epuraea limbata (Fabricius)

Appleton Lower Common, Oxon, 3.7.95, obtained by shaking fruit bodies of *Pleurotus cornucopiae*, growing on log in damp deciduous wood, over a sheet (TDH). One old record (HHC).

Soronia punctatissima (Illiger)

Leighton Park, Reading, 11.7.95, attracted to mercury vapour light, overlooking extensive lawn in parkland (TDH). Four old records (HHC).

Sphindus dubius (Gyllenhal)

Leighton Park, Reading, 10.7.95, attracted to mercury vapour light, overlooking extensive lawn in parkland (TDH). Three old records (HHC).

Aspidiphorus orbiculatus (Gyllenhal)

Whiteknights, Reading, 5.8.95, nine specimens found on a yellow slime mould (*Fuligo septica*) which was growing on a decayed deciduous log in woodland (TDH). One old record (HHC).

Henoticus serratus Gyllenhal

Leighton Park, Reading, 11.7.95, attracted to mercury vapour light, overlooking extensive lawn in parkland (TDH). New record (HHC).

Cryptophagus cellaris (Scopol)

Leighton Park, Reading, 13.7.95, attracted to mercury vapour light, overlooking extensive lawn in parkland (TDH). Three old records (HHC).

Cryptophagus distinguendus Sturm

Leighton Park, Reading, 16.7.95, one male found in trap set on 21.5.95 (piece of cheese wrapped in straw enclosed inside a wire cage) placed deep inside a rat burrow at base of sycamore tree in parkland (TDH). One old record (HHC).

Cryptophagus falcozi Roubal

Whiteknights, Reading, 4.8.95, two males found resting on fruit bodies of *Ganoderma adspersum* which had been taken home for examination. The fungus was found on a well decayed deciduous log (probably hornbeam) in ornamental deciduous woodland within parkland. Fruit bodies were kept in a tin and several specimens, including males, emerged up to 8.8.95. This species is only known from Windsor Forest in this country, its occurrence at Whiteknights suggests that the woodland is a remnant of ancient forest which may well have been connected to Windsor Forest. Identification of voucher specimens confirmed by C Johnson (TDH). New record (HHC).

Cryptophagus pseudodentatus Bruce

Leighton Park, Reading, 31.7.95, one male attracted to mercury vapour light, overlooking extensive lawn in parkland (TDH). New record (HHC).

Cryptophagus scanicus (Linnaeus)

Leighton Park, Reading, 15.9.95, one male in old bird's nest inside a nest box attached to a deciduous tree in parkland; Whiteknights, Reading, 20.9.95, five specimens obtained by shaking over a sheet a fungus, *Polyporus squamosus*, which had fallen to the ground from the top of a diseased beech tree in woodland (TDH). Six old records (HHC).

Cryptophagus scutellatus Newman

Leighton Park, Reading, 17.7.95, four specimens obtained from a trap set on 21.5.95 (piece of cheese wrapped in straw enclosed inside a wire cage) placed deep inside a rat burrow at base of sycamore tree in parkland (TDH). One old record without data (HHC).

Caenoscelis subdeplanata Brisout

Leighton Park, Reading, 13.7.95, attracted to mercury vapour light, overlooking extensive lawn in parkland (TDH). New record (HHC).

Atomaria fuscata (Schoenherr)

Leighton Park, Reading, 12.7.95, attracted to mercury vapour light, overlooking extensive lawn in parkland (TDH). Two old records, one without data (HHC).

Atomaria nigripennis Kugelann

Leighton Park, Reading, 17.7.95, obtained from a trap set on 21.5.95 (piece of cheese wrapped in straw enclosed inside a wire cage) placed deep inside a rat burrow at base of sycamore tree in parkland (TDH). New record (HHC).

Atomaria pusilla (Paykull)

Leighton Park, Reading, 11.7.95, attracted to mercury vapour light, overlooking extensive lawn in parkland (TDH). Two old records, one without data (HHC).

Triplax russica (Linnaeus)

Appleton Lower Common, Oxon, 3.7.95, obtained by shaking fruit bodies of *Pleurotus cornucopiae*, growing on log in damp deciduous wood, over a sheet (TDH). One old record, no data (HHC).

Annomatus duodecimstriatus (Müller P.W.J.)

Leighton Park, Reading, 22.12.95, found inside trap set on 11.8.95 (piece of cheese wrapped up in mouldy grass cuttings enclosed in a perforated tin) placed inside a rat burrow at base of sycamore tree in parkland (TDH). One old record (HHC).

Orthoperus mundus Matthews A

Whiteknights, Reading, 7.5.95, on recently sawn logs of a deciduous tree in parkland (TDH). New record (HHC).

Adonia variegata Goeze

Leighton Park, Reading, 31.7.95, attracted to mercury vapour light, overlooking extensive lawn in parkland (TDH). New record (HHC).

Enicmus rugosus Herbst

Whiteknights, Reading, 18.8.95, resting on dried up slime mould (*Fuligo septica*) on a decayed deciduous log in woodland (TDH). New record (HHC).

Adistemia watsoni Woolaston

Leighton Park, Reading, 31.7.95, several found dead inside insect store boxes inside a house, killed by dichlorovos in the boxes (TDH). New record (HHC).

Corticaria elongata (Gyllenhal)

Leighton Park, Reading, 11.7.95, attracted to mercury vapour light, overlooking extensive lawn in parkland (TDH). Two old records, one non-local (HHC).

Cis bidentatus (Olivier)

Leighton Park, Reading, 28.8.95, in wood mould under tufts of *Volvariella bombycina* in a rot hole in horse chestnut in parkland (TDH). Four old records, two non-local (HHC).

