

The Reading Naturalist

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THE READING NATURALIST

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EDITORIAL

Having volunteered to become Editor I must first acknowledge the help given by the former Editor, Frances Cook, in introducing me to the ways and means of producing "The Reading Naturalist". The task has been made much easier with the help given by Alan Brickstock, so much so that I feel he should be given the title of Co-Editor. My thanks also to all those who have provided the Reports and articles, especially those who used word processors for their material, and to the proof readers. The present format, begun by Frances, will be continued using word processing and should make the task of producing "The Naturalist" easier in future years.

Unfortunately an error appeared last year in the Obituary of Nan Sandels whose maiden name was Barnett, and not Simmonds. It is much regretted that this error occurred.

Looking back over past copies of "The Naturalist" I see that the Editorial has varied in length from a relatively few words to a summary of the past year's activities and usually included is an exhortation to members to provide articles and plenty of records for the recorders. The latter is, of course, essential for the continuation of "The Naturalist" and the fact that this is the 46th. number speaks well for the efforts of members in past years. I note that in the last year's issue there were contributions from about one fifth of the membership. Is it too much to hope that the number of contributors can be increased to one quarter of the membership for next year's issue?

Excursions

Renée Grayer

Winter 1992-1993

Twenty-four members attended the first winter walk on October 18th, a fungus foray to Fence Wood led by Paul Cook. Although the fungi were sparse, many species were found.

On a cloudy but very mild November day (7th), ten members drove all the way to Winkworth Arboretum near Godalming to enjoy the autumn colours, not only in the arboretum itself but also along the roads in Berks, Hants and Surrey. Colin Grayer led this excursion, assisted in tree identification by Jocelyn Whitfield.

On December 12th we studied freshwater micro-organisms from Whiteknights lake. After a short walk to the lake where Michael Keith-Lucas obtained the samples with a dextrous flourish of the collecting net, 21 members hurriedly retreated to the warmth of the Plant Science Laboratories to study the flora and fauna under the microscope. An afternoon enjoyed by all, largely thanks to Michael's explanations and identification of the fascinating organisms.

January 16th and February 20th were devoted to birdwatching, the former trip (to Pagham Harbour) led by Martin Sell and the latter (to Lovell's and Sandford Lakes) by Norman Hall. Highlights of the trip on 16th January were a peregrine falcon flying very close which put up all the waders, and in Sidlesham a barn owl was seen hunting.

On March 13th some 15 members and guests enjoyed the annual mosses and liverworts outing. Although Dr. Watson showed us the mosses in his garden, he unfortunately could not lead the excursion because of a leg injury. However, Michael Fletcher ably took over and showed us many species of bryophytes during the long walk through the Woodcote and Goring area. And at the end of the trip we could recover with tea and cakes hospitably provided by Mrs. Watson.

Summer 1993

The summer excursions started well with a five-mile walk on April 10th by 13 members in the Nuffield and Mongewell area, led by Alan Brickstock. The weather was beautiful, the green hellebores were superb, and many other spring flowers were in bloom (23 species counted) including some early bluebells.

One of the highlights of the season was the visit to Bill Baker's garden, attended by some 20 members. After Bill's successful illustrated talk to the society in October 1992, everybody was keen to see all his plants "in the flesh", and were not disappointed.

Half a dozen members listened to the dawn chorus at Theale Gravel Pits on May 8th. Martin Sell went on to the South Coast afterwards, and several unusual birds which were seen there, including a pomarine skua flying by, a hobby, and an osprey flying off the sea.

On May 12th ten members came to Redhatch Copse for a walk led by Renée Grayer. Although the bluebells were past their peak due to an early season, they still gave a good display of colour together with greater stitchwort and herb robert. Wood spurge and wood speedwell were unexpected finds. We also heard the green woodpecker and lesser whitethroat.

An excursion to Swyncombe Downs on May 22nd was led by Colin Grayer. 14 members attended in ideal walking weather, and 66 plant species were recorded including many unusual and special ones. The highlight was searching for (and rediscovering) a dozen or so white helleborines at the end of the walk. The area was also good for Lepidoptera, including the silver Y moth and dingy and grizzled skippers.

The yearly coach outing took us on June 19th to Cheddar Gorge, Crook Peak and Sand Point; 41 members attended, plus a very cheerful and friendly coach driver (Dick Gordon). The cool but summery weather was ideal for travelling and walking. At Cheddar Gorge the cheddar pink was in bloom, and many photos of it were taken by intrepid members clambering on the rocks. We also saw

the green hairstreak butterfly. Crook Peak was well worth visiting for its flowers, and many other species were found at Sand Point. The area behind the toilets was especially interesting!

The barbecue and mothing evening on July 2nd in the Harris Garden and Wilderness proved to be another success thanks to the excellent food provided by Jocelin Whitfield, the expert knowledge of Brian Baker and the warm and beautiful weather. 29 members were present during the barbecue and another 6 turned up for the mothing.

Light trapping for insects took place from 22.50 on Friday night until 02.50 on Saturday morning but on this occasion, the 27th annual mothing night, only 36 species of macro-moths were recorded, all of them commoners. In the early part of the night caddisflies and lesser water boatmen came to the sheets in considerable quantity and provided additional interest.

Unfortunately our group was not alone in the Wilderness, as many students were celebrating the end of term with outdoor parties and loud music.

Despite the changeable weather with heavy showers, 17 people attended an excellent excursion through Dry Sandford Pit on July 10th led by Dr. Searle, warden of this BBONT reserve. 74 species of plants and 6 Lepidoptera were recorded, including the exquisite marsh helleborine and scarlet tiger moth. The banks were full of small holes used as nests by solitary bees.

Pouring rain did not deter ten hardy members from attending a meeting led by Brian Baker to Silchester Common and Pamber Forest on July 24th. Unfortunately it was too wet to see many butterflies, but an Essex skipper and small skipper obligingly sat next to each other so that we could photograph them and study the differences in their antennae. However, members were rewarded by seeing a large patch of Lily of the Valley on the common. Late in the day the sun appeared and White Admirals, Silver-washed Fritillaries and Essex Skippers were seen in the forest.

John Roberts, a friend of Brian's, showed us many different leaf miners on the leaves of various trees, and Alan Brickstock identified the fungi. In addition, 47 species of higher plants were recorded, including cow-wheat, wild service tree and lily-of-the-valley.

Another highlight of the summer excursions was a trip to Butter Wood on August 7th, enthusiastically led by Jean Schmieder. The weather was ideal for seeing butterflies, and the 13 members attending made memorable sightings of purple hairstreaks and silver-washed fritillaries. Flowers included the unusual lesser skullcap.

On August 21st Renée Grayer led an excursion to Watlington Hill. Over 50 species of plant were recorded, amongst others the frog orchid, chiltern gentian, autumn felwort, candytuft and pale toadflax. Butterflies included silver-spotted skippers, and we were lucky enough to see a red kite high in the sky while we were having tea.

Bartley Heath was the destination of a trip led by Martin Sell on September 4th. 19 members attended on a beautiful sunny day. The marsh gentians were very good, and sneezewort, lesser skullcap and saw-wort were also seen. We also saw a poplar hawkmoth caterpillar, a nuthatch or two, and flocks of tits assembling for the autumn.

Michael Fletcher took a group of some 22 members to Turville on September 18th.

Highlights were chiltern gentian, autumn felwort and giant fescue.

Wednesday Afternoon Walks

A regular corps of 6-8 people attended the monthly Wednesday afternoon walks. These were to Bix and Shepherd's Green on April 21st; Silchester Amphitheatre and Simms Copse on May 19th; Eling and Trumpetts Farm, Hampstead Norreys on June 16th; River Whitewater and West Green on July 21st; Upper Bolney Farm and Shiplake Woods on August 18th; and Howe Grove Wood and Hare Green on September 15th. On three of these walks over 100 plant species were recorded along the way, with a record of 119 species during the trip on 18th August. Again many thanks to Ken Thomas for working out and leading these walks.

MEETINGS

Meryl Beek

Between October 1992 and March 1993, a series of winter lectures was held on alternate Thursday evenings in the Abbey Room, Reading Central Library. The Annual General Meeting on October 15th. was followed by Jocelin Whitfield's presidential address "On Sunshine". A precis of this interesting and unusual talk appeared in the 1993 "Reading Naturalist" (40 members). On October 29th. the Society were delighted to welcome Bill Baker, who showed excellent slides of his wild garden at Tidmarsh by the river Pang (41 members). This meeting had been postponed from last year's programme due to Mr. Baker's illness at that time. A Brains Trust followed in November (29 members), and at the end of the month "The Wildlife of Bramley Frith Wood" was the subject of Andrew Cleave's address, which delighted all with its varied and abounding flora and fauna (47 members).

In the New Year, Jim Newman spoke to the Society on "Spiders", which introduced the meeting to both common species in the local environment, and more venomous ones from warmer climates (33 members). Dr Philip Sterling, booked for January 21st. to speak on "Conservation in Thames Water", was unable to be present as he had the 'flu, and Brian Baker and Alan Brickstock "saved" the meeting with slides of Lakeland butterflies and plants of the Ben Lawers region respectively (41 members). February 4th. was another "home-brewed" evening, when Norman Hall spoke of the structure and diverse habitats of Tenerife, which he visited five times and always at Christmas (46 members). This was continued with Neville Diserens' address on February 18th. entitled "Mount Olympus and beyond", showing the wealth of wildlife to be seen in Greece in high summer (41 members). On March 4th. the Society listened to Ian Currie's superb lecture on "Weather lore - fact or fiction". This talk was of a general nature, but included many observations of animals and plants in varying weather conditions, together with folklore - sometimes true and sometimes not ! The meeting was recommended to make their own observations ! (37 members).

Members evenings are always popular, and these were held on December 10th. 1992, when Paula Cox gave a fascinating "mini talk" on foxes (45 members). At the meeting on March 18th. 1993 Kit Brownlee spoke on "Natural History begins at home" -with local illustrations ! (43 members).

Brian Baker, as Winter Programmes Secretary, is thanked for arranging these varied and interesting lectures.

MEMBERSHIP

It is a great pleasure to say that at the Annual General meeting in October it was unanimously agreed that Miss Eileen Holly should become a Honorary Member of the Society. Eileen joined the society in June 1974, and was President for the years 1986-7 and 1987-8. She joins Brian Baker, Enid Nealmes, Hilda Lambden, Vera Paul and Eric Watson as Honorary Members

. It was reported that there were 155 paid-up members, 11 less than for the previous year.

The names of new members of the Society who joined in the years 1991 to 1993 are given below

1991

Mrs Elaine Ghent

Mr Barrie and Mrs Joan Knowles

Mr John and Mrs Brenda M. Marshal

Mr Christopher Raper

Miss Lizzie Woodman

1992

Mr Graham J. Dennis

Mrs Pamela Harvey

Miss Jasmin Husain

Mr David and Mrs Lin Matthews

Mr David and Mrs Frances Tucker, Kay and Keir Tucker

1993

Mr R. and Mrs Lin Carter and Hannah Carter

Mrs Margaret Gladdish Mr Roland F. Marslin

The Society was sorry to have resignations from Mrs Vi Gumbrell because of ill-health and from the following long-standing members; Mr Alan and Mrs Doreen Hodge, Mrs Monica Long and Mr Donald and Mrs Ruth Palmer.

Obituaries.

Lt. Col. G.G.Eastwick-Field 1921-1993.

Although Gordon Eastwick-field may have been known to only a few of us in the Reading & District Natural History Society, which he joined in January 1976, he had for many years been a valuable contributor of records for the Reading Naturalist. He was an ardent field-worker and undertook survey work for English Nature, The Hants and Isle-of-Wight Naturalist's Trust and for Poole District Council, Dorset. He also organised mothning nights for West Berks. BBONT.

Nearer home he was an active member of the A.W.R.E Conservation Group, and assisted in the production of the detailed 38 page report of macro-lepidoptera recorded at Aldermaston from February 1976 to December 1982.

Following retirement in 1983 he recorded in great detail the macro-lepidoptera attracted to the moth-trap in his attractive $1\frac{3}{4}$ acre garden at Burghclere, work which he much enjoyed and which he had commenced, if only sporadically, in 1975. In that first full year he made some notable records, the highlight being that of the Devon Carpet, a new Vice-county record for North Hampshire.

He was always keen to help current recording work whenever required and, in 1987, sent the writer a bound list of the macro-lepidoptera species published in The Victoria County History of Berkshire, 1906, which he had converted to modern taxonomic order.

He was the happiest of companions in the field and will be sorely missed.

BRB.

K.M. Horswell 1918-1993

By the sudden death of Ken Horswell on 2nd. March the Society lost a valued member. Ken was born in Henley, and although leading a very active business life he managed to create and maintain a very great interest in the natural history, particularly the flora, of Henley and its surrounding counties. For many years he was an active member of BBONT, carrying out local orchid wardening as well as helping in other ways. He was also a member of the Wild Flower Society at "Valhalla" level.

In 1985 he joined the Reading Society after the Henley Society was unfortunately disbanded. He was a regular attender at winter talks and on Saturday walks as well as being one of the few who supported the instigation of Wednesday afternoon walks.

As well as his knowledge, we shall miss his kindly, genial personality.

E.F.H.

SOME OBSERVATIONS ON LARGE SWIMMING ANIMALS

Presidential Address, October 14 1993

Michael Fletcher

I am not happy with this title. It sounds dangerously vague. It is also the sort of dull but worthy title a learned society might have expected in Victorian times. However there is nothing vague about the subject. I am going to look at a very precise question which has probably not been asked before. Nor is this a dull subject, for it has a bearing on one of the biggest controversies in zoology, and on one of the most dramatic pieces of evolution ever to happen on this planet. However it is not a subject that lends itself to snappy titles.

People are animals. People are large, and people swim. We are part of the natural world, and we forget it at our peril. This is not surprising to a zoologist, since most large animals will swim. If you throw a stick in the river almost any dog will leap in and fetch it, and there is nothing in the world so friendly as a wet dog. Cats can swim, though most cats don't like it because their fur goes soggy. Horses, though highly adapted runners, are also strong swimmers. Even elephants, the largest land animals of today, are good swimmers.

I show a silly picture which baffles some people while others quickly work out what it really shows. It appears to show a circle of ladies in swimming costumes dancing in ankle-deep water. The clue is that it is not the caption which is upside-down, but the entire picture. This is an underwater photograph of a team of synchronised swimmers, heads down and feet sticking out of the water. This is a baffling picture partly because balancing upside-down in water is a trick we rarely see. It is extremely difficult. It is certainly an unusual trick for any land animal. Dogs and horses, so far as I have seen, always try to keep their heads clear when swimming. However a wise zoologist would draw no conclusions from it.

British Gas, in one of the most striking advertisements of recent years, used a picture of a year-old boy floating happily under the Red Sea, suspended above a coral reef. It proved a controversial picture, and prompted a warning from the Royal Society for the Prevention of Accidents and from the Amateur Swimming Association, about the dangers of babies swimming underwater "particularly in light of limited research on the effects of water pressure on them".