Anisoxya fuscula (Illiger)

Leighton Park, Reading, 9.8.95, obtained by beating twigs of a branch of a deciduous tree which lay on the ground in tree-lined hedgerow at edge of parkland (TDH). One old record from Wytham (HHC).

Scaptia testacea Allen

Leighton Park, Reading, 31.7.95, attracted to mercury vapour light, overlooking extensive lawn in parkland (TDH). New record (HHC).

Anaspis pulicaria Costa A.

Near Appleton, Oxon, 3.7.95, one male obtained by sweeping plants of *Ballota nigra* on roadside verge (TDH). Seven old records (HHC).

Aderus populneus Creutzer in Panzer

Leighton Park, Reading, 11.7.95, attracted to mercury vapour light, overlooking extensive lawn in parkland (TDH). New record (HHC).

Molorchus minor (Linnaeus)

Pamber Forest, near Silchester, Hampshire, 7.6.95, swept from young birch in a clearing within mature oak woodland (TDH). Three old records (HHC).

Donacia crassipes Fabricius

Leighton Park, Reading, 2.7.95, one male resting on leaf of bindweed entwined around wilowherb on bank of pond which contained *Nymphaea alba*, its food plant (TDH). One old non-local record (HHC).

Donacia vulgaris Zschach

Whiteknights, Reading, 10.7.95, resting on leaves of *Typha latifolia* on margin of ornamental lake within parkland (TDH). Two old non-local records (HHC).

Phyllotreta exclamationis (Thunberg)

Near Eversley Common, Hampshire, 15.7.95, one female hopped onto white beating tray as it lay in damp meadow (TDH). One old record, four with no data (HHC).

Mantura matthewsi Curtis

Hartslock NR, near Goring, Oxon, 23.5.95, one resting on leaf of plant belonging to Asteraceae on short rabbit grazed turf on calcareous downland (TDH). New record (HHC).

Chuetocnema subcoerulea (Kutschera)

Near Eversley Common, Hampshire, 15.7.95, one male obtained by sweeping vegetation in damp meadow (TDH). One previous record with no data (HHC).

Anthribus fasciatus Forster

Leighton Park, Reading, 10.8.95, one male obtained by beating dead branches of an oak tree in copse of deciduous trees (TDH). New record (HHC).

Apion flavimanum Gyllenhal

Hartslock NR, near Goring, Oxon, 3.9.95, obtained by tapping plants of *Origanum vulgare*, growing in calcareous grassland, over a tray (TDH). New record (HHC).

Apion lacertense Tottenham

Leighton Park, Reading, 10.7.95, one male attracted to mercury vapour light, overlooking extensive lawn in parkland (TDH). New record (HHC).

Magdalis barbicornis (Latreille)

Near Shinfield, Reading, 1.7.95, resting on stem of hawthorn tree in tree-lined hedgerow (TDH). One 1938 record from Swinley park (HHC).

Zacladus exiguus (Olivier)

Near Hitchcopse Pit, near Cothill, Oxon, 23.6.95, inside corolla of a small-flowered geranium in tree-lined hedgerow on sandy soil (TDH). Four old records (HHC).

Amalorrhynchus melanarius (Stephens)

Cothill Fen NNR, Abingdon, Oxon, 23.6.95, obtained by sweeping a stand of *Rorippa nasturtium-aquaticum* on marshy ground in fen (TDH). One old record (HHC).

Drupenatus nasturtii (Germar)

Cothill Fen NNR, Abingdon, Oxon, 3.7.95, obtained by sweeping a stand of *Rorippa nasturtium-aquaticum* on marshy ground in fen (TDH). One old Cothill record (HHC).

Poophagus sisymbrii (Fabricius)

Bank of Isis near Appleton, Oxon, 3.7.95, one specimen was found resting on leaf of *Rorippa nasturtium-aquaticum* on river bank (TDH). Five old records (HHC).

Gymnetron veronicae Germar

Bank of Isis near Appleton, Oxon, 3.7.95, resting on inflorescence of *Veronica anagallis-aquatica* on river bank (TDH). New record (HHC).

Kissophagus hederæ Schmitt

Near Shinfield, Reading, 21.8.95, obtained by beating small dead elm in tree-lined hedgerow (TDH). New record (HHC).

Xylocleptes bispinus Duftschmid

Leighton Park, Reading, 19.8.95, attracted to mercury vapour light, overlooking extensive lawn in parkland (TDH). One old record (HHC).

HYMENOPTERA : SAWFLIES, ICHNEUMONS, ANTS, BEES AND WASPS

Vespa crabo L. **The Hornet**

Pamber Forest, 16.7.96, several flying around flowering *Rubus* (BRB).

Apis mellifera L. **Honey bee**

Holy Trinity churchyard, Hermitage, 8.12.96, old dead colony three metres up in a tree near the cross contained two double sided combs about dinner plate size (MWS).

DIPTERA : TRUE FLIES

Ctenophora pectinicornis (L.)

Coombe Wood SSSI (SU 544734), 5.6.96, Compartment 2 near bottom of slope (MWS).

Wachtliella riparia Winnertz (= *Dasyneura muricatae*)

Red Hill (SU 596737), 27.6.96, galls in *Carex spicata* (MWS).

Asilus crabroniformis L.

The Hollies, 4.8.96, a mating pair seen flying over grassland which had recently been quite heavily grazed by horses (the larvae of this rare fly live in the dung of horses or cattle) (MCH).

Leptarthrus brevirostris (Meig.)

Cherry Bank Farm (SU 532794), 28.7.96 (MWS).

Sphegina verecunda Collin

Dry Sandford Pit, 16.5.96, beaten from *Betula* (MCH).

Volucella inanis (L.)

Kiln Ride, Upper Basildon, 3.8.96 (MCH).

Volucella inflata (Fabr.)

Bucklebury Common, 8.8.96 (MCH).

Brachypalpoides lenta (Meig.)

Coombe Wood, just south of SSSI, 5.6.96, at hawthorn flowers (MWS).

Criorhina berberina (Fabr.)

Bucklebury Lower Common, 7.7.96, on *Rubus fruticosus* (MWS).

Psacadina verbekei Rozk

Moor Copse N.R., 21.9.96, swept from *Juncus*, Park Wood pond (MCH); Hogmoor Copse, north of second bend in River Pang (MCH, det MWS).

Pollenia amentaria (Scop.) (= *P. vespillo* (Fabr.))

Bucklebury Lower Common, 24.3.96, on *Tussilago* flowers (MWS).

CONTRIBUTORS

The Recorder expresses his appreciation to the following for their contributions:-

Martin Albertini (MVA), Heather Baker (HGB), Hugh Carter (HHC), Lin Carter (LC), Nigel Cleere (NC), Graham Dennis (GJD), Kenneth Grinstead (KHG), Norman Hall (NMH), Thomas Harrison (TDH), Martin Harvey (MCH), Lin Matthews (LM), David Moore (DAM), John Notton (JHFN), Basil Parsons (BTP), Christopher Raper (CMR), John Robbins (JIR), Malcolm Storey (MWS), David Young (DAY).

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RECORDER'S REPORT FOR INVERTEBRATES OTHER THAN INSECTS 1996

Hugh H. Carter

COELENTERATA

Chlorohydra viridissima

Chapel Row Pond, Bucklebury Lower Common (SU 567699), 14.6.96 (MWS).

PLATYHELMINTHES

Dendrocoelum lacteum

River Pang through Longmeadow Plantation (SU 592721), 19.8.96 (MWS).

Dugesia lugubris

River Pang near lay-by below Cray's Copse (SU 535724), 7.10.96 (MWS).

Polycelis tenuis

Pond at Beenham turning, Bucklebury Lower Common, (SU 581699), 14.6.96 (MWS).

ANNELIDA

Piscicola geometra

Bucklebury, on stone in river by footbridge just upstream from ford (SU 543713), 4.2.96 (MWS).

Trocheta subviridis

River Pang, near lay-by below Cray's Copse (SU 535724), 7.10.96 (MWS).

ARACHNIDA

Araniella sp.

A male in shade on leaves of *Aucuba japonica* in garden, Baughurst, 28.6.96 (KHG) - this was probably *A. cucurbitina* (Recorder).

Dicranopalpus caudatus

One on leaf of *Ulmus glabra*, five feet from ground, with legs aligned outwards, Moor Copse N.R. (SU 633737), 21.9.96 (MWS).

CRUSTACEA

Crayfish

A number in pond at Shire Hall, October 1996 (MJC) - perhaps introduced, may be an exotic species.

The Recorder expresses his appreciation to the following for their contributions,

Mary Carter (MJC), Kenneth Grinstead (KHG), Malcolm Storey (MWS).

THE RECORDER'S REPORT FOR VERTEBRATES 1996

Hugh H. Carter

FISH

Leuciscus cephalus (Linnaeus) **Chub**

One about 180 mm (7 inches) long and one 130 mm (5 inches) long in Holy Brook at Central Library, 6.6.96; ten in Emm Brook at Dinton Pastures, up to 200 mm (8 inches) long.

Cottus gobio Linnaeus **Bullhead**

Under stones in River Pang, Shallow Ford, Bucklebury (SU 543711), 7.10.96 (MWS).

AMPHIBIANS

Triturus vulgaris (Linnaeus) **Smooth Newt**

Some in garden pond at 40 Hemdean Road, 19.6.96 (JL).

Triturus helveticus Razoumovsky **Palmated Newt**

In pond at 43 Berry's Road, Upper Bucklebury (SU 542 683) and male in pond at The Slade (SU 533695), 23.3.96 (MWS).

Rana temporaria Linnaeus **Frog**

Four litres of spawn in the Horse Pond, Gallowstree Common 8.4.96; tadpoles in upper pond at Greenmore Hill, Woodcote, 8.4.96; "two handfuls" of frogs in garden pond, 40 Hemdean Road, 19.6.96 (JL); breeding in two ponds at Netherleigh, Pangbourne (CF).

Rana esculenta Linnaeus **Edible Frog**

Two large green aquatic frogs with white vocal sacs were seen in a flooded gravel pit at Bramshill Plantation near Hartley Wintney (SU 758 616), 16.6.96 (TDH). They were heard at some distance before they were seen.

Bufo bufo (Linnaeus) **Toad**

None in main or east ponds at Coach and Horses, Binfield Heath, 19.3.96, 25.3.96 or 1.4.96; one dead on Northbrook Road, Caversham Park, 21.3.96; two dead on Lowfield Road, Caversham Park; one dead on Peppard Road, Emmer Green, 23.3.96; three several days dead on Queensway and one dead on Whitby Green, both Caversham Park, 24.3.96; six dead on Kiln Road, Emmer Green, 25.3.96; juvenile in garden at 4 Westfield Road, Caversham, 19.6.96 (MJC); many in garden ponds at Patrick Road and 40 Hemdean Road, 19.6.96 (JL); many juveniles at 6 Tudor Close, Wokingham, 31.7.96 (AHM); one dead at Bix, 3.8.96 (MJC); one dead in Westfield Road, Caversham, 13.8.96; one caught in car headlights in driveway of Netherleigh, Pangbourne, 30.9.96 (CF); one dead in Row Lane, Dunsden, 30.10.96 (MJC).