Nevertheless thousands of babies have enjoyed mother and baby swimming lessons in recent years. They have become common. Though more helpless for longer than the babies of any other animal, human babies are able to float, make swimming movements, and hold their breath underwater. This, to a zoologist, must seem far more remarkable than the antics of synchronised swimmers.

I was first reminded what remarkable animals people are by a talk at my boarding school in the early 1950's. The inmates were amused or edified by visiting travellers and experts. One such speaker, I remember, talked at length about human hair. He drew attention to hair on human heads - a striking feature for any animal, and quite extraordinary on one which is otherwise almost hairless. He talked at length about the way it lay on the human body, especially around the neck. However he was not a hairdresser. The school secretary had no convenient record of the speaker's name, but he was probably Sir Alistair Hardy, professor of Zoology at Oxford. In the 1930's he had an idea about human evolution, so startling that he decided not to spoil his promising academic career by publicising it. He published it only in 1960, though by the 1950's he may well have been trying it out on schoolboys.

The title of the talk I heard was "Has man an aquatic past?" In retrospect, that talk was not entirely convincing. The mane of hair on a human head, said the speaker, covered the bits which stuck out of the water when swimming, protecting heads and shoulders from sunburn. People spend so much time grooming, washing and beautifying their hair that it is better explained as a display feature like a peacock's tail. If human hair has a practical purpose it is probably - like a horse's mane - to stop flies landing where we can't swat them! The lie of our hair is more puzzling. Most animal hair points back from the nose to the tail, or hangs down. Human hair, especially around the neck, does seem to follow the flow lines of water around the body, as the speaker said.

That observation alone would hardly endanger a Zoologist's career. However it was only one of many strange or unique features of the human body which he said could be explained as an adaptation to life in water. The hairlessness, the layer of fat under the skin (a rare feature of land animals, but present in all marine mammals) the ability to hold breath while swallowing, and above all, the upright posture, were all as he claimed, adaptations to water.

This so-called "Aquatic Hypothesis" has been around for over 40 years. It has been pushed further by others, especially by Elaine Morgan, who has written a series of books, all promoting the central idea that the evidence of human evolution is written in our own bodies, and that this evidence all points to an aquatic ancestry.

The reasons why the "Aquatic Hypothesis" has not got very far in the past 40 years can be found in any book on prehistoric man. A picture from "Prehistoric Man" by Andrew Leuschner shows a long line of ancestors. These ancestors are usually male, probably because nobody wants to guess what female breasts looked like a million years ago, and they usually have a mean look on their faces, as though they spent their spare time molesting innocent mammoths. It was partly to contradict this macho image that Elaine Morgan titled one of her books "The Descent of Woman".

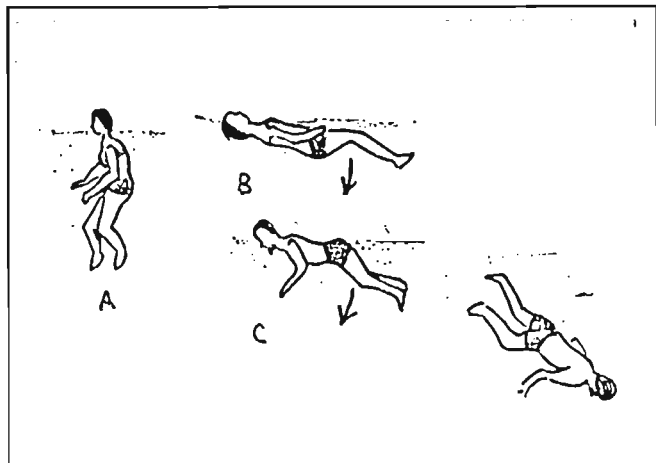
Yet the pictures are based on fossil evidence, however incomplete. Bone by bone and site by site, a picture is being built up, not of a human family tree, but more of a family forest in which there have been rapid but continuous changes going back 3-4 million years. They leave no room for the "Aquatic Hypothesis". Nor does the incidental evidence. Another picture from the same book, for instance, shows *Austropithecenes* gathering herbs and butchering an antelope by a lake. The evidence is clear enough that our ancestors did these things. It is written in bones and stones, the most enduring traces of our ancestors. Notice though, how the artist shows animals swimming and paddling in the lake, but not *Austropithecenes*.

There is a mystery time between 4 million years ago, when our earliest upright ancestors lived, and 7 million years ago, when apes and the human family diverged. The "Aquatic Hypothesis" has no room for either. It is ridiculous to suggest that some ape leapt into the water, evolved, climbed out, and went on evolving for 4 million years on dry land, while keeping all these aquatic features. And yet the evidence of our own bodies still convinces some people that our ancestors lived in water.

I am notorious for discarding shoes whenever I dare and going barefoot. As a result I have long appreciated that the human body, at least from the ankle downwards, is a very remarkable piece of design. Yet it has some puzzling features. I was rather surprised to realise a few years ago that they might relate to swimming, and that a look at how the human foot performs in water might have a bearing on the riddle of how the human race became as it is.

Any animal adapted to water must be able to control its movements. People float, obviously a useful accomplishment in any air-breathing animal that goes for a swim. The lungs and the cavities in the head contain air, making the head and torso buoyant. Limbs and the lower body are slightly denser than fresh water and tend to sink.

Position A and B are stable. A swimmer can maintain the unstable position C, but only by kicking the legs. The upside-down ladies were in a position which is almost impossible to maintain, since the feet are out of the water, and cannot help. Only if they are almost exactly balanced and quite skilled, can swimmers hold this position. The feet, in other words, are the most important control surface in a human swimmer.



A half-hour at a local swimming pool gave evidence of something else that most people find obvious. Being unable to time

myself in a crowded pool, and not wishing to try racing or hurrying, I swam a series of lengths with a steady comfortable stroke (about one in each 1.4 seconds), drifting when someone else got in the way, and counting the number of strokes to a length. The figures do not show what happens in fast competition swimming, but only that the feet and legs give by far the greater part of the thrust in normal leisurely swimming.

Normal swimming	28,36 and 38 strokes	Total 112
Legs only	41,38 and 38 strokes	Total 117
Arms only	70,94 and 71 strokes	Total 235

The arms make very little difference. I confirmed this with a rough spring balance that could be tied to the bar of a swimming pool, and could measure forces in both directions while floating on the water. Holding the handles with my hands I consistently managed 5-5.5 Kg thrust by kicking with my feet, and a peak reading of 6 Kg. Hooking feet around the handles I managed 1.5 Kg thrust with arms and hands, and a peak reading about 2 Kg. Another male swimmer got similar results.

If the human foot and lower leg provide most of the thrust in swimming, and play the main part in controlling body position in the water, a simple logical proposition can be made.

It is this: If people are adapted to water, the human foot is adapted to use in water. Well is it? That is the question I intend to answer.

A zoologist could quickly reach a conclusion by reasoning like this: Most water animals have no feet. Most footed animals are not water animals. The few animals with feet adapted for swimming include water-birds and amphibians. They have long toes with webs between them. Human toes are short, with no webs. The human foot is unlike the foot, fin, flipper or other aquatic appendage of any well-adapted swimming animal. Therefore it is not adapted to use in water. However a more thorough look at how animals actually swim, at the mechanical principles involved, and at how the human foot works in water lead me to a surprising conclusion.

To reach it means taking a general look at large swimming animals, ignoring insects and anything smaller. Here is a selection, classified according to how they propel themselves.

The first group is the Jet Set. They are molluscs. When in a hurry, squids and octopus squirt water. Even scallops can jump along by snapping their shells shut. People can fill their mouths with water and spit it out as hard as possible. However it is messy, antisocial, and it doesn't work. We cannot learn about human swimmers from the jet set.

Next come the Wrigglers. Snakes can wriggle on land or in water. Wriggling is a good option for an

amphibious life-style. Grass snakes can hunt on land or in water, and the Atlantic eel is the only ocean-going fish which can go any distance on land. Wrigglers are very versatile and can climb trees or go down holes. However it is not a fast or efficient way to travel. Wrigglers adapted to water tend to be flattened, like sting rays and leeches, or to have fins around the tail, like lampreys. People too can wriggle, but it is not a useful accomplishment in water.

The largest group are the Tail Waggers, abundant in both species and individual numbers. It is a diverse group, containing mammals, sharks, and fish. It once contained reptiles. It contains all the fastest swimmers on the planet, and whatever group they are in, the fast ones show a remarkable convergence of body form, which must represent some sort of optimum design. What they all have in common is that the tail and body flex sideways (or up and down in marine mammals) at right angles to the direction of swimming.

This classification by means of propulsion leaves a few doubtful animals. The Northern Diver is a fast and agile underwater swimmer. It differs from most water-birds in body structure, and catches fish by outswimming them. Its silhouette shows feet sticking out clear of the back of the body, beating up and down like the fluke of a whale. It might be classed as an Honorary Tail Wagger. Some other birds approach this shape also.

The Kickers are another diverse group, including mammals, amphibians, turtles, some reptiles, and most water-birds. They all propel themselves by pushing their feet to and fro along the line in which they wish to swim. None are very fast, and there is little or no convergence of shape. They vary from long-distance deep-sea swimmers like turtles to purely land animals like elephants, but all spend some time on land. Even turtles come ashore to lay eggs.

People usually swim by kicking. For this reason, and because it is the only group apart from Wrigglers to contain land animals, people belong in the kickers group. The mechanics of kicking are simpler than those of tail wagging. In this, the most complex part of the talk, I shall explain first the mechanics and show how they apply to people, but first I will mention another group.

The Stick-In-The-Muds, like barnacles and winkles and sea anemones, don't go anywhere. Yet they remind us of something important. The keenest human swimmers spend an enormous amount of time and effort trying to go as fast as possible, yet the results are pathetic. A human Olympic Gold Medallist would be trounced by a goldfish, yet most of the research on human swimming - as on running - concentrates on athletes. The idea is deep-rooted that the fastest animals are best adapted. By this standard people are less aquatic than horses. Yet the Stick-In -The-Muds remind us that very slow animals can be well adapted, and that research on human athletes may be irrelevant.

To simplify the mathematics I shall choose one kicker. I shall choose the elephant. It is an obvious land animal, and its legs are the most obvious design for a leg with an obvious function. An elephant's leg is a cylinder, designed to keep 1.5 tonnes (per leg) of elephant off the ground. A radially symmetrical leg makes the mathematics simpler and to simplify further I will consider one leg only of a swimming elephant.

Please understand that I have never seen an elephant swimming and that this is a Hypothetical Elephant. The figures are notional figures, chosen for illustrative purposes only, and are chosen to illustrate the mechanics of swimming by kicking the feet, as simply as possible and to simplify further.

First the elephant kicks backwards. Ignoring tiresome details such as acceleration and turbulence around the toenails, one can say the leg moves one metre in one second and generates a thrust of 100kg for 1 second, i.e. 100 units of thrust. If the leg is to kick again it must be brought forwards. If it is moved forwards 1 metre in 1 second, it will generate a drag of 100 kg for 1 second, being radially symmetrical. Thrust cancels drag. The elephant does not move.

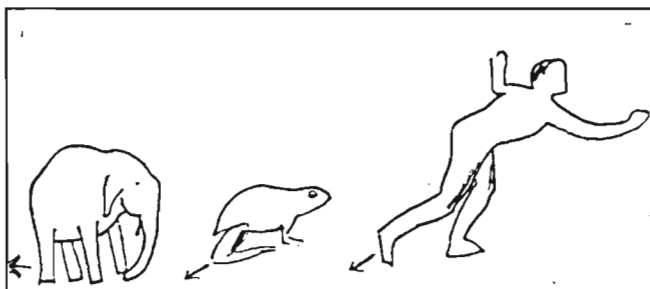
When an insect falls in a pond, that is what happens - legs beat furiously to and fro to no purpose. Likewise when a puppy or a child first swim there is a lot of thrashing about and very little progress. However, puppies, children and elephants have more intelligence than insects and soon learn the laws of hydrodynamics. The relevant law is that thrust and drag are proportional to the square of velocity.

Consider the leg of the Hydrodynamically Aware Elephant. It kicks back at twice the speed, giving four times the thrust. The leg moves 1 metre in half a second, generating 400 kg for 0.5 seconds, i.e. 200 units of thrust. It is brought forward as before, generating 100 units of drag. That is how kicking animals swim. Thrust exceeds drag. The animal begins to move.

However half the thrust is cancelled by drag, and that half is wasted. Energy is force x distance, and if we look at elephant's energy use, the position is even worse. Energy used on the backwards thrust is 400 kg x 1 metre, and on the forwards drag 100 kg x 1 metre. Total energy used is 500 units. 400 generate thrust, and of that thrust half is wasted by drag. Total efficiency is thus 200/500. or 40% .

As soon as the animal is moving the position gets even worse, since thrust decreases, and drag increases not only on the leg, but on the whole body. It is already clear why no kicking animal can ever go as fast as a fast tail Wagger. Refinements in swimming technique and body shape among kickers can be seen as an attempt to swim more efficiently.

One refinement of technique is to kick harder still. A leg moving three times as fast generates nine times the thrust for a third of the time. However a harder kick needs stronger muscles. The strongest muscles of a frog or a person are the leg muscles used in jumping and running respectively, and these are the ones used in swimming. An elephant is less well designed in this respect.



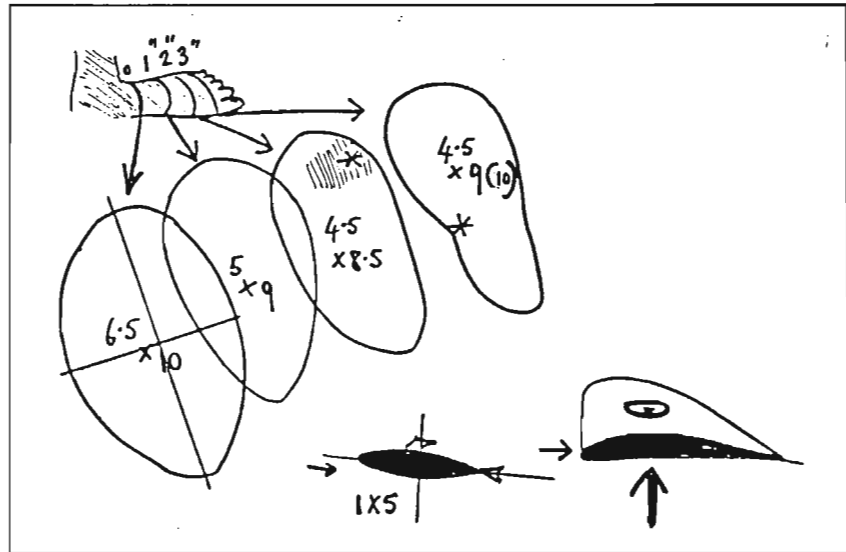
Another refinement is to reduce drag. This can be done by bringing the leg forward more slowly, and letting it trail while drifting through the water, until forward speed has been reduced by drag on the rest of the body. This means that it is longer before the leg can kick again, and it will therefore give fewer kicks and less thrust in a given time.