REPTILES

Vipera berus Linnaeus **Adder**

A well-marked specimen was seen basking in sunshine on a patch of dry ground surrounded by shallow water, Decoy Heath N.R., 7.5.96 (KHG).

MAMMALS

Erinaceus europaeus Linnaeus **Hedgehog**

One dead on Northbrook Road, Caversham Park 30.6.96; one dead on Caversham Park Road, 28.7.96; one juvenile beside Caversham Park Road, 29.7.96, one dead juvenile there 7.8.96, one juvenile there, 20.8.96, two juveniles there, 4.9.96; one dead on Basingstoke Road near Long Barn Lane, 8.8.96; pregnant female dead on Kingsway, Caversham Park, 8.8.96 (EMC); one dead in Whitley, 24.8.96; one on Kings way and one at Milestone Centre, Caversham Park, 30.8.96; one dead on Northbrook Road, Caversham Park, 8.9.96; one juvenile by Littlestead Close, Caversham Park; one dead on Northumberland Avenue, Whitley, 28.9.96.
15 sightings (8 in 1995, all casualties).

Sorex minutus Linnaeus **Pygmy Shrew**

One dead by Bottle and Glass, Binfield Heath, 2.10.96 (MJC); one dead in Kiln Road, Emmer Green, 12.10.96 (MJC).

Neomys fodiens Pallas **Water Shrew**

One juvenile dead in Littlestead Lane, Caversham Park, 13.4.96.

Vulpes vulpes (Linnaeus) **Fox**

One dead on Swallowfield By-pass, 13.9.96.

Meles meles (Linnaeus) **Badger**

Sett disused, holes blocked by human agency in Comp Wood, 19.3.96; sett in Foxhills Lane, Dunsden apparently deserted but circular trackways and faeces in field on opposite side of lane, 15.7.96; faeces at Harpsden, 1.9.96.

Mustela erminea Linnaeus **Stoat**

One crossing Peppard Road in Sonning Common, reported 27.4.96 (EMC); one crossing Caversham Park Road. 31.6.96 (EMC).

Lutreola lutreola (Linnaeus) **Mink**

One swimming in River Pang by Longmeadow Plantation (SU 591 720), 12.5.96 (MWS).

Deer struck by car near East Ilsley, 11.2.96 (JS).

Dama dama Linnaeus **Fallow Deer**

One on Bucklebury Common at night, 23.2.96.

Capreolus capreolus (Linnaeus) **Roe Deer**

Mother and young at Netherleigh, Pangbourne, July 1996 (CF).

Muntiacus reevesi Ogilby **Muntjac**

One at Coppid Hall, Binfield Heath, and tracks and droppings in wood south-east of College Wood, 8.4.96; one in Rocky Lane, Rotherfield Grays, 25.5.96 (MJC); one in field near Hambleden, 6.10.96 (MJC); one struck by recorder's car, Kidmore Road, Caversham, 7.10.96; one dead on A404 north of Maidenhead Thicket, 20.11.96; one calling at night at Dunsden, 1.12.96.

Lepus capensis Pallas **Hare**

Two in field at Comp Farm, Binfield Heath, 25.3.96; one at Crowsley Manor, 8.4.96; one dead Rotherfield Greys, 25.5.96 (MJC); one in Sulham Woods, 26.12.96 (AB); two in field by Swallowfield By-pass, 28.12.96 (MJC).

In a year when Hares have been reported as becoming scarce nation-wide, it is good to have more than usual recorded in our area from farmland habitats.

Oryctolagus cuniculus (Linnaeus) **Rabbit**

Ten at Hardwick and three in Path Hill area, 3.3.96; six at Hook End, 15.3.96; one at Comp Wood, 19.3.96; two on Caversham Park Primary School playing field, 23.3.96, two there, 31.5.96, one there, 29.6.96 and 9.10.96; two dead on road, two alive north of Bishopsland Farm, 25.3.96 six there, 9.10.96, 4 in pit there, 8.11.96; nine in fields south of Peppard Road, Chalkhouse Green, 25.3.96 and seventeen there, 8.4.96, ten adults and seven juveniles there, 17.4.96 plus one dead on road, one juvenile and one dead on road there, 1.6.96 and 3.6.96, one dead there, 16.8.96, eight there, 6.9.96, five dead on road there, 23.9.96, two there, 23.9.96, 3 there, 6.11.94, six there, 2.6.96 (EMC); one in Milestone Wood, Caversham Park, 27.3.96; one in hedge of Showground, Caversham Park, 31.3.96 (EMC), two there 25.9.96; one on Bryant's Farm, Dunsden, 8.4.96 and 9.10.96; one in Hazelmoor Lane, Kidmore End, 8.4.96; three at Sonning Common sewage works, 8.4.96 and 17.4.96; ten in fields by Emmer Green reservoir, 12.6.96 and nine there, 14.7.96 and 9.10.96, 6 there 8.11.96; one juvenile at Dunsden, 12.7.96; one at badger sett in Foxhills Lane; twentyone on Watlington Hill, 24.8.96; one at Hurst, 25.8.96; one dead on Straight Mile, Hurst, 31.8.96; two in Bishopswood Spinney, 6.9.96; two alive and one dead, with abundant signs in the Crowsley area, 8.9.96; two dead on Swallowfield By-pass, 13.9.96; two dead on New Road, Sonning, 18.9.96; members of the Peppard Road colony showed signs of myxomatosis in September.

Total sightings 193, an increase on last year.

Rattus norvegicus Berkenhout **Brown Rat**

One dead on Henley Road, 27.2.96; three dead on Peppard Road, 23.9.96; one dead on Kiln Road, Emmer Green, 9.10.96.

Apodemus flavicollis (Melchior) **Yellow-necked Mouse**

One (cat prey) in garden, Baughurst, 1.8.96 (KHG).

Microtus agrestis (Linnaeus) **Short-tailed Vole**

One dead on Christchurch Meadow, 30.10.96 (MJC).

Clethrionomys glareolus (Schreber) **Bank Vole**

One dead in Clayfield Copse, 5.4.96; one female dead in Littlestead Lane, Caversham Park, 19.7.96 (MJC).

Sciurus carolinensis Gmelin **Grey Squirrel**

One at Standlake, 19.2.96; one dead on Maidenhead Road, Hurst at Waltham turn, 1.3.96; one at Hook End, one in Lackmore Wood north of College Wood, 15.3.96; four Clayfield Copse, 19.3.96 and two there, 1.5.96; one on the Showground, Caversham Park, 22.3.96 and 30.8.96 when many remains of acorns eaten by squirrels were found; one dead in College Wood, 8.4.96; one in Prospect Park, 27.4.96 (SM); one on Balmore, 1.5.96; one by Caversham Park Village pond, 26.5.96; one Peppard Hill, Emmer Green, 31.5.96, and one dead on road there, 11.6.96 and 2.7.96; three near Emmer Green reservoir and five in Clayfield Copse, 12.6.96; one near Emmer Green reservoir, 8.11.96; one on Sports Field, Caversham Park; one juvenile on Caversham Park Road, 28.7.96 and 29.11.96; two in Reade's Lane, Sonning Common, 9.8.96, and one dead there, 16.8.96; one dead near Surrell's Wood, Hurst, 9.8.96; four north of Fawley, 11.8.96; one dead on road in Emmer Green, 24.8.96; one in Holyrood Crescent, Caversham Park, 25.8.96; one in Old Copse, Sonning Common; two dead on Caversham Park Road, 16.9.96, one dead there, 18.9.96 and 23.9.96; two in Marchwood Avenue, 23.9.96; six at Wordsworth Court, Emmer Green, 9.10.96.

Total sightings 54 (14 in 1995).

Muscardinus avellanarius (Linnaeus) **Dormouse**

Present in Bottom Wood, "News of the Woods".

My thanks are due to the following contributors:

Alan Brickstock (AB), Elizabeth Carter (EMC), Mary Carter (MJC), Claire Frank (CF), Kenneth Grinstead (KHG), Thomas Harrison (TDH), Anne Murray (AHM), Stephen Murray (SM), Jeanne Smith (JS), Malcolm Storey (MWS).

Editor's Space-Filler

Plant names and Pliny the Elder (23 - 79 A.D.) author of the encyclopedic *Natural History*.

The generic name of the lesser celandine, *Ranunculus ficaria*, is attributed to Pliny. The damp and marshy habitat of many plants of the genus, also a typical haunt of frogs, gives the Latin name, meaning 'little frog'.

He mentions the greater celandine, *Cheledonium majus*, so named from Greek *chelidon* (a swallow), as it was said to come into flower when the swallows arrived and to fade at their departure.

His name for the primrose, Greek *dodecatheon*, was said to be under the protection of twelve gods. Linnaeus gave the name to a North American genus, in the family Primulaceae. These plants might be considered the American equivalent of the cyclamen, and are known as cyclamen in some parts of the USA, but are more commonly called shooting-stars and sometimes birdie-bills.

Saxifrage is taken from the Latin *saxum* (a rock) and *frangere* (to break) as some species grow in rock crevices and were reputed to break rocks, though according to Pliny the plant was so-called for its supposed efficacy in breaking up stones in the bladder.

THE WEATHER AT READING DURING 1996

Ken Spiers

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A year where each season's weather was more defined. The coldest winter since 1990/91 was followed by a cool but dry Spring. The Summer was very good, dry and with plenty of sunshine, and Autumn was dry and sunny, especially September and October. Monthly mean temperatures early and late in the year were below average. However a warm Summer brought the yearly mean temperature up to 9.9°C, only 0.2°C below the twenty five year average. This was not enough to stop the year's annual mean temperature being the lowest since 1987.

Eight of the months of the year had their rainfall totals below average. This coupled with the number of rain days and wet days, which were the lowest since 1990 and 1991 respectively, made this year the driest since 1990 and the second driest since 1960. June was the driest month and November the wettest, in fact November was the wettest month in the last four years. With the cooler weather early and late and the easterly winds, the number of snow showers increased. The number of days with snow was the highest since 1987 and the number of days with snow lying was the highest since 1986.

The second half of the year was very sunny and this brought the annual total above the twenty five year mean, which made 1996 the fourteenth sunniest since 1956, the year when sunshine records were first kept at the University. June was the sunniest month and January the dulllest. Both months were fairly extreme, with June the sunniest since 1976 and January the dulllest since 1956.

January started warm and very wet, with the bulk of the month's rainfall deposited in the first twelve days. From the middle of the month onwards the weather became dominated by the presence of an anticyclone. The precipitation was reduced to a few snow showers. These showers were generated by cold easterly winds blowing from the continent over a cold North Sea. This in turn kept the total rainfall for the month some 30% below the expected monthly average. It was also very cloudy for most of the month, with only 19.2 hours of bright sunshine being recorded. This was only 35% of the expected monthly average, making it the dulllest January since records began in 1956. It was also the second dulllest month, for any time of the year, since December 1956.