It is always efficient for a kicking animal to kick hard. Strategy on the drag stroke depends on circumstances. If in a hurry, the legs are brought forwards sooner, despite increasing drag, giving more kicks per minute. If not in a hurry, legs can trail while the animal drifts, or be brought forwards slowly. These are strategies I and other breast stroke swimmers use. Newts use them. So far as I can judge, so do water-birds. However these strategies have drawbacks, and an animal needing to swim more efficiently must reduce drag in other ways.

Oarsmen show two ways of reducing drag. One is to lift oars out of the water on the drag stroke. So far as I know there is only one animal on the planet which uses this trick. It is of course Homo sapiens, using crawl or butterfly stroke. Only the arms are lifted out of the water, and this trick has no bearing on the use of the foot and leg. The other is the shape of the oar which is flattened.

Some kickers adapted to swimming have flattened feet or flippers. Those of birds fold up on the drag stroke, like umbrellas. Those of a turtle are 3-4 times wider than thick. Human feet are

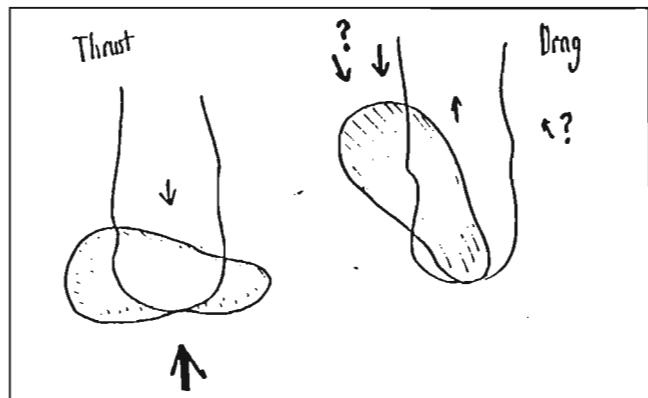
somewhat flattened, but not in an obvious way. It is possible, with patience, to make accurate cross-sections of feet, including the softer tissues, with pieces of soft flexible wire. Sections of other people's feet, though made less accurately, are similar to my own. Here are four taken at the ankle and at 1", 2", and 3" down from the ankle. They are perhaps the most surprising piece of information I have to offer.



The shape at 1" down, across the instep, is familiar, being very similar to the profile of a fish. It is in fact an accurate aerofoil section, albeit a rather short one. This shape, familiar in various forms to aircraft designers, is the one which gives minimum drag, and if asymmetrical, maximum lift. Other sections of the foot depart slightly from this ideal shape. The reason for the bulge in the section at 2" is obvious. It is where the inner metatarsal bone runs. It can carry up to 2-3 times body weight, and is too thick to accommodate in this aerofoil shape. The section 3" from the ankle has a concave side with no obvious function in water. On land this is the highly stressed load-bearing part of the forefoot. Both features suggest a compromise between use in water and use on land.

An aerofoil cross-section to the foot will not in itself reduce drag when swimming unless water strikes the blunt end during the drag stroke, as it strikes the blunt leading edge of an airplane wing or the nose of a fish. To ensure this, the ankle pivots sideways. While kicking, a swimmer turns the ankle out, so the broad side of the aerofoil section pushes the water, maximising thrust. When pulling the foot back on the drag stroke the ankle is turned in, presenting the blunt end of the aerofoil in such a way as to minimise drag.

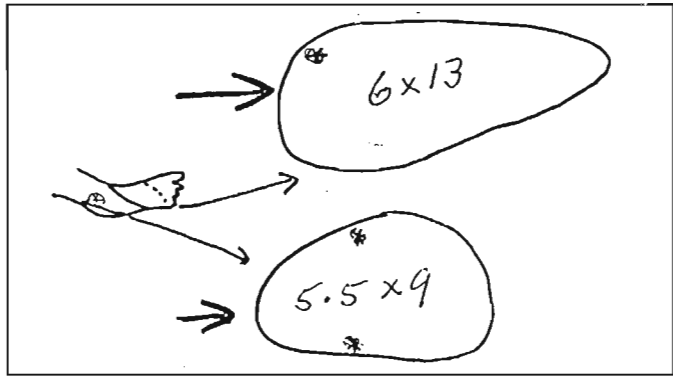
This is not quite accurate, since the ankle can turn laterally only through about 60°. To use the aerofoil most effectively, a breaststroke swimmer must not only turn the ankle, but must also move the feet inwards, (bringing them closer together) on the drag stroke, and to a lesser extent on the thrust stroke. To compensate they must be moved apart between strokes, i.e. when the legs are fully stretched, and again when they are drawn up, ready to kick. Some swimmers, at least, can be seen doing this.



This suggests another design compromise, since this elaborate movement would not be necessary if the ankles could turn sideways through a full 90°. However an ankle which turns too far outwards when walking can throw the weight off the edge of the foot, putting damaging force on the ankle itself. Sprained and broken ankles are common injuries anyway, they would be commoner if the ankle turned more than it does.

Another movement reduces drag. As the feet are drawn up the ankle is stretched so that the foot

points away from the body. Water then strikes the back of the ankle and flows over the more elongated profiles shown in the next diagram.



Though longer than the sections directly across the foot, neither of these is an exact aerofoil. In particular the section around the ankle is the wrong way round, with the blunt end downstream. The bulge in the section below the ankle represents the main tendon which controls the foot during heelstrike. Nevertheless this shape is the one encountered by most of the water flowing round the foot on the drag stroke, and is quite close to an aerofoil section.

That is the theory anyway. My spring balance, using a bicycle inner tube and a slider on a brass rod, was not accurate below about 0.5 kg, but was good enough to confirm that drag reduction is quite efficient. Peak thrust at about 5.5-6.0 kg has been mentioned. Drag was below 0.5 kg in normal swimming, and when the feet were drawn up faster never exceeded 1.0 kg.

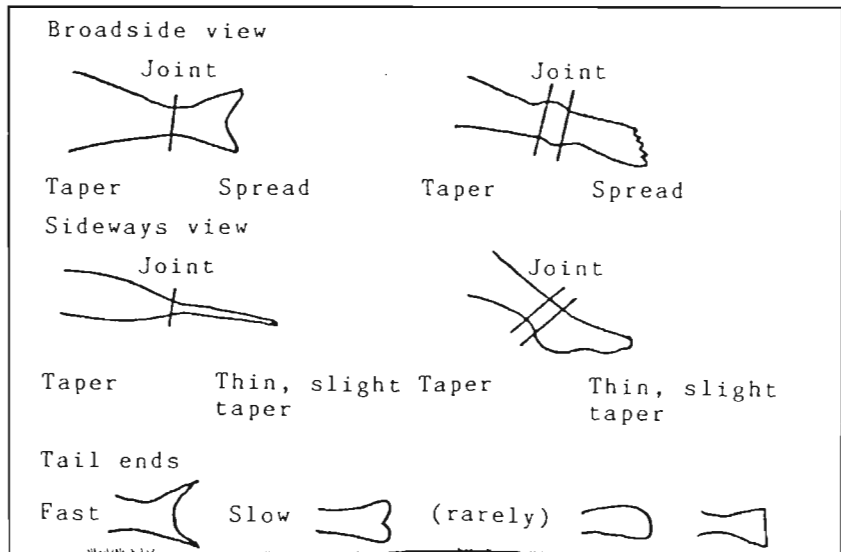
So it would seem that the design of the foot and ankle together achieve surprisingly efficient swimming, and show clear signs of being adapted for it. However there are two qualifications.

The first is the very low thrust achieved. The main leg muscles can achieve thrusts on land greater than the total body weight (probably up to twice body weight in fit people). If they could not, people who fell over or lay down might never get up again. Thrust in water is at most 10% of what the leg muscles can actually achieve. The implication is that the foot is far too small for efficient swimming.

The second reservation is that people are remarkable in having another quite different swimming technique. I am happiest with breaststroke, back stroke, or suchlike. I am a kicking animal. However there is crawl stroke and in freestyle, crawl stroke usually wins.

My spring balance measured a thrust of 0.5-1.0 kg from the feet in crawl stroke. Strong crawl swimmers develop more thrust with their arms than their feet, but the thrust from the feet is continuous and there is no drag to counter it. The foot movement is not strictly a flapping up and down, but rather a small fast circular movement. Nevertheless it resembles the movement of a fishes' tail more than a kicking movement. So the last intriguing question is whether people are sufficiently adapted to this way of swimming to qualify as honorary tail Waggers. Lacking a mathematical understanding of how tail wagging works, I cannot say. However, since all fast tail Waggers have evolved a very similar body shape, it is possible to make anatomical comparisons.

The sketch shows the features of a fishes' tail, and the same features labelled on a human foot. The comparison is complex and not always satisfactory. A fish has a joint between tail and body only. A human leg has three joints, at ankle, knee and hip, and the ankle joint, which is the most relevant, is asymmetrical. The spread is slight, and

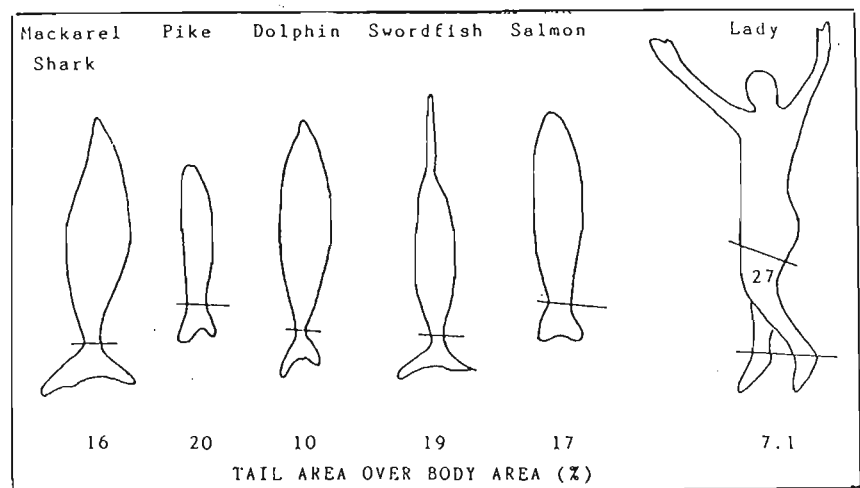


probably obscured in First World feet, which are constrained by shoes, but is clear in such photographs as I have of aboriginal peoples. However even then the metatarsal bones do not diverge more than about 15° , less than most fish fins. The taper is more clearly present, but rather obscured by the massive heel.

There also seems, from looking at a large number of fishy pictures, to be a correspondence between fast swimming and sharp-tipped fins. Only slow swimming fish have rounded fins. Human feet are rounded, with a ragged fringe of toes which may help control turbulence, but do not look designed for speed swimming. However a pair of feet beating in opposite directions may operate very differently from a single forked fin. In any case the profile of the toes varies widely between individuals.

To sum up, there is no one feature of human feet which shows convincingly that people are adapted to swimming as honorary tail Waggers. However almost every feature is present that one might expect of such an animal. Though all are poorly developed, I can think of no other land animal whose feet show all these features.

There is one last observation. I traced a few fast tail wagging animals on squared paper and worked out the percentage of total body silhouette occupied by the tail. On the right is a tracing of one of the "upside-down" ladies. The results show how strikingly convergent is the design of these animals. Tails occupy between 16% and 20% of the silhouette. For the



dolphin, the tail is drawn sideways and occupies only 10%, but an overhead view would show it occupying a larger proportion. The odd one out is the lady. The silhouette of her feet occupy (depending on exactly how the picture is interpreted) only a half or a third of the area, in proportion. These figures show, as did the measurements of thrust earlier, that human feet are a lot smaller than the optimum size for efficient swimming. Human ingenuity has long since reached this same conclusion, since flippers usually have an area between two and three times that of a foot, and make it possible to swim and manoeuvre with less effort, especially underwater.

So, has man, and woman, an aquatic past? Much of the anatomical evidence for the aquatic hypothesis is vague and ambiguous. Feet, in contrast, have a mechanical task to perform. Mechanics is a "hard" science, and the mechanical performance of a foot, in water or on land, can be analysed. Even on this crude evidence the conclusion is clear, that every adaptation to use in water which might be expected is present. Individually no one feature proves the case, but the presence of so many adaptations to water is quite conclusive.

On the other hand, because mechanical adaptations are so clear-cut, it is possible to see that some of them are only partial. The foot is too small. The aerofoil section is too thick. The ankle does not turn enough. Some aquatic adaptations are compromised by features of the foot with an obvious function on land. Bones are too thick. The ankle is wrong. The foot, in other words is a compromise, perhaps one of the most unusual and ingenious in the animal kingdom. The human race does not have an aquatic past. It has an amphibious one.

There is another even more striking conclusion. Fossil footprints show that feet like our own have walked the planet for over 3 million years. To suggest that human feet have kept these adaptations to water for so long if they were no longer needed would be ridiculous. Our amphibious past is more recent than that, but how recent?

None of these adaptations involve major changes. They are fine-tuning of an ancient design. They vary between individuals, and perhaps between races of the human family. They would soon have been lost if they were no use. If modern people have appeared in the past 50,000-100,000 years, as seems likely, they have already shown an ability to evolve within this timescale. Teeth now are about half their former size. A wide range of skin colours has appeared. Our amphibious past seems likely to have been as recent as that. Over about 600 years, average height in English people has increased. This is probably a consequence of better food and health, and of a more mobile population, with less inbreeding. A better example of evolution over a short timescale is among the Inuit peoples, who have occupied their high Arctic habitats for 10,000 to 20,000 years. Their bodies are shorter and rounder than those of their temperate cousins, and their noses are flatter and hence less vulnerable to frost-bite.

I therefore suggest that the amphibious history of our ancestors, or the most recent part of it, lies within the last 10,000 years.

Superficially this suggestion seems to conflict with all our accepted ideas about human history and prehistory. The past 10,000 years have been dominated by the rise of agriculture and by the growth of large land-based and urban populations. Hunter-gatherers and fishing people have been marginalised. The most familiar ancient culture, through the Old Testament, is that of the Jews who are, or were, the least amphibious people one could find. They needed divine assistance even to cross the river Jordan. Yet if one looks a little further back in time, and away from the Middle East and Asia, a very different picture appears.

There are some, perhaps many parts of the world, whose prehistory is a watery one. Polynesia is one. North-west Europe seems to be another. During the Ice Age Homo sapiens was in the Mediterranean, and hunting and travelling in the milder parts of Europe. Settlements were usually near water. As the ice retreated enterprising bands moved north into the watery postglacial landscapes. By 8,000 BC the ancestors of the Celts and Norsemen were carving pictures of themselves in Northern Norway, fishing from small boats. Those who fell out and couldn't swim didn't get to be anyone's ancestors. In historic times Viking youths were expected to be strong swimmers, even in cold Northern waters, and Viking boats, like those of the Polynesians, covered a huge area, from the Black Sea to the New World.

The link between genetic success and swimming ability has of course long since been broken, not least by the invention of boats. Yet the Aquatic Hypothesis, like many good ideas, has been blown up out of all proportion. If members of the Natural History Society appear to be amphibious, if their feet in particular show so many ingenious adaptations to swimming, it is not because of some great evolutionary breakthrough millions of years ago. It is simply because our ancestors, as recently as 10,000 years ago, often had to swim or row for their supper, and in some cases for their breakfast and dinner as well.

A Fungus Horror Story

Christine Oswald.

The first time we realised we had a problem was with the developing smell in the living room in January 1993. Initially only myself could smell anything at all, but eventually, after a day or two, it became obvious that there was a problem when the children also were able to detect an odour. By this time the smell had become so intense that, unable to establish any other possible cause, I called in the Gas Board, suspecting we had a leak.

After conducting all the necessary tests, the Gas Board employee concluded we must have a bed of gas lying in the bottom of the fire, isolated the supply, and left.

During that evening even my husband admitted to being able to smell something, and after deliberating on what to do, again called out the Gas Board.

At approximately 11 pm. the same employee arrived, walked in the room and said "yes, definitely gas". However, after exhaustive tests a leak was again ruled out and we were left wondering what could be causing the problem.

Next morning my husband opened the living room door and smelt for the first time the foul stench that had built up overnight. As this was a Friday, he left for work, vowing to establish the cause of the problem over the weekend. However, in view of the intensity of the smell, he could not concentrate and returned home straight away to sort out the problem.

The smell seemed to be emanating from the T.V. aerial socket, so a series of holes were knocked out of the wall in an effort to trace the smell to it's source. We thought that, as the smell seemed to be coming from a section of wall about ten feet in length, either the down pipe could be blocked, or roots from shrubs under the window could be to blame. Consequently the shrubs were dug out, and the down pipe cleaned out and disinfected, but all to no avail.

By this time the exploratory holes in the wall were getting larger and nearer to the window, so this whole section of wall was removed, together with some of the concrete flooring, and bags were filled with Rockwool insulation and rubble. After a while it was apparent that the smell had faded from the wall and seemed to be coming from one of the bags.

After carefully sifting through the rubbish, we found a small conker-like object, which we now know to be *Melanogaster ambiguus*, sometimes called the 'Stinking Slime Truffle'. I can vouch for the latter name being totally appropriate. It was only after a second specimen was found in August that the fungus was kindly identified by Paul Cook.

We have now used a fungicide and repaired all the damage, and hopefully will not get a repeat visit from this unwelcome guest.

Footnote by Alan Brickstock.

The second specimen was taken to Reading Museum for identification, and was eventually passed on to me. When received the smell was quite overpowering. The fungus was placed in a closed tube for about three weeks, when it was passed to Paul Cook, and identified. Interestingly, it did not appear to have decayed significantly, and the revolting smell had almost completely disappeared.

Berkeley (1844) commented that "a single specimen in a room is so strong as to make it scarcely habitable".

Pegler *et al.* (1993) described the odour as "at first sweetish, becoming unpleasant, reminiscent of rotting onions, rubber, or of *Scleroderma citrinum*, finally strong and foetid." They commented that *Melanogaster ambiguus* is a common truffle occurring amongst humus or sandy soil, usually under *Fagus*, but sometimes under other types of trees, including *Castanea* and *Quercus*. In the Kew herbarium there are several collections associated with domestic timber, and collections are mentioned from; under floorboards at Farnham, Surrey; associated with timbers of a shop front at Esher, Surrey; and under floorboards at Sevenoaks, Kent. Clearly, the associations with human habitation may be more than coincidence.

References.

Berkeley, M.J. (1844). Notices of Fungi. *Ann. Mag. Nat. Hist.* **13** 340-360.

Pegler, D.N., Spooner, B.M. & Young, T.W.K. (1993). British Truffles, Royal Botanic Gardens, Kew.

THE RECORDER'S REPORT FOR BOTANY 1993

Betty M. Newman

There were no reports of unseasonal early flowering of plants in 1993 and no discoveries of rare plants, but it was a good year for plants in general. This is reflected in the members' records received, which include plants from over thirty different families and a wide range of habitats around Reading.

A selection from these records is printed below. The nomenclature and order are those of the "Flora of the British Isles" by Clapham, Tutin & Moore 1987. An alien taxon is indicated by an asterisk (*). The English names are from "English Names of Wild Flowers" by Dony, Jury & Perring 1986.

EQUISETACEAE : HORSETAILS

Equisetum variegatum Schleicher ex Weber & Mohr **Variegated Horsetail**
Dry Sandford, 10.7.93 (AB).

ASPLENIACEAE : SPLEENWORTS

Asplenium scolopendrium L. **Hart's-Tongue**
Dry Sandford, 10.7.93 (AB).

SPERMATOPHYTA : FLOWERING PLANTS & CONIFERS

RANUNCULACEAE

Helleborus foetidus L. **Stinking Hellebore**
Howe Grove Wood and Hare Green, 15.9.93 (AB).

Ranunculus lingua L. **Greater Spearwort**
Knowl Hill sand-pits, 12.7.93 (C&RG).

Ranunculus sceleratus L. **Celery-leaved Buttercup**
Knowl Hill sand-pits, 12.7.93 (C&RG); River Whitewater and West Green, 21.7.93, (AB).

NYMPHAEACEAE

Nuphar lutea (L.) Sm. **Yellow Water-lily**
In Basingstoke Canal between Colt Hill and Spratts Hatch bridges near Odiham. 15+ clumps, 6.7.93 (MMB); Holy Brook, Reading, 13.6.93; River Whitewater and West Green, 21.7.93 (AB).

CRUCIFERAE

Cardaria draba* (L.) Desv. **Hoary Cress
Holy Brook and old railway line, Reading, 10.6.93 (AB).

Iberis amara L. **Wild Candytuft**
Old railway line, Reading, 13.6.93; Pyrton Hill, 8.8.93 (AB); Watlington Hill, 26.8.93 (C&RG).

POLYGALACEAE

Polygala calcarea F.W. Schultz **Chalk Milkwort**
Swyncombe Downs, 10.5.93 (C&RG).

HYPERICACEAE

Hypericum humifusum L. **Trailing St John's Wort**
Bramshill Plantation, 23.6.93 (C&RG).

Hypericum pulchrum L. **Slender St John's Wort**
Silchester/Pamber, 24.7.93; Bartley Heath, 4.9.93 (AB).

Hypericum hirsutum L. **Hairy St John's Wort**
Dry Sandford, 10.7.93 (AB).

CARYOPHYLLACEAE

Sagina procumbens L. **Procumbent Pearlwort**
The Holies, Streatley, 22.5.93 (AB).

Spergularia rubra (L.) J. & C. Presl **Sand Spurrey**
Bramshill Plantation, 23.6.93 (C&RG).

PORTULACACEAE

Montia perfoliata* (Willd.) Howell **Springbeauty
Growing on boundary wall of Royal Berks Hospital, Redlands Road, Reading, 11.5.93 (C&RG).

MALVACEAE

Malva moschata L. **Musk Mallow**
Knowl Hill sand-pits, 12.7.93 (C&RG); Dry Sandford, 10.7.93; River Whitewater and West Green, 21.7.93; Howe Grove Wood and Hare Green, 15.9.93 (AB).

Malva neglecta Wallr. **Dwarf Mallow**
Silchester and Simm's Copse, 19.5.93 (AB).

GERANIACEAE

Geranium pratense L. **Meadow Crane's-bill**
Holy Brook and old railway line, Reading, 13.6.93; Dinton Pastures, 3.6.93 (AB).

Geranium phaeum* L. **Dusky Crane's-bill
Holy Brook and old railway line, Reading, 13.6.93 (AB).

Geranium columbinum L. **Long-stalked Crane's-bill**
Pynton Hill, 8.8.93 (AB).

Erodium cicutarium (L.) L'Herit **Common Stork's-bill**
Dry Sandford, 10.7.93 (AB).

LEGUMINOSAE

Ulex gallii Planchon **Western Gorse**
Bartley Heath, 4.9.93 (AB).

Lathyrus nissolia L. **Grass Vetchling**

Knowl Hill sand-pits, in fruit 12.7.93 (C&RG).

Melilotus alba* Medicus **White Melilot

Eling and Trumpletts Green, 16.6.93 (AB).

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

Dry Sandford, 10.7.93 (AB).

Trifolium micranthum Viv. **Slender Trefoil**

Sunninghill, grounds of Civil Service College, Berks (HJMB).

Anthyllis vulneraria L. **Kidney Vetch**

Watlington Hill, 8.8.93; Turville, 18.9.93 (AB).

**Anthyllis vulneraria ssp. polyphylla* (DC.) Nyman

On bank of the A34 near East Ilsley, Berks. (Mentioned by Stace as a recent introduction (HJMB).

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

Sunninghill, grounds of Civil Service College, Berks (HJMB); Bramshill Plantation, 23.6.93 (C&RG).

ROSACEAE*Filipendula ulmaria* (L.) Maxim. **Meadowsweet**

A large quantity on the Basingstoke Canal bank between Colt Hill and Spratts Hatch bridges, 6.7.93 (MMB); Holy Brook and old railway line, Reading, 13.6.93 (AB); River Whitewater and West Green, 21.7.93 (AB).

Sanguisorba officinalis L. **Great Burnet**

Eling and Trumpetts Green, 16.6.93 (AB).

CRASSULACEAE*Sedum telephium* L. **Orpine**

Leaves by roadside, Remenham, 19.4.93 (C&RG)

**Crassula helmsii* (Kirk) Cockayne

Sunninghill, grounds of Civil Service College, Berks (HJMB).

SAXIFRAGACEAE**Darmara peltata* (Torrey) Voss (= *Peltiphyllum peltatum*) **Umbrella Plant**

Growing with Coltsfoot by footpath at Ufton Nervet, with several flowering stalks, 6.5.93 (C&RG).

LYTHRACEAE*Lythrum salicaria* L. **Purple-loosestrife**

On Basingstoke Canal bank between Colt Hill and Spratts Hatch bridges, 15-20 good specimens, 6.7.93 (MMB); Moor Copse 2.5.93 (AB); River Whitewater and West Green, 21.7.93 (AB).

Lythrum portula (L.) D.A. Webb **Water-purslane**

Bramshill Plantation, 23.6.93 (C&GR).

THYMELAEACEAE

Daphne laureola L. **Spurge-laurel**

Turville, 18.9.93 (AB).

ONAGRACEAE

Epilobium hirsutum L. **Great Willowherb**

A large quantity on Basingstoke Canal bank between Colt Hill and Spratts Hatch bridges, 6.7.93 (MMB); Holy Brook and old railway line, 13.6.93; River Whitewater and West Green, 21.7.93 (AB); Turville, 18.9.93 (AB).

Epilobium ciliatum* Rafin. **American Willowherb

Shiplake, 18.8.93 (AB). The first record of this plant was in 1891.

UMBELLIFERAE

Chaerophyllum temulentum L. **Rough Chervil**

Nuffield Ridgeway, 10.4.93 (AB).

Smyrniolum olusatrum* L. **Alexanders

In abundance by roadside hedge at junction of the Mount and Priest Hill, Caversham, near to the Council salt and gravel supply for treating roads in winter (MMB).

Silaum silaus (L.) Schinz & Thell. **Pepper-saxifrage**

Several plants at Loddon Park, Earley (MB).

POLYGONACEAE

Polygonum hydropiper L. **Water-pepper**

Silchester / Pamber, 24.7.93 (AB).

URTICACEAE

Parietaria judaica L. **Pellitory-of-the-wall**

Nuffield Ridgeway, 10.4.93 (AB).

BETULACEAE

Betula pubescens Ehrh. **Downy Birch**

PRIMULACEAE

Primula veris L. **Cowslip**

Swyncombe Downs, 10.5.93 (C&RG); Dry Sandford, 10.7.93 (AB); Pyrton Hill, 8.8.93 (AB).

GENTIANACEAE

Blackstonia perfoliata (L.) Hudson **Yellow-wort**

Knowl Hill sand-pits, 12.7.93 (C&RG); Pyrton Hill, 8.8.93 (AB); Howe Grove Wood and Hare Green, 15.9.93 (AB); Turville, 18.9.93 (AB).

Gentiana pneumonanthe L. **Marsh Gentian**

Bartley Heath , 4.9.93 (AB). First recorded here by the Society in 1954.

Gentianella germanica (Willd.) E.F. Warburg **Chiltern Gentian**

Pyrtton Hill, 8.8.93 (AB); Turville, 18.9.93 (AB).

BORAGINACEAE

Pentaglottis sempervirens* (L.) Tausch **Green Alkanet

Silchester and Simm's Copse, 19.5.93 (AB); River Whitewater and West Green, 21.7.93 (AB);
Dinton Pastures, 3.6.93 (AB).

Lithospermum arvense L. **Field Gromwell**

Warburg Reserve, 12.6.93 (AB).

Echium vulgare L. **Viper's-bugloss**

Howe Grove Wood and Hare Green, 15.9.93 (AB).

CONVOLVULACEAE

Cuscuta epithymum (L.) L. **Dodder**

Silchester Common. A very large patch on *Erica cinerea* and *Ulex* spp, 25.7.93 (N&MD).

SCROPHULARIACEAE

Mimulus moschatus* Douglas ex Lindley **Musk

Sunninghill, grounds of Civil Service College, Berks. (HJMB).

Pedicularis sylvatica L. **Lousewort**

Silchester / Pamber, 24.7.93 (AB)

Rhinanthus minor L. **Yellow-rattle**

Watlington Hill, 8.8.93 (AB); Warburg Reserve, 12.6.93 (AB).

LABIATAE

Lamium amplexicaule L. **Henbit Dead-nettle**

Silchester and Simm's Copse, 19.5.93 (AB).

Nepeta cataria L. **Cat-mint**

Howe Grove Wood and Hare Green, 15.9.93 (AB).

Scutellaria minor Hudson **Lesser Skullcap**

Butter Wood, Hook, 7.8.93 (C&RG); Bartley Heath, 4.9.93 (AB).

CAMPANULACEAE

Campanula latifolia L. **Giant bellflower**

Warburg Reserve, 12.6.93 (AB).

RUBIACEAE

Asperula cynanchica L. **Squinancywort**

Watlington Hill, 8.8.93 (AB).

COMPOSITAE

Senecio integrifolius (L.) Clairv. **Field Fleawort**

Dry Sandford, 10.7.93 (AB).

Filago minima (Sm.) Pers. **Small Cudweed**

Bramshill Plantation, 23.6.93 (C&RG).