February saw several anticyclones passing over or to the north of the British Isles. They brought with them several spells of cold weather. Precipitation in these spells was of a wintry nature, some of them were of snow. As a result the number of days with snow lying on the ground was the highest since 1991 and the fifth highest since 1955. Interspersed with the cold spells, depressions and their associated bands of cloud tracked in from the Atlantic. They regularly deposited fair amounts of rain on their way, with the result that the total amount of rain for the month was 32% above the expected monthly average. Unlike the previous month, sunshine was in plentiful supply, especially in the last part of the month, making it the sunniest February since 1990.

The Winter Season as a whole, was unusual compared to previous winters experienced in the last decade. Anticyclonic weather was the dominant feature throughout, bringing with it winds from an easterly direction on half of the winter's days. Although we did not experience any large amounts of snowfall, we did have quite a number of days with snow showers, on fourteen days snow was reported as falling. This helped make this the highest number for any winter since 1981/82. With the winds blowing from the Continent and at times straight from Siberia, it was expected temperatures would be low. It turned out that this winter's mean temperature was the tenth lowest in the last thirty five years. Only a very sunny February helped save this winter being the dulllest on record. However the numbers of sunless days were equal to the winters of 1992/93, 1971/72 and 1963/64 which in turn were the highest since 1959/60.

March was another month where an anticyclone over Scandinavia dominated our weather. Winds blowing from an easterly direction kept daytime and night-time temperatures well below normal, making the month the coldest March since 1987. The lowest temperature recorded during the month was on the 24th, -3.5°C, the lowest for any March day since 1989. It was drier than normal due to anticyclones acting as a block and restricting the number of depressions reaching the British Isles. This helped to make the monthly rainfall total only 71% of the expected average. With cloud coming in off the North Sea, it looked at one point as if it was going to be one of the dulllest March months on record.

However the last five days produced twenty five hours of sunshine, but the total was still 42% below the monthly average. Eleven days when no sunshine was recorded, made this the highest amount for any March since 1969.

April continued the same pattern of weather that had been prevalent over the previous months, with an anticyclone centred over Northern Europe producing winds from the east. However, as the anticyclone receded and winds blew from a more normal westerly direction, temperatures began to rise. They reached a peak on the 20th when 21.9°C was recorded, this being the highest for any day in April since 1990. Although the rainfall for the month was nearly average, it could be classed as a "dry month" apart from two days, the 12th and the 22nd. On these days 14.5 and 18.8 mm of rainfall were recorded respectively. To show how the weather in April can be so diverse, rain falling for most of the evening of the 12th began to fall as snow and a layer of snow was reported at the University campus for a time before melting. During the middle of the month, when more cyclonic weather was establishing itself, especially until the last part of the month, there was very little in the way of sunshine. In this period, the total of 12.8 hours of sunshine, recorded on the 27th, was the sunniest April day since 1988.

May brought with it a continuation of the cold winds from the north-north-west. This kept day and night-time temperatures well below normal. It was only on the 19th that temperatures began to recover when winds changed to a westerly direction, but not enough to stop this May being the coldest since 1921. Over the first half of the month there were several ground frosts, some five above the expected average, making it the highest number since 1990. During the second half the weather became very unsettled, with most of the month's rain falling in this period. It also became very windy, with this month the windiest May since 1986. During this period a maximum wind gust of 47mph, recorded on the 19th, was the highest for any day in May since 1986.

The Spring Season's main feature was the temperature. This was largely controlled by the wind, which varied in direction between north-east and south-east. There were only brief respites from the below average temperatures and they were on the third weekend in April and at the end of May. As a result the season was the coldest since 1986 and the eighth coldest since 1921. The number of ground frosts recorded was the highest since 1990 and third highest in the last twenty years. There was an up side to the weather and that was the amount of rainfall. Each month of the season had rainfall totals below average, as a result the seasonal total was 24% below the expected average. However it was very cloudy, with the number of days without sunshine well above average, only the years 1994, 1984 and 1978 recording more. The result was that this Spring was the dullest since 1991 and the sixth dullest in Reading since 1939.

June was a fine early summer month. Pressure was high over the British Isles for most of the month, the mean pressure for the month was the highest since 1987. This gave many days of long unbroken sunshine, which helped daytime temperatures to climb to well above normal. However with clear skies at night ground frosts were frequent, with the total for the month the highest since 1972. The anticyclonic weather acted as a block to other weather systems approaching these islands at those times, with the result that rainfall was at a premium. There were only three days when 0.2 mm or more of rain was recorded. This has only happened three times in previous years, in 1995, 1942 and 1940. All this helped make this month the driest June since 1975 and the fifth driest since 1921. It was very sunny throughout the month, with no days reporting nil sunshine, which made June the sunniest since 1976.

July started very unsettled, with three quarters of the month's rainfall being recorded in that time. High pressure became firmly established, producing very dry and warm weather. The barometric pressure was very high during the middle of the month, this made the mean for July the highest since 1990. It became very warm in the third week, with a temperature of 30.4°C being recorded, the highest temperature recorded since August 1995. Daily amounts of sunshine were also high around this time, with the sunniest day on the 18th, when 14.5 hours were recorded. The total for the month was nearly 10% above the monthly average, making it the second month in a row with 200 hours being recorded. A thunderstorm was recorded on the 5th and as the anticyclones receded later on in the month, more thunderstorms were recorded on the 23rd and 29th.

August seemed to be a bag of allsorts, with two spells of fine dry weather with high temperatures interspersed with spells of wet weather accompanied on some occasions by thunder and lightning. Daytime and night-time temperatures held up well for most of the month, this helped to produce one of the warmer August months in the last twenty five years. There were two spells of disturbed weather accompanied by thunder and lightning making this month the stormiest since July 1995. Sunshine

was recorded every day, with the total for the month just over 200 hours, this was the third month in a row with two hundred hours or more recorded.