Erigeron acer L. **Blue Fleabane**

Knowl Hill sand-pits, 12.7.93 (C&RG); Watlington Hill, 8.8.93 (AB).

Achillea ptarmica L. **Sneezewort**

Bartley Heath, 4.9.93 (AB).

Cirsium helenioides (L.) Hill **Melancholy Thistle**

Holy Brook and old railway line, Reading, 13.6.93 (AB).

Cichorium intybus L. **Chicory**

Shiplake Cross, 1.7.93 (C&RG).

POTAMOGETONACEAE

Potamogeton natans L. **Broad-leaved Pondweed**

Sunninghill, grounds of Civil Service College, Berks (HJMB).

Potamogeton crispus L. **Curled Pondweed**

Sunninghill, grounds of Civil Service College, Berks (HJMB).

LILIACEAE

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

Chambers Copse, Emmer Green, 22.5.93 (JM).

Ruscus aculeatus L. **Butcher's-broom**

Remenham Court, 19.4.93 (C&RG).

Allium ursinum L. **Ramsons**

Remenham, near the church, 19.4.93 (C&RG).

Allium paradoxum* (Bieb.) G. Don **Few-flowered Leek

Cookley Green, 24.4.93 (N&MD)

Allium vineale* L. **Wild Onion, Crow Garlic

Holy Brook and old railway line, Reading, 13.6.93 (AB).

AMARYLLIDACEAE

Leucojum aestivum L. **Summer Snowflake, Loddon Lily**

In quantity by the Thames between Remenham and Henley, 19.4.93 (C&RG).

ORCHIDACEAE

Cephalanthera damasonium (Miller) Druce **White Helleborine**
Chambers Copse, Emmer Green, 8.5.93 (JM); Sulham, 27.5.93 (AB).

Epipactis palustris (L.) Crantz **Marsh helleborine**
Dry Sandford, 10.7.93 (AB).

Listera ovata (L.) R.Br. **Common Twayblade**
Chambers Copse, Emmer Green, 8.5.93 (JM); The Holies, Streatley, 22.5.93 (AB).

Neottia nidus-avis (L.) L.C.M. Richard **Bird's-nest Orchid**
Sulham, 27.5.93 (AB).

Coeloglossum viride (L.) Hartman **Frog Orchid**
Watlington Hill, 21.8.93 (C&RG).

LEMNACEAE

Lemna miniscula* Herter **Least Duckweed
Sunninghill, grounds of Civil Service College, Berks (HJMB).

CYPERACEAE

Carex ovalis Good. **Oval Sedge**
Sunninghill, grounds of Civil Service College, Berks (HJMB).

Carex pendula Hudson **Pendulous Sedge**
New Copse, Sonning Common, 12.5.93 (C&RG); Knowl Hill sand-pits, 12.7.93 (C&RG).

CONTRIBUTORS

Thanks are due to the following contributors:

Maureen Baggaley	(MB)	Neville & Mary Diserens	(N&MD)
Meryl Beek	(MMB)	Colin & Renee Grayer	(C&RG)
Humphry Bowen	(HJMB)	John Marshall	(JM)
Alan Brickstock	(AB)		

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THE RECORDER'S REPORT FOR FUNGI 1993.

Alan Brickstock

This was another superb year for fungi, with a number of quite rare finds. The total number of species found was 449, four less than last year's record.

The outstanding event of the year was the formation of the 'Reading Fungus Group'. So far we have 66 members, and have had some splendid forays. At Pamber Forest on October 9th, 156 species were recorded, and at Sulham on December 5th, a time when most forayers have put away their trugs for the season, an amazing 107 species were found.

Interesting finds included *Rutstroemia echinophila*, a tiny cup fungus growing on the inside of old Chestnut husks, at Davenport Wood; large numbers of *Clavariadelphus fistulosus*, as well as its var. *contorta*, together with the smaller *Typhula phacorrhiza* in Pamber Forest. Also found there was *Mycena amicta*, growing on Pine cones and debris.

Hundreds of specimens of *Pseudohiatula esculenta*, growing on Spruce cones, were found at both Earl's Wood and Fence Wood. Large numbers of the small Earth-star, *Geastrum sessile*, were also present at Earl's Wood, in one place forming a large ring.

The uncommon *Coriolus hirsutus* was found at Ufton Nervet, Turville and Swyncombe.

Finds at Fence Wood included the dark pink Ascomycete *Hypomyces rosella*; the *Myxomycete* *Stemonitis fusca*; and two rare species, *Ripartites helomorphus* and *Peziza proteana* v. *sparassoides*.

Camerops lutea, a black Ascomycete which stains wood bright yellow, and most usually grows on Box, was found on Ash at Burchett's Green, and on Beech at Highstanding Wood.

There were several small clumps of *Rhodotus palmatus* at Sulham, all growing on Beech, rather than on Elm, the usual host for this species. Jew's Ear was also abundant there on Beech.

The most unusual find of the year was probably *Anthina flammea*, for which there are very few British records. This forms small, bright pink grass-like strands among leaf litter, and was found in some numbers in Pamber Forest.

The following are a rather arbitrary selection of the more interesting records:

GILL FUNGI.

Amanita phalloides (Vaill.ex.Fr.) Secr

Ufton Nervet,30.10.93 (RFG).;Sulham,02.10.93 (BBONT); Sulham,01.10.93 (AB).

Cantharellus cibarius Fr.

Bucklebury,10.10.93 (BBONT AGM). A few specimens to enliven the barbecue!

Chroogomphus rutilus (Fr.)Muller

Warburg Reserve,12.09.93 (RFG)

Collybia cirrhata (Pers.)Kumm.

Pamber Forest,09.10.93 (RFG).

Coprinus lagopides Karst.

Fence Wood, Hermitage,07.11.93 (RFG). Growing on an old burnt stump.

Coprinus niveus (Pers.ex Fr.)Fr.

Davenport Wood,03.10.93 (NH)

Cortinarius croceo-caeruleus (Pers.ex Fr.)Fr.

Hapsden,03.10.93 (NH)

Cortinarius paleaceus (Weinm.)Fr.

Pamber Forest,09.10.93 (RFG)

Cortinarius splendens Henry

Davenport Wood,03.10.93 (NH)

Craterellus cornucopioides (L.ex Fr.)Pers.

Pamber Forest,09.10.93 (RFG);Sulham,05.12.93 (RFG).

Gomphideus roseus (Fr.)Karst.

Bucklebury,10.10.93 (BBONT AGM). A beautiful coral-red species.

Hohenbuehelia mastrucata (Fr.ex Fr.)Sing.

Windsor Great Park,16.10.93 (MS)

Hygrophoropsis pallescens

Pamber Forest,09.10.93 (RFG)

Hygrophorus cossus (Sow.ex Berk.)Fr.

Davenport Wood,03.10.93 (NH). "Goat Moth Wax Cap". Smell unpleasant, of Goats?

Lactarius cyathula (Fr.)Fr.

Pamber Forest,09.10.93 (RFG)

Lactarius mitissimus (Fr.)Fr.

Pamber Forest,09.10.93 (RFG);Kingwood,17.10.93 (RFG);Earl's Wood,17.10.93 (RFG)

Lactarius spinosulus Qué!

Bucklebury,10.10.93 (BBONT AGM)

Lactarius volemus (Fr.)Fr.

Whiteknights Wilderness,12.10.93 (AB)

Lepiota bucknallii (Berk.&Br.) Sacc.

Earl's Wood,17.10.93 (RFG). Has a strong smell of gas-tar.

Melanoleuca arcuata (Fr.)Sing.

Harpsden,03.10.93 (NH)

Melanoleuca grammopodia (Bull.ex Fr.)Pat.

Burchett's Green,Grasslands,26.09.93 (RFG)

Mycena amicta (Fr.)Qué!

Pamber Forest,09.10.93 (RFG). On Pine cones and Pine debris.

Mycena pearsoniana Dennis ex Sing.

Kingwood,17.10.93 (RFG)

Mycena rosea (Bull.)Bramberg v. *coccinea*

Earl's Wood,17.10.93 (RFG). A rare, bright pink species.

Mycena sepia J.Lange

Pamber Forest,09.10.93 (RFG)

Panellus serotinus (Schrader ex Fr.) Kühn.
Fence Wood, 07.11.93 (RFG); Pheasant's Hill, 21.11.93 (RFG); Sulham, 05.12.93 (RFG).

Paxillus panuoides Fr.
Fence Wood, Hermitage, 07.11.93 (RFG).

Pholiota highlandensis (Peck.) Smith & Hesl.
Fence Wood, Hermitage, 07.11.93 (RFG).

Pholiota lenta (Pers. ex Fr.) Sing.
Davenport Wood, 03.10.93 (NH)

Pleurotus lignatilis (Pers. ex Fr.) Kummer
Windsor Great Park, 16.10.93 (MS)

Pseudohiatula esculenta (Wulf. ex Fr.) Sing.
Fence Wood, Hermitage, 07.11.93 (RFG). On Spruce cones.

Pseudohiatula tenacella (Pers. ex Fr.) Métrod
Highstanding Wood, 24.04.93 (MS). On buried Pine cones.

Ripartites helomorphus (Fr.) Karst.
Fence Wood, Hermitage, 07.11.93 (RFG). A rare species.

Russula brunneoviolacea Crawshay
Ufton Nervet, 19.10.93 (AB). A dark wine-coloured species.

Russula xerampelina (Schaeff. ex Secr.) Fr.
Pamber Forest, 09.10.93 (RFG); Ufton Nervet, 30.10.93 (RFG). Smells of crab.

Schizophyllum commune Fr.
Park Wood, Turville, 18.04.93. On a burnt Beech log.

Tephroclype anthrocophila (Lasch.) Orton
Fence Wood, Hermitage, 07.11.93 (RFG). On burnt ground.

BOLETI.

Boletus appendiculatus Schaeff. ex Fr.
Reading Golf Course, 16.10.93 (GC).

Leccinum roseofractum Watling
Davenport Wood, 03.10.93 (NH). A dark blackish-brown Bolete.

APHYLLOPHORALES

Athelia epiphylla Pers.
Sulham, 05.12.93 (RFG).

Clavariadelphus fistulosus (Fr.) Corner
Pamber Forest, 09.10.93 (RFG); Bucklebury, 10.10.93 (BBONT AGM); Windsor Great Park, 16.10.93 (MS) Present at Pamber in unusually large numbers.

Clavariadelphus fistulosus v. *contorta* Corner

Pamber Forest, 09.10.93 (RFG); Pheasant's Hill, 21.11.93 (RFG). Also in large numbers at Pamber.

Coriolus hirsutus (Wulf. ex Fr.) Quéf.

Ufton Nervet, 30.10.93 (RFG); Turville, 21.02.93 (PC); Swyncombe, 25.02.93 (PC).

An uncommon species, upper surface creamy-white, zoned and covered in silvery hairs.

Grifola frondosa (Dicks. ex Fr.) S.F. Gray

Ufton Nervet, 30.10.93 (RFG).

Hapalopilus rutilans (Pers. ex Fr.) Karst

Sulham, 25.09.93 (AB); Famous Wood, Henley, 31.01.93.

Ischnoderma benzoinum (Wahl. ex Fr.) Karst.

Ufton Nervet, 19.10.93 (AB). On an old Spruce stump.

Oxyporus populinus (Schum. ex Fr.) Donk.

Pamber Forest, 09.10.93 (RFG); Warburg Reserve, 07.03.93 (PC). On *Beech*.

Peniophora proxima Bres.

Whiteknights Wilderness, 15/02/93 (PC); Lower Dean's Wood, Watlington, 14.03.93 (PC).

A Salmon pink resupinate specific to Box.

Phellinus pomaceus (Pers. ex S.F. Gray) Maire

Southview Avenue, Caversham, 20.02.93; Shiplake College, 20.03.93; Ibstone, 18.04.93 (PC).

Physisporinus sanguinolentus (Alb. & Schw.) Pilat

Burchett's Green, Ladyplace Wood, 26.09.93 (RFG). Creamy-white resupinate, reddening on handling

Polyporus lentus Berk.

Warburg Reserve, 12.09.93 (RFG)

Serpula himantioides (Fr. ex Fr.) Karst.

Sulham, 05.12.93 (RFG); Whiteknights Wilderness, 17.03.93 (PC). Growing on Pine.

Steccherinum ochraceum S.F. Gray

Pamber Forest, 09.10.93 (RFG). A "toothed" resupinate, orange to salmon coloured.

Typhula phacorrhiza Fr.

Pamber Forest, 09.10.93 (RFG)

Tyromyces wakefieldiae Kotlaba & Pouzer

Pheasant's Hill, 21.11.93 (RFG); Sulham, 05.12.93 (RFG).

GASTEROMYCETES

Geastrum sessile (Sow.) Pouz.

Harpsden, 03.10.93 (NH); Davenport Wood, 03.10.93 (NH); Pamber Forest, 09.10.93 (RFG)

Earl's Wood, 17.10.93 (RFG). In unusually large numbers at Earl's Wood, including a large ring.

Melanogaster ambiguus (Vitt.)Tul.

Burghfield Common,01.93 (CO).

A foul-smelling and most unwelcome find! See separate article.

Sphaerobolus stellatus Tode

Warburg Reserve,12.09.93 (RFG). A tiny, bird's nest type fungus, 1 to 2 mm. across.

HETEROBASIDIOMYCETES

Auricularia auricula-judae var. *lactea* Quél.

Grey's Court, Henley,01.93 (PC). Albino form of the common Jew's Ear fungus.

ASCOMYCETES

Camarops lutea (Alb. & Schw.) Nannf.

Highstanding Wood,24.04.93 (MS); Top Wood, Burchetts Green,26.09.93; Whiteknights Wilderness,15.02.93 (PC); Lower Dean's Wood, Christmas Common,14.03.93 (PC).

On Box. Stains wood bright yellow.

Cordyceps ophioglossoides (Ehr. ex Fr.)Link.

Pamber Forest,09.10.93 (RFG). Parasitic on species of false truffle.

Cudoniella acicularis (Bull. ex Fr.)Schroet.

Fence Wood, Hermitage,07.11.93 (RFG).; Sulham,05.12.93 (RFG).; Ipsden,24.10.93 (AB)

A tiny white Ascomycete growing on a rotting Oak stump.

Daldinia concentrica (Boet.) de Not.

Grey's Court, Henley,28.03.93. Growing on Wild Cherry, an unusual host.

Daldinia vernicosa (Schw.) de Not.

Pamber Forest,09.10.93 (RFG); Windsor Great Park,16.10.93 (MS). Growing on Gorse stems.

Diatrype stigma (Hoffm. ex Fr.)Fr.

Pheasant's Hill,21.11.93 (RFG).; Sulham,05.12.93 (RFG). Forming black sheets, white inside.

Hypomyces rosellus (Alb. & Schw.)Tul.

Fence Wood, Hermitage,07.11.93 (RFG). A dark pink Ascomycete.

Hypoxyton fuscum (Pers. ex Fr.)Fr.

Pheasant's Hill,21.11.93 (RFG).; Sulham,05.12.93 (RFG). Growing on Hazel.

Lasiosphaeria spermoides (Hoffm. ex Fr.)Fr.

Highstanding Wood,24.04.93 (MS)

Nectria episphaeria (Tode. ex Fr.)Fr. Grows on *Pyrenomyces* such as *Diatrype*.

Sulham,05.12.93 (RFG).

Peziza proteana v. *sparassoides* (Boud.)Korf

Fence Wood, Hermitage,07.11.93 (RFG). An unusual species, looking more like *Sparassis crispa* than a *Peziza*.

Rutstroemia echinophila (Bull.ex Mérat) von Höhnei
Davenport Wood, 03.10.93 (NH) A tiny cup fungus on the inside of old Sweet Chestnut husks.

Rutstroemia firma (Pers.) Karst.
Ipsden, 24.10.93 (AB)

Trichophaea hemisphaerioides (Mouton) Graddon
Fence Wood, Hermitage, 07.11.93 (RFG). A *Discomycete* growing on burnt ground.

MYXOMYCETES

Badhamia utricularis (Bull.) Berk.
Grey's Court, Henley, 31.01.93. On Oak.

Meraticia visparium (Batsch.) Nann.-Brom.
Highstanding Wood, 24.04.93 (MS) A coral-red species.

Stemonitis fusca Roth.
Fence Wood, Hermitage, 07.11.93 (RFG).

Trichia floriformis (Schw.) G. List.
Highstanding Wood, 24.04.93 (MS). A black species, growing on Beech.

Trichia varia (Pers.) Pers.
Windsor Great Park, 16.10.93 (MS);

ZYGOMYCETES

Spinellus fusiger (Link) V. Tregg
Warburg Reserve, 12.09.93 (RFG). A pin mould which grows on agarics.

~~F~~FUNGI IMPERFECTI

Anthina flammea Jungh.: Fr. Forming bright pink strands in leaf litter. Very few British records.
Pamber Forest, 09.10.93 (RFG)

Pycnostysanus azaleae (Peck.) Mason
Highstanding Wood, 24.04.93 (MS). 'Azalea bud-blast'.

CONTRIBUTORS AND ABBREVIATIONS.

Alan Brickstock	(AB)	Paul Cook	(PC)
Gordon Crutchfield	(GC)	British Mycological Society Foray	(MS)
Reading Fungus Group Foray	(RFG)		

Thanks to Paul Cook and Neville Diserens for leading forays, and to Gordon Crutchfield for his many records from Reading Golf Course, Cucumber Wood and other sites.

Special thanks to Paul Cook for the identification of many of the species, particularly the non-gill ones.

THE RECORDER'S REPORT FOR ENTOMOLOGY 1993

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).

ORTHOPTERA : CRICKETS, BUSHCRICKETS, GRASSHOPPERS, GROUNDHOPPERS

Tetrix undulata (Sowerby) **Common Groundhopper**
Swyncombe Downs, 22.5.93, in leaf litter (GS).

NEUROPTERA : ALDERFLIES, SNAKEFLIES, LACEWINGS

Conwentzia psociformis (Curt)/ *pineticola* Enderlein
Hargrave Road, Maidenhead, 12.9.93 (MVA), (females of *Conwentzia* species cannot be separated on present knowledge)

Osmylus fulvicephalus (Scop.) **Giant Lacewing**
Benyon's Plantation, 24.5.93, several along stream banks (BRB).

LEPIDOPTERA : BUTTERFLIES AND MOTHS

Adscita statices (L.) **The Forester**
Hazelwood Meadow near Bracknell, 9.6.93, abundant across damp unmanaged field (DJS).

Mecyna flavalis (D.& S.) ssp *flavicularis* Caradja
Matlock Road, Caversham, 23.7.93, one in Robinson light-trap. New v.c. 23 record (BRB).

Aphomia sociella (L.) **Bee Moth**
Crawshay Drive, Emmer Green, 18.5.93, a total of 74 recorded in the season (JHFN); Hargrave Road, Maidenhead, 6.6.93 (MVA).

Hesperia comma (L.) **Silver-spotted Skipper**
Watlington Hill, Aston Rowant N.N.R., Pyrtton Hill and Shirburn Hill, all on 8.8.93 (N&MD).

Hamearis lucina (L.) **Duke of Burgundy Fritillary**
Aston Upton, 4.6.93, eggs noted on *Primula veris* L. (BRB).

Vanessa atalanta (L.) **Red Admiral**
Woodland near The Harris Garden, Reading University, 2.7.93. A single specimen noted at 20.05 hrs settled on a dry woodland path, then rapidly taking flight but returning to the same spot several times in the gathering dusk.

Polygonia c-album (L.) **The Comma**
Little Court, Goring, much in evidence during late summer and autumn (EVW).

Eulithis prunata (L.) **The Phoenix**
Crawshay Drive, Emmer Green, 24.6.93 (JHFN).

Rheumaptera cervinalis (Scop.) **Scarce Tissue**
Crawshay Drive, Emmer Green, 13.4.93 (JHFN).
Xestia rhomboidea (Esp.) **Square-spotted Clay**
Crawshay Drive, Emmer Green, 9.8.93 (JHFN).

Cucullia verbasci (L.) **The Mullein Moth**
Hargrave Road, Maidenhead, 21.8.93, three larvae in the garden (MVA).

Lithophane ornitopus (Hufn.) **Grey Shoulder-knot**
Crawshay Drive, Emmer, 24.3.93 (JHFN).

Mormo maura (L.) **The Old Lady**
Hargrave Road, Maidenhead, 21.8.93 (MVA).

Parascotia fuliginaria (L.) **The Waved Black**
Silchester Common, 3.6.93. a larva noted on *Stereum hirsutum* (Willd.) which was covering the underside of a felled trunk (BRB); Crowthorne, 7.7.93 (DJS).

COLEOPTERA : BEETLES

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

Bembidion obtusum Serville
Near The Lynch, Shiplake, 29.12.92, in flood refuse (TDH). One old, one recent local record (HHC).

Bembidion stephensi Crotch
Sheffield Bottom near Theale, 16.7.93, amongst stones on shore of water-filled gravel pit (TDH). One local record (HHC).

Olisthopus rotundatus Paykull
"Flashings", Warren Heath, 11.3.93, by shaking grass tussock over sheet, tussock on edge of shallow pond in clearing dominated by heather (TDH). Two old local records (HHC).

Agonum sexpunctatum L.
"Flashings", Warren Heath, 22.7.93, under log on shore of pond in clearing dominated by heather (TDH). Two old local records (HHC).

Amara praetermissa Sahlberg.C.R.
"Flashings", Warren Heath, 25.8.93, under stones on edge of dried-up pond in clearing dominated by heather (TDH). One recent record (HHC).

Anisodactylus binotatus Fabr.
Warren Heath, 2.4.93, by shaking grass tussock over sheet, tussock on bank of pond in conifer plantation (TDH). One recent local record (HHC).

Stenolophus teutonius Schrank
"Flashings", Warren Heath, 2.4.93. by shaking grass tussocks over sheet, tussocks on edge of shallow pond in clearing dominated by heather (TDH). Two recent local records (HHC).

Acupalpus dorsalis Fabr.

"Flashings", Warren Heath, 24.3.93, by shaking grass tussocks over sheet, tussocks on edge of shallow pond in clearing dominated by heather (TDH).

No local record (HHC).

Badister sodalis Duftschmid

Near Shinfield Grange, 6.4.93, inside rotting wood of fallen willow tree beside pond in deciduous/conifer plantation (TDH). Three old local records (HHC).

Hydroporus gyllenhalii Schiödte

"Flashings", Warren Heath, 22.7.93, one male resting on underside of log at edge of shallow pond bordered by heathland (TDH). Three local records, latest 1955 (HHC).

Anacaena lutescens Stephens

Blackwater Reach Meadow near Sandhurst, 22.6.93, by dipping net into water filled ditch in area of river meadows (TDH). New record (HHC).

Choleva oblonga Latr.

Leighton Park School, Reading, 18.11.92, one male in pitfall trap set up beside ditch in tree-lined hedge (TDH). One recent record (HHC).

Catops fuliginosus Erichson

Leighton Park School, Reading, 18.11.92, one male and one female in wasp's nest in deciduous wood (nest underground) (TDH). One recent record (HHC).

Metopsia gallica Kich

Leighton Park School, Reading, 6.11.92, one male on underside of flat piece of wood beside ditch in tree-lined hedge (TDH). New record (HHC).

Clophrum piceum Gyllenhal

"Flashings", Warren Heath, 11.3.93, amongst leaf litter on edge of shallow pond in clearing dominated by heathland (TDH). Two old local records (HHC).

Acidota crenata Fabr.

"Flashings", Warren Heath, 2.4.93 by shaking grass tussock over sheet, tussock near shallow pond in heathland clearing (TDH). New record (HHC).

Stenus fornicatus Stephens

Pamber Forest, 21.8.92, by dipping with a net in shallow pond within oak woodland (TDH). One local record (HHC).

Euaesthetus laeviusculus Mannerheim

"Flashings", Warren Heath, 11.3.93, by shaking grass tussock over sheet, tussock on edge of shallow pond in clearing dominated by heather (TDH). New record (HHC).

Euaesthetus ruficapillus Boisduval & Lacordaire

"Flashings", Warren Heath, 24.3.93, by shaking moss over sheet, moss beside shallow pond in clearing dominated by heathland (TDH). New record (HHC).

Lathrobium fovulum Stephens

"Flashings", Warren Heath, 24.3.93, by shaking grass tussock over sheet, tussock on edge of

shallow pond in clearing dominated by heather (TDH). One local record (HHC).

Lathrobium fulvipenne Gravenhorst

Near The Lynch, Shiplake, 29.12.92, in flood refuse (TDH). One old, one new local record (HHC).

Lathrobium geminum Kraatz

Near The Lynch, Shiplake, 29.12.92, in flood refuse (TDH). One local record (HHC).

Lathrobium impressum Heer

Near Shinfield Grange, 6.4.93, inside rotting log of fallen willow beside pond in mixed deciduous/conifer wood (TDH). New record (HHC).

Achenium depressum Gravenhorst

Near Hall Farm, Shinfield, 6.4.93, in flood refuse on river bank (TDH). One local record (HHC).

Sunius melanocephalus Fabr.

Shirburn Hill near Watlington, 24.1.93, in moss on calcareous grassland slope (TDH). No local record (HHC).

Gyrohypnus angustatus Stephens

Near The Lynch, Shiplake, 29.12.92, in flood refuse on river bank (TDH). No local record (HHC).

Philonthus rubripennis Stephens

Sheffield Bottom near Theale, 16.7.93, amongst stones on shore of water filled gravel pit (TDH). New record (HHC).

Staphylinus brunnipes Fabr.

Near The Lynch, Shiplake, 29.12.92, in flood refuse on river bank (TDH). One local record (HHC).

Quedius nigriceps Kraatz

Heckfield Heath, 14.10.92, in blackened fruit bodies of *Russula nigricans*, in clearing in woodland (TDH). Three old local records (HHC).

Quedius scitus Gravenhorst

Near Shinfield Grange, 6.4.93, inside rotting dead willow beside stream in mixed deciduous/conifer wood (TDH). No local record (HHC).

Mycetoporus angularis Mulsant and Rey

"Flashings" Warren Heath, 11.3.93, by shaking grass tussock over sheet, tussock on edge of pond in heathland area (TDH). New record (HHC).

Bolitobius cingulatus Mannerheim

Snelsmore Common, 12.12.92, in clump of *Polytrichum* in a bog with *Sphagnum* (TDH). New record (HHC).

Sepedophilus pedicularius Gravenhorst

Near Hall Farm, Shinfield, 6.4.93, in flood refuse on river bank (TDH). One local record (HHC).

Tachyporus dispar Paykull

Cookham near Maidenhead, 6.12.92, trapped under ice in flooded river meadow (TDH). One local record (HHC).

Deinopsis erosa Stephens

Near Shinfield Grange, 6.4.93, inside rotting wood of fallen willow beside pond in mixed deciduous/conifer plantation (TDH). One local record (HHC).

Gyrophana affinis Mannerheim

Whiteknights, Reading, 15.6.93, in fruit bodies of *Collybia fusipes* on soil between exposed roots of fallen oak in mixed deciduous wood (TDH). No local record (HHC).

Gyrophana pulchella Heer

Heckfield Heath, 19.9.92, on gills of fruit bodies of *Tricholoma* sp., under birch and oak (TDH). No local record (HHC).

Leptusa puchella Mannerheim

Whiteknights, Reading, 18.6.93, on fruit bodies of *Stereum hirsutum* on logs of deciduous tree in mixed deciduous wood (TDH). New record (HHC).

Bolitochara bella Märkel

Near Hall Farm, Shinfield, 6.4.93, in flood refuse on river bank (TDH). No local record (HHC).

Bolitochara lucida Gravenhorst

Leighton Park School, Reading, 13.9.92, in decomposing fruit bodies of *Leucopaxillus giganteus* in clearing in mixed deciduous wood (TDH). Three old local records (HHC).

Aloconota gregaria Erichson

Near The Lynch, Shiplake, 29.12.92, and near Hall Farm, Shinfield, 6.1.93, both in flood refuse on river bank (TDH). No local records (HHC).

Amischa analis Gravenhorst

Near The Lynch, Shiplake, 29.12.92, in flood refuse on river bank (TDH). One old, one new local record (HHC).

Geostiba circellaris Gravenhorst

Near The Lynch, Shiplake, 29.12.92, in flood refuse on river bank (TDH). One old, one new local record (HHC).

Dinaraea aequata Erichson

Near Shinfield Grange, 6.4.93, inside rotting wood of fallen willow beside pond in mixed deciduous/conifer plantation (TDH). One old local record (HHC).

Dinaraea angustula Gyllenhal

Near Sonning Eye, 29.12.92, in flood refuse on river bank (TDH). New local record (HHC).

Dinaraea linearis Gravenhorst

Near Shinfield Grange, 6.1.93, under bark of rotting willow beside pond in willow copse adjoining conifer plantation (TDH). New record (HHC).

Liogluta pagana Erichson

Leighton Park School, Reading, 30.10.92, in pitfall trap beside compost heap in garden (TDH). New record (HHC).

Atheta crassicornis Fabr.

Leighton Park School, Reading, 28.10.92, in blackened fruit bodies of *Russula nigricans*, in grass under beeches at edge of wood (TDH). New record (HHC).

Atheta liturata Stephens

Whiteknights, Reading, 15.6.93, on fruit bodies of *Collybia fusipes* on soil between the exposed roots of fallen oak (TDH). New record (HHC).