This Summer Season did have its moments, however it would be hard to beat last year's summer. June had warm days and cool nights and was also very dry and sunny. July was also very sunny and warm but with average rainfall. August was not quite as good being the wettest, however the overall temperatures were still above average. The season was interspersed with a few days of high daytime temperatures. The best of these occurred on the 22nd July, 30.4°C, the only time this summer's temperatures topped 30.0°C. July was also the warmest month. Water stocks in reservoirs and aquifers were very low, especially after a dry Spring, with this summer's rainfall 16% below the expected average. However sunshine was the main feature of the season, with over 200 hours recorded every month. With the total 18% above the seasonal average this made it the sunniest since 1989 and the fifth sunniest since 1956. Also this was the first summer since 1960 when no sunless days have been recorded.

September continued with good late summer weather up to the middle of the month, dominated by anticyclones. After they had receded in the latter part of the month, more normal weather entrenched itself, however rainfall was still low and this produced the driest September since 1985 and the eighth driest since 1921. Although the monthly sunshine total was just below average, there was a period in the middle of the month, 13th - 17th, when over fifty hours were recorded. On the 20th no sunshine was recorded, this was the first day since late May, one hundred and eighteen days earlier. This was the longest period with no sunless days since before 1960.

October was a fine Autumn month, with plenty of sunshine, below average rainfall and temperatures above average. Although it will take some time to match last October's temperatures, it was still pleasantly mild, as a result the number of ground frosts were the lowest since 1990 and the fourth lowest since 1960. This October was the seventh month this year with rainfall total below the monthly average, the total this month was some 30% below the expected monthly average. There were some long sunny days and with the number of days without sunshine the lowest since 1990, it made this month the sunniest October since sunshine records were first started at the University in 1956.

November ended a sequence of months where rainfall had been near or below average, with the month's total 69% above the expected monthly average. During the month, the first snow of the season was recorded, the earliest since 1985. The first few days of the month recorded some of the highest daytime temperatures recorded in any November since 1976. However temperatures soon plummeted to make the month overall very cool. As already mentioned the month was very wet, which made this month the wettest November since 1992 and it was also the wettest month since January last year. However, although it was very wet it was unusually sunny, with quite a large proportion of the rain falling at night-time. The number of days with no sunshine being recorded was the lowest since 1990 which made this the sunniest November since 1989.

The Autumn Season continued as for previous months, very dry and sunny at times. There were no great fluctuations in temperatures only the gradual decrease expected as the season progressed. However temperatures did drop dramatically during November but this did not affect the overall mean which was above average for the season. The season will be remembered for its dryness during September and October and although November was very wet, which helped to alleviate the problems a very dry Autumn would have had on water resources, it was still 13% below the seasonal average. Sunshine was well above average at times, which helped make this overall a very pleasant Autumn. The total number of hours of bright sunshine was well above the seasonal average, that made it the sunniest Autumn since 1990.

December never recovered after a cool November. As the month progressed high pressure began to establish itself to the north-east of the British Isles, bringing very cold weather from Northern Europe. This produced the first snow on Christmas Day since 1976, when most people awoke to find a light dusting of snow had fallen in the early morning. During a two week period, the 7th to the 21st there was only one day that recorded any sunshine, that was on 14th. However it was still the sunniest December since 1986, due to some very sunny days early and late in the month.

Table 1 WEATHER RECORDS 1996

UNIVERSITY OF READING (WHITEKNIGHTS)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Mean Daily Temperatures °C													
Maximum	6.7	6.1	8.0	13.5	14.0	21.2	22.9	22.1	18.1	15.6	9.6	5.7	13.6
Minimum	3.3	- 0.2	2.0	5.0	5.6	9.6	12.1	12.2	10.1	8.2	2.9	1.1	6.0
Mean	5.0	3.0	5.0	9.2	9.8	15.4	17.5	17.2	14.0	11.9	6.3	3.4	9.9
Range	4.4	6.3	6.0	8.5	8.4	11.6	10.8	9.9	8.0	7.4	6.7	4.8	7.7
Extreme Maximum Date	12.1 8th	12.2 16th	13.5 23rd	21.9 20th	23.6 30th	29.4 7th	30.4 22nd	29.5 19th	21.9 15th	19.6 23rd	16.7 2nd	12.6 3rd	30.4 22nd Jul
Extreme Minimum Date	- 5.3 27th	- 4.6 5th	- 3.5 11th	- 2.9 2nd	0.0 6th	5.7 3rd	7.9 7th, 18th	8.3 31st	3.4 24th	1.8 17th	- 3.7 22nd	- 4.2 26th	- 5.3 27th Jan
Extreme Grass Minimum Date	- 8.2 27th	- 10.5 5th	- 9.4 11th	- 11.5 4th	- 7.5 6th	- 3.6 22nd	- 0.6 18th	1.8 4th	- 3.6 14th	- 3.5 17th	- 10.5 22nd	- 11.2 26th	- 11.5 4th Apr
Days with air frost	6	16	7	4	0	0	0	0	0	0	9	12	54
Days with ground frost	10	24	19	15	13	8	1	0	6	6	21	19	142
Hours at or below 0°C	61.5	174	26	12.5	0	0	0	0	0	0	57	96	427
Sunshine Hours													
Total	19.2	87.3	63.1	144.0	168.3	266.4	222.3	202.4	129.1	124.1	82.4	56.1	1564.7
% of possible	7.3	30.0	17.2	34.8	35.0	54.0	44.7	44.9	33.9	37.4	30.6	22.6	32.7
Daily Mean	0.6	3.0	2.0	4.8	5.4	8.9	7.2	6.5	4.3	4.0	2.8	1.8	4.3

Table 1 (continued) WEATHER RECORDS 1996

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation													
Amount in mm	42.7	53.0	36.0	43.1	29.0	8.9	48.1	59.7	14.7	42.2	94.7	16.4	488.5
Rain days	9	15	10	10	11	3	10	10	6	15	18	12	129
Max. rain in one day mm	21.3	10.1	8.6	18.8	6.1	7.8	23.2	17.5	5.7	9.3	18.7	8.2	23.2
Date	8th	24th	25th	22nd	18th	7th	5th	22nd	30th	8th	19th	2nd	5th-Jul
Mean wind speed mph	4.8	4.5	3.5	3.0	5.2	2.6	2.5	2.6	3.1	3.3	3.9	3.5	3.5
Snow or sleet days	3	6	1	1	0	0	0	0	0	0	2	3	16
Days with snow lying	1	7	1	0	0	0	0	0	0	0	1	4	14
Days with fog at 09.00 GMT	9	2	4	0	0	0	0	0	0	0	1	0	16
Days of thunder	0	0	0	0	0	1	3	4	1	0	0	0	9
Days of hail	0	3	1	0	0	0	0	0	0	0	0	0	4
Mean Pressure mb	1009.4	1013.7	1018.4	1017.2	1014.8	1021.6	1018.0	1015.0	1018.3	1014.8	1009.7	1014.9	1015.5
Highest	1027.8	1034.1	1034.5	1032.0	1026.7	1036.2	1033.6	1028.4	1029.4	1026.9	1025.8	1039.7	1039.7
Date	16th	29th	1st	4th	13th	13th	16th	3rd	1st	10th	16th	26th	26th-Dec
Lowest	984.9	998.3	1002.7	1000.8	995.2	1009.8	1001.9	1003.2	1005.3	998.3	980.2	991.8	980.2
Date	7th	24th	21st	23rd	19th	20th	3rd	23rd	20th	28th	19th	3rd	19th-Nov

Table 2 MONTHLY AND ANNUAL WEATHER AVERAGES

UNIVERSITY OF READING (WHITEKNIGHTS)

1971 - 1995

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Mean Barometric Pressure mb	1015.3	1015.9	1014.3	1015.4	1015.4	1016.6	1017.0	1016.7	1016.3	1015.0	1015.7	1015.3	1015.7
Mean Temperature °C	4.4	4.3	6.5	8.4	11.8	14.6	17.2	16.8	14.0	10.7	7.1	5.3	10.1
Mean Maximum Temperature °C	7.2	7.3	10.1	12.5	16.4	19.2	22.1	21.6	18.3	14.4	10.2	8.1	14.0
Mean Minimum Temperature °C	1.5	1.3	2.9	4.2	7.2	10.0	12.4	12.0	9.7	7.1	3.9	2.6	6.2
Daily Range Temperature °C	5.7	6.1	7.2	8.3	9.2	9.3	9.7	9.6	8.6	7.3	6.2	5.5	7.7
Soil Temperature °C 5 cm	3.1	3.0	5.3	8.9	13.8	17.1	19.5	18.3	14.4	10.0	6.0	4.2	10.3
" " " 10 cm	3.4	3.2	5.1	8.1	12.6	16.1	18.3	17.4	13.9	9.8	6.2	4.4	9.9
" " " 20 cm	4.1	3.9	5.5	8.0	11.9	15.1	17.5	17.1	14.3	10.7	7.2	5.2	10.0
" " " 30 cm	5.0	4.8	6.3	8.6	11.9	14.9	17.1	17.1	14.8	11.8	8.5	6.2	10.6
" " " 50 cm	5.5	5.2	6.5	8.6	11.6	14.4	16.6	16.9	15.1	12.4	9.2	6.8	10.7
" " " 100 cm	6.6	6.0	6.6	8.1	10.6	13.2	15.2	16.0	15.0	13.0	10.5	8.0	10.7

Table 2 (continued) MONTHLY AND ANNUAL WEATHER AVERAGES

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Number of Air Frosts	10	10	6	2	0	0	0	0	0	1	5	8	42
Number of Ground Frosts	20	19	18	15	8	3	0	1	4	10	15	17	130
Mean Grass Minimum °C	-1.9	-2.1	-0.9	0.2	3.0	5.1	8.5	7.9	5.6	3.1	0.4	-0.8	2.4
Mean Bare Soil Minimum °C	-0.8	-1.0	0.4	1.5	4.4	7.4	9.9	9.3	6.9	4.2	1.5	0.2	3.7
Mean Concrete Minimum °C	-0.5	-0.5	1.0	2.5	5.7	8.9	11.2	10.4	7.8	3.1	1.8	0.4	2.1
Rainfall mm	61.7	40.1	50.8	43.2	48.2	48.5	40.6	9.7	57.4	60.6	55.9	64.3	621.0
Number of Rain Days	16	13	16	13	13	11	10	11	11	13	13	15	155
Number of Wet Days	12	8	11	7	9	8	7	7	8	10	9	11	107
Hours of Bright Sunshine	54.9	67.0	107.7	152.7	190.9	188.1	202.6	195.1	139.0	104.5	68.3	48.4	1519.2
Mean Duration	1.8	2.4	3.5	5.1	6.2	6.3	6.5	6.3	4.6	3.4	2.3	1.6	4.2
Mean Duration possible at Latitude 51 ⁰	8.5	10.1	11.9	13.8	15.5	16.5	16.0	14.5	12.7	10.7	9.0	8.0	12.3
Number of Sunless Days	12	9	6	3	2	2	1	1	3	6	9	13	67
Mean Relative Humidity	88.5	88.2	83.3	76.3	70.5	73.1	73.1	75.6	80.6	87.1	89.2	89.9	81.0