Zyras limbatus Paykull

"Flashings", Warren Heath, 11.3.93, by shaking grass tussock over a sheet, tussock on edge of shallow pond in clearing dominated by heather (TDH). One local record (HHC).

Amarochara forticornis Boisduval & Lacordaire

Near The Lynch, Shiplake, 29.12.92, in flood refuse on river bank (TDH). No local record (HHC).

Oxypoda alternans Gravenhorst

Heckfield Heath, 19.9.92, inside decomposing fruit body of *Boletus* sp. under oak in woodland (TDH). Two old local records (HHC).

Oxypoda opaca Gravenhorst

Near The Lynch, Shiplake, 29.12.92, in flood refuse on river bank (TDH). Two old local records (HHC).

Cetonia aurata (L.) **Rose Chafer**

Matlock Road, Caversham, 1.6.93, one flying in the garden (BRB).

Simplocaria semistriata Fabr.

Leighton Park School, Reading, 31.3.93, in flight interception trap beside ditch in tree-lined hedge (TDH). One old, one new local record (HHC).

Syncalypta spinosa Rossi

Aston Rowant N.R., 1.5.93, walking over a bare path in area of calcareous grassland (TDH). No local record (HHC).

Dryops striatellus Fairmaire & Brisout

"Flashings", Warren Heath, 25.8.93, under stones in dried up pond surrounded by heathland (TDH). New record (HHC).

Megatoma undata L.

Near Shiplake House, 29.12.92, hibernating under bark of paling on edge of copse of deciduous trees (TDH). One new, one old local record (HHC).

Axinotarsus marginalis Laporte de Castelnau

Near Four Houses Corner near Burghfield Common, 26.6.93, sweeping, *Juncus* sp. and willow saplings in ride in oak/conifer plantation (TDH). Two recent local records (HHC).

Meligethes flavimanus Stephens

Whiteknights, Reading, 18.6.93, inside flowers of ornamental rose (TDH). New record (HHC)

Meligethes nigrescens Stephens

Hartslock N.R., 18.7.93, inside corollas of *Campanula glomerata* on calcareous grassland (TDH). Six old records to 1925 (HHC).

Meligethes solidus Kugelann

Hartslock N.R., 18.7.93, inside corollas of *Campanula glomerata* on calcareous grassland (TDH).
New record (HHC).

Cryptophagus pubescens Sturm

Leighton Park School, Reading, 26.11.92, in wasp nest in ground in deciduous woodland (TDH).
Two old local records (HHC).

Dacne rufifrons Fabr.

Whiteknights, Reading, 15.6.93, on fruit bodies of *Collybia fusipes* on soil between exposed roots of fallen oak (TDH). Four old local records (HHC).

Scymnus auritus Thunberg

Pamber Forest, 6.5.93, beating willow tree in scrub in oak woodland (TDH). One local record (HHC).

Halyzia sedecimguttata L.

Pamber Forest, 6.5.93, by beating birch in scrub in oak woodland (TDH). Two recent local records (HHC).

Pseudotriphyllus suturalis Fabr.

Leighton Park School, Reading, 25.10.92, in decomposing blackened fruit body of *Russula nigricans* in deciduous wood (TDH). One old local record (HHC).

Triphyllus bicolor Fabr.

Whiteknights, Reading, 15.6.93, in fruit bodies of *Collybia fusipes* on soil between exposed roots of fallen oak (TDH). One old local record (HHC).

Cicones undatus Guérin

Whiteknights, Reading, 30.10.92, under bark of dead but standing sycamore tree encrusted with black fungus (sooty bark disease) (TDH). One new local record (HHC).

Rabocerus gabrieli Gerhardt

Near Four Houses Corner near Burghfield Common, 23.6.93, beating diseased branches of pine trees in plantation (TDH). New record (HHC).

Mordellistina neuwaldeggiana Panzer

Pamber Forest, 21.8.92, on umbel of *Oenanthe crocata* on bank of pond in oak woodland (TDH). One old local record (HHC).

Galerucella nymphaeae L.

Warren Heath, 2.4.93, by shaking grass tussock over sheet, tussock on bank of pond in conifer plantation (TDH). Two old local records (HHC).

Luperus flavipes L.

Near Four Houses Corner near Burghfield Common, 23.6.93, sweeping young birch trees on margin of open ride in young conifer plantation (TDH). Four old local records (HHC).

Aphthona herbigrada Curtis

Hartslock N.R., 18.7.93, resting on low vegetation in area of calcareous grassland (TDH). Three old local records (HHC).

Longitarsus ballotae Marsham

Near Gatehampton Farm, Goring, 7.10.92, on leaves of *Ballota nigra* in hedgerow (TDH). One local record (HHC).

Apion loti Kirby.W.

White Shute near Lambourn, 13.6.93, general sweeping of calcareous grassland which contained *Lotus corniculatus* (TDH). Four old local records (HHC).

Apion tenue Kirby.W.

White Shute near Lambourn, 13.6.93, general sweeping of calcareous meadow (TDH). One old, one new local record (HHC).

Nanophyes gracilis Redtenbacher

"Flashings", Warren Heath, 22.7.93, by sweeping *Lythrum portula* in muddy area (dried pond) (TDH). One old local record (HHC).

Hypera plantaginis Degeer

White Shute near Lambourn, 13.6.93, general sweeping of calcareous meadow (TDH). New record (HHC).

Tanysphyrus lemnae Paykull

Blackwater Reach Meadow near Sandhurst, 22.6.93, by dipping a net into a water filled ditch in area of river meadows (TDH). New record (HHC).

Euophryum confine Broun

Whiteknights, Reading, 30.1.93, hibernating under bark of decaying tree stump in deciduous wood (TDH). Note: Previously recorded under *Pentarthrum huttoni* Woll.

Phytobius olssoni Israelson

"Flashings", Warren Heath, 22.7.93, on or near plants of *Lythrum portula* on more or less bare mud (dried pond) (TDH). One local record (HHC).

Curculio rubidus Gyllenhal

"Flashings", Warren Heath, 22.7.93, resting on birch leaf, tree growing on edge of marshy ground (TDH). One old local record (HHC).

Miaris graminis Gyllenhal

Hartslock N.R., 18.7.93, inside the corollas of *Campanula glomerata* on calcareous grassland (TDH). One old local record (HHC).

HYMENOPTERA: SAWFLIES, ICHNEUMONS, ANTS, BEES AND WASPS*Plutothrix scenicus* (Walker)

Near Clayfield Copse, 29.5.93, on dead oak (DGN).

Calosota acron (Walker)

Clayfield Copse, 6.6.93 emerged from a hazel twig collected 10.5.93 (DGN).

Calosota aestivalis Curtis

Near Clayfield Copse, 24.5.93, noted drilling into dead oak; 4.6.93, on dead elm (DGN).

Epiclerus tremenus (Walker)

Clayfield Copse, 21.9.93 (DGN).

Euplectrus bicolor (Swederus)

Near Clayfield Copse, 2.8.93, (DGN); Clayfield Copse, 21.9.93 (DGN).

Aulogymnus gallarum (L.)

Clayfield Copse, 7.7.93 (DGN).

Chrysocharis amyite (Walker)

Clayfield Copse, 21.9.93 (DGN).

Hemiptarsenus dropion (Walker)

Clayfield Copse, 21.9.93 (DGN).

Hemiptarsenus unguicellus (Zett.)

Clayfield Copse, 18.9.93 and 21.9.93 (DGN).

Pedobius epigonus (Walker)

Blackhouse Wood, 3.6.93 (DGN); Clayfield Copse, 21.9.93 (DGN).

Myrmecina graminicola (Latr.)

Emmer Green, 5.8.93 and 7.8.93 (alate females) (DGN); 15.9.93 (worker) (DGN).

Stenamma westwoodi (Westwood)

Emmer Green, 1.10.90 to 15.10.90, alate males in Malaise trap (DGN); 16.4.92 to 7.5.92, dealated female in pitfall trap (DGN); 17.9.93 alates emerging from nest in flower bed (DGN).

Lasius fuliginosus (Latr.) Jet Ant

Near Clayfield Copse, 28.4.93, nest in roots of large oak-tree in hedgerow (DGN).

Vespa crabo L. **Hornet**

Pamber Forest, 8.7.93, one specimen flying around flowering blackberry. The first time I have ever seen this fine insect in the Forest but the warden, Graham Dennis, informs me that he has seen several there this year (BRB).

Dolichovespula media (Retz.)

Hargrave Road, Maidenhead 17.7.93, (MVA); Chambers Copse, 17.8.93, a nest suspended in a bush discovered by John Marshall (DGN). This wasp is a recently established species in Britain, first noted in 1981 (BRB).

Dolichovespula sylvestris (Scop.) **Tree Wasp**

Near Chambers Copse, 4.9.93, captured by John Marshall (DGN).

Psenulus concolor (Dahlbom)

Emmer Green, 17.6.93 and 2.7.93 (DGN).

Psenulus pallipes (Panzer)

Emmer Green, 12.6.89, 13.6.89, 16.6.89, 21.6.89 and 2.7.93 (DGN).

Psenulus schencki (Tournier)

Emmer Green, 30.6.88, 17.6.89, 9.6.92, 28.6.93 and 2.7.93 (DGN).

DIPTERA: TRUE FLIES*Xylomyia marginata* (Meigen)

Emmer Green, 7.7.93 (DGN).

Chrysophilus aureus (Meigen)

Emmer Green, 7.7.93 (DGN).

Rhagio strigosus (Meigen)

Chalkhouse Green, 31.5.93 (DGN).

Xanthogramma pedissequum (Harris)

Hargrave Road, Maidenhead, 21.8.93 (MVA).

CONTRIBUTORS

The Recorder expresses his thanks to:

Martin Albertini	(MVA)	John Notton	(JHFN)
Hugh Carter	(HHC)	Graham Saunders	(GS)
Neville & Mary Diserens	(N&MD)	Des Sussex	(DJS)
Thomas Harrison	(TDH)	Dr. Eric Watson	(EVW)
David Notton	(DGN)		

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THE RECORDER'S REPORT FOR VERTEBRATES 1993.

H.H.Carter

FISH

Cyprinus carpio L. **Carp**

Child Beale Trust 31.1.93 (KE in Evening Post). Reported by anglers in lower pond at Greenmore Hill, Woodcote 20.3.93. 1 about 400 mm long in very murky water of Widmore Pond, Sonning Common 7.6.93.

Leuciscus leuciscus (L.) **Dace**

2 in Emm Brook at Dinton Pastures 5.5.93.

Leuciscus cephalus (L.) **Chub**

2 about 250 mm long in Emm Brook, Dinton Pastures 7.5.93. 5 there, 250-300 mm long 4.6.93. 1 about 210 mm long in Holy Brook at Central Library 8.7.93, 4 all about 200 mm long there 13.7.93, 2 there about 180 mm long 9.8.93.

Abramis brama (L.) **Bream**

Child Beale Trust 31.1.93 (KE in Evening Post)

Rutilus rutilus (L.) **Roach**

Child Beale Trust 31.1.93 (KE in Evening Post). A few reported by anglers in lower pond at Greenmore Hill, Woodcote 20.3.93.

Perca fluviatilis L. **Perch**

Child Beale Trust 31.1.93 (KE in Evening Post). A few reported by anglers in lower pond at Greenmore Hill, Woodcote 20.3.93.

Tinca tinca L. **Tench**

Child Beale Trust 31.1.93 (KE in Evening Post)

AMPHIBIANS

Rana temporaria L. **Frog**

None in pond east of Coach and Horses 8.3.93 or 20.3.93. 6 clumps of new spawn and 2 older clumps in main pond at Coach and Horses, no adults seen but 2 heard 20.3.93. Horse Pond at Gallowstree Common, a former site for this species, nearly dry 20.3.93. Spawning completed by 18.3.93 (PC). About 20 pairs in amplexus and males croaking, much spawn in lower pond, a little spawn in upper pond at Greenmore Hill, Woodcote 20.3.93, no adults there 26.3.93. 1 about 75 mm long in garden at 301 Northumberland Avenue, Whitley Wood 5.6.93. 1 65 mm long dead on Milestone Way, Caversham Park 10.6.93 (MJC). Single animals throughout the year at Netherleigh, Pangbourne (CF).

Bufo bufo (L.) **Toad**

Main pond at Coach and Horses full of water again but no toads yet, 8.3.93 but about 45 unmated small males and 30 pairs in amplexus, much new spawn 20.3.93 - a remarkable and welcome recovery. Spawning beginning by 18.3.93 (PC). About 20 pairs in amplexus and males croaking, much spawn in lower pond at Greenmore Hill, Woodcote 20.3.93, no adults there 26.3.93. 1 at 12 Northbrook Road 12.8.93 (JA and Recorder). 1 in Star Road, Caversham 26.9.93 (MJC). Single animals throughout the year at Netherleigh, Pangbourne (CF).

REPTILES

Anguis fragilis L. **Slow Worm**

Maximum count on any one night 8 at Netherleigh, Pangbourne, fewer than usual (CF).

Natrix natrix (L.) **Grass Snake**

1 about a metre long by main pond at Coach and Horses 20.3.93; the householder here says there are 4 or 5 resident. This perhaps is about as many as the amphibian population will support.

MAMMALS*Sorex araneus* (L.) **Common Shrew**

1 on sports field, Caversham Park 26.6.93. 1 dead opposite 132 Lowfield Road, Caversham Park 26.8.93.

Talpa europaea L. **Mole**

Active on Show Ground, Caversham Park December 1993

Erinaceus europaeus L. **Hedgehog**

1 at Fishers Court 5.7.93. 1 dead in Caversham Park Road 14.7.93, 19.7.93, 4.10.93, 7.11.93. 1 dead Lowfield Road, Caversham Park 21.7.93. 1 dead on Woodcote Road, Caversham 22.8.93 (VM). 1 dead New Road, Sonning Eye 23.8.93. 1 dead in Kennylands Road (south), Sonning Common 17.9.93. 1 dead on Old Peppard road, Emmer Green 12.10.93. No records from Netherleigh where it used to be common (CF).

Nyctalus noctula (L.) **Noctule**

Seen at Netherleigh, Pangbourne this year for the first time (CF).

Pipistrellus pipistrellus (Schreber) **Pipistrelle**

5-6 at Blackhouse Wood north of Emmer Green 4.6.93. Seen at Netherleigh, Pangbourne (CF).

Vulpes vulpes (L.) **Fox**

1 dead on Maidenhead Road east of Hurst 7.5.93. 1 on sports field, Caversham Park 27.6.93. Reported at Allt Wen, Upper Warren Avenue, Caversham Heights 25.8.93(JB). 1 crossing road at 1930, Padworth Common 31.9.93. Regular at Netherleigh, Pangbourne (CF).

Meles meles (L.) **Badger**

Signs at Allt Wen, Upper Warren Avenue, Caversham Heights 25.8.93. Trackways in use in Tanner's Lane adjoining Reading Golf Course, a long-established locality 30.10.93. Fairly regular October-November 1993 at Netherleigh, Pangbourne (CF).

Mustela erminea L. **Stoat**

1 crossing Peppard Road near Abbey Football Ground 1.10.93.

Dama dama (L.) **Fallow Deer**

Slots of 40-45 and 55-60 mm width at pond east of Coach and Horses 8.3.93. Slots in muddy puddle in Foxhills Lane north of Caversham Park 24.5.93. Slots in muddy lane leading to Highlands Wood from Kidmore End 30-31.5.93. Slots in Blackhouse Wood north of Emmer Green 27.8.93 and 29.9.93.

Muntiacus reevesi Ogilby **Muntjac**

1 seen by main pond at Coach and Horses 20.3.93. Slots in muddy puddle in Foxhills Lane north of Caversham Park 24.5.93. 1 calling north of Caversham Park 5.6.93 and again late December 1993. 1 crossing road near St. Andrew's School, Pangbourne in daylight 12.8.93 (VM).

Droppings on trackway at Allt Wen, Upper Warren Avenue, Caversham Heights 25.8.93. Slots in Blackhouse Wood north of Emmer Green 29.9.93. Seen in garden by J.H.

Oryctolagus cuniculus (L.) **Rabbit**

1 dead on road, Bishopsland Farm north of Emmer Green 1.2.93, juvenile there 7.6.93. 1 dead on road, Bryant's Farm north of Emmer Green 25.2.93. "Stop" (temporary breeding burrow) dug out there, probably by badger, 18.3.93. 1 dead on road, A329/Maidenhead Road bridge 19.3.93. 1 by underpass under Caversham Park Road 25.4.93 (MJC). 1 seen, signs of many more at Dinton Pastures 7.5.93. 6 seen in Cane End area 30.5.93. 1 juvenile beside Peppard Road, Chalkhouse Green. 1 at Sonning Common 7.6.93. 3 on Caversham Park School playing field 21/6/93, 6 there 23/6/93, 2 there 9.7.93. 1 on sports field, Caversham Park 27.6.93. 2 in Reades Lane, Sonning Common 27.6.93. 1 at Kennylands, Sonning Common 6.7.93. 1 dead on the Straight Mile, Hurst 21.7.93. Reported at Allt Wen, Upper Warren Avenue, Caversham Heights 25.8.93 (JB). 1 in Blackhouse Wood north of Emmer Green 27.8.93.

Rattus norvegicus (L.) **Brown Rat**

1 dead on road, Bryant's Farm north of Emmer Green 1.2.93. 1 dead on road, Arborfield Garrison 1.3.93. 1 dead on road in Binfield Heath Lane by Crowsley Park 20.3.93. 1 dead on Kiln Road, Emmer Green 17.9.93. 1 dead in Peppard Road, Chalkhouse Green 21.9.93.

Microtus glareolus (L.) **Bank Vole**

1 dead on footpath near Mapledurham Lock 14.6.93 (VM).

Sciurus carolinensis Gmelin **Grey Squirrel**

1 dead in Lowfield Road 8.1.93. 1 in Wood Lane, Sonning Common 30.1.93. 1 in St Barnabas Road, Emmer Green 25.4.93. 2 dead on road, Emmer Green 31.5.93. 4 in grounds of Wordsworth Court, Emmer Green 7.6.93. 1 dead at north end of Reade's Lane, Sonning Common 27.6.93. 1 in Clayfield Copse, Emmer Green 23.7.93. 1 in Blackhouse Wood north of Emmer Green 27.8.93, 26.8.93, 19.10.93, 14.11.93, 24.11.93. 1 dead on Peppard Hill, Caversham 27.8.93, 1 alive there 23.9.93. 1 in Caversham Park Road 18.10.93. 1 dead on road, Bradfield South End 19.10.93. 1 at Emmer Green Court 21.12.93. 1 on Watlington Hill 27.12.93 (EMC and Recorder). Adult seen carrying young on its back at Netherleigh, Pangbourne in July (CF). Seemingly abundant near Gurney Drive, Caversham where there are several nut-bearing walnut trees (VM).

My thanks are due to the following contributors:

John Ashton (JA); Janet Bull (JB); Elizabeth Carter (EMC); Mary Carter (MJC); Paula Cox (PC); Keith Elliott (KE); Claire Frank (CF); June Housden (JH); Vivienne Murphy (VM).

THE RECORDER'S REPORT FOR OTHER INVERTEBRATES 1993

H.H.Carter.

Salticus scenicus **Jumping Spider**

Common as ever at 10 Northbrook Road.

Pisaura mirabilis **Tent Spider**

1 at 301 Northumberland Avenue, Whitley Wood 5.6.93

Nuctanea umbratica

Female on fence beside pond at By Pond Cottage, Binfield Heath (SU743792) 20.3.93

Araneus diadematus **Garden Spider**

Common as ever at 10 Northbrook Road. A fine female at entrance to house in Galsworthy Drive, Caversham Park.

The Weather at Reading during 1993

by

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 Department of Geography
 University of Reading

1993 turned out to be a reasonable year weather-wise with (overall) temperatures, rainfall and barometric pressure remaining close to the long-term average. Once again, there was no sign of the predicted global warming trend. The only major deviant was sunshine since the total number of hours recorded (1343) was some 12% below normal (for the second year running). This made it the third - dullest year since records began in 1956 (after 1958, 1297 hours and 1992, 1335 hours). As in 1992, only one month (this time June) exceeded 200 hours of sunshine (by just 30 minutes!), compared to four such months in the brilliant summers of 1976 and 1990.

However, the overall average values mask the fact that 1993 was a year of quite distinctive halves, with the first half of the year experiencing above-average temperatures and below-average rainfall. Indeed, February recorded only 3.2 mm rainfall, with 14 consecutive dry days, making it the driest month since May 1990. Furthermore, a 21-day drought was recorded from the 18th June to the 9th July. Conversely, the second half of the year experienced below-average temperatures and above-average rainfall. September, October and December all exceeded 85 mm of rainfall and the 95 mm deposited in October (57% above normal) made it the seventh-wettest October since 1959.

The following monthly weather summaries are based on the table of weather records provided (Table 1), along with mean values for the station over the period 1971-1990 (Table 2). All these data have been kindly supplied by the Department of Meteorology at Reading University.

January was a very mild, wet, dull and stormy month. After a cold start (and -5.7°C , the coldest day of the year, recorded on the 3rd), cyclonic westerlies dominated the rest of the month. These gave mild, winter-less conditions with a monthly mean temperature some 2°C above normal (the fourth-warmest since before 1959), with a 'balmy' 13°C recorded on the 13th. The preponderance of depressions provided rainfall some 29% above average with the number (22) of rain days (i.e. with more than 0.2 mm per day) the seventh-highest since 1921. Consequently, sunshine was a very rare event and was some 45% below average, with a pathetic daily mean of one hour. Indeed, total sunshine hours were the second-lowest since 1939, after 1959 when a miserable 27 hours were recorded.

February was a truly anticyclonic month, with the highest mean pressure recorded for any February since 1960. Consequently, it was a very dry month, making it the second-driest February since 1921 (after 1934 when 2.5 mm rainfall were deposited). However, temperatures remained close to normal and only two air frosts were recorded, giving only 25.5 hours below 0°C (compared with 460 hours in the 'Big Freeze' February of 1986), continuing the winter-less conditions experienced since the beginning of the year. Despite the blocking high pressure dominance, its favourable southerly location maintained a mild, maritime trajectory for the air flow (for 79% of the recorded wind directions), which accounted for the remarkable winter-less weather. However, the resultant anticyclonic 'gloom' (so typical of winter high pressure systems) gave very dull weather and below-average sunshine hours. Indeed, there was a 10 - day spell (2nd - 12th) which remained completely sun-less and very depressing!

March continued the anticyclonic weather of the previous month and very dry conditions persisted up to the last two days when 15 mm of rain were recorded. A drought, which had started on the

27th February, lasted until the 15th March and overall, the rainfall aggregate for the month was 61% below average. The combined February/March total (24.2 mm) was the fifth lowest since 1921 whereas the combined number of raindays (7) was the lowest over the same period. Temperatures remained above average mainly due to a very warm period around the middle of the month, when 18.3°C was recorded on the 15th (the highest temperature of the year so far). However, the end of the month was, considerably colder with eleven consecutive ground frosts and a grass minimum temperature (-11.1°C) on the 26th, which was the lowest recorded in March since 1985. Overall, it was the coldest March since 1987, with problems for local gardeners. After two relatively sun-less months, it was so pleasant to experience above-average sunshine at long last.

April experienced disappointing dull, wet weather although temperatures remained well above average, with the number of ground frosts the lowest since 1967, to benefit sensitive garden plants. Rainfall was almost double the average total mainly due to a very wet first eleven days. On the 9th, 22 mm rainfall were deposited which was the third-heaviest total recorded since 1921 (after 1991 and 1940). Again, it turned out to be a very dull month with the number of sunshine hours 27% below normal, making it the fourth-lowest since 1939 (after 1966, 1961 and 1941).

May's weather was quite pleasant, although it could not compare with the marvellous weather of May 1992. Temperatures remained above average but there were only five days with maxima over 20°C, compared with the 16 in the previous May. The maximum temperature on the 11th was 24.3°C, the highest recorded since the 8th August 1992. Rainfall totalled 18% below average and indeed it would have been an even drier and more stressful month if a deluge had not occurred on the 20th, which deposited some 59% of the monthly aggregate. It was the eighth consecutive May in which recorded rainfall was less than the monthly average. Sunshine was disappointing though since, once again, total hours recorded were below normal.

June gave us very pleasant summer weather which was generally warm, dry, calm and sunny, apart from a more unsettled cooler, wet spell around the middle of the month (between the 11th and 21st). Temperatures were well above average, especially the monthly mean maximum which was a remarkable 4.4°C higher. Indeed, maximum temperatures exceeded 20°C on 16 days (although only two such days were recorded between the 11th and 23rd) and the 26.5°C maximum on the 8th was to be the hottest day of the year. Consequently, the monthly mean temperature (15.8°C) was the fourth -highest since 1971 (after 1976, 1992 and 1982). Rainfall was 13% below normal and most (92%) of the recorded aggregate occurred in the very unsettled, thundery spell between the 9th and 16th. The hours of sunshine were 5% above average which was a welcomed, if modest, recent trend reversal. The main feature of the month was the very calm weather experienced since the mean wind speed and the highest wind gust were the lowest recorded since before 1961.

July was a mixed month with a very warm, dry and sunny first week changing to more cyclonic cool, wet and dull conditions over the rest of the month which influenced the overall mean values. Despite the warm start, mean temperatures were below normal making it the second-coolest July in the last 10 years. Indeed, there were two very cold nights on the 11th and 12th which both recorded ground frosts (the first time this had happened in July since 1968). Rainfall was close to normal despite the dry start and the drought which lasted from the 18th June until the 8th July. From then on, rainfall occurred on most (15) days which just about compensated for the early drought. Sunshine was most disappointing after such a sunny start and the month's total was 25% below average, with a dismal mean daily duration of only five hours.

August was an anticyclonic month with dry weather and below-average temperatures mainly due to a large number of cloud-less cool nights, especially in the second half of the month. With these

very clear nights, seven ground frosts were experienced which is the highest August total since 1921 and which gave local gardeners considerable headaches! The rainfall deficiency and associated biological stresses were other important features of the month since the recorded aggregate was only 53% of the expected monthly average. Indeed, this deficiency could have been even worse since 80% of the recorded rainfall was actually deposited on only two days (the 11th and 21st). Despite the dry anticyclonic conditions, the recorded sunshine hours were only a little above normal but this was a vast improvement over the previous month.

September did not produce the desired 'Indian Summer' weather and indeed, after a promising start, it proved to be a pretty miserable month with cool, dull and wet conditions instead. The warmest day of the month (23.6°C) occurred on the 1st but, thereafter, temperatures declined to a pathetic 9.6°C maximum on the 27th (the coolest September day for over 30 years). Consequently, the number of ground frosts was the highest since 1986 and the monthly mean temperature turned out to be the fourth-lowest since 1959. A fifteen-day drought (which had started on the 23rd August) ended on the 7th September. From then on, very wet weather occurred on 16 days giving an overall aggregate some 65% above the monthly average. It was an incredibly dull month with sunshine hours totalling only 60% of the expected monthly average. It proved to be the second-dullest September since 1939, just behind 1945 (which recorded 71.5 hours total sunshine).

October was a month of two very different halves weather-wise, with the first half cyclonic, very wet and warm whereas the second half was anticyclonic, very dry and cold. The maritime airflows up to the 12th gave above-average temperatures (by as much as 2-3°C) but thereafter, temperatures plummeted, as the high pressure developed, with some very cold nights in particular. The minimum temperature on the 16th (-2.4°C) was the lowest recorded in October for over a decade and also represented the earliest air frost since 1981. Indeed, the total number (4) of air frosts was the highest since 1952. The monthly rainfall aggregate was 57% above normal (the seventh-wettest October since 1959 but considerably drier than the wettest in 1960, when 175mm deposited), but 98% of this aggregate was recorded up to the 12th before the 'blocking high' became established. Even though the total number of sunshine hours was 8% above average (to represent a considerable improvement over the previous month), the variations throughout the month were very marked. The cyclonic first two weeks gave average sunshine totals, the anticyclonic third week saw totals well above average and the associated 'gloom' of the last week or so was responsible for only 5.6 hours of sunshine being recorded in eight days (which was considerably below average and so depressing for Autumn).

November gave us an early 'taste' of winter with very cold weather associated with anticyclonic dominance (atmospheric pressure being some 4 mb above normal). However, the month started off with very mild weather (with a balmy 15.6°C maximum on the 5th) until the infamous 'blocking high' became established. Furthermore, its central location to the north-east maintained a cold easterly airflow and very unseasonal, freezing weather. For example, the maximum temperature (0.1°C) on the 23rd was the lowest for any November day since before 1951; the daily mean temperature on the same day (-2.4°C) was the second-lowest since 1959 (after 1985) and the nine consecutive nights (18 - 26th) with minimum temperatures below 0°C was the longest such 'run' since before 1960. The month was naturally very dry, with the rainfall aggregate 30% below normal and a drought recorded from the 14th - 28th. Snow fall was recorded on two days (21st and 22nd), which did not lie. The dominant anticyclonic 'gloom' gave very dull weather and overall, the recorded hours of sunshine were well (19%) below normal (for the seventh month this year). The high pressure control gave the lowest wind speeds since 1965.

December saw a return to cyclonic, westerly weather and a relentless passage of Atlantic depressions providing mild (winter-less), wet conditions, apart from a short respite over Christmas (when four of the six air frosts were recorded). Temperatures remained mostly above average (with a balmy 14°C maximum recorded on the 19th) apart from the spell which was well-below normal, observed between the 24th - 27th (when maxima ranged between 2.3 and 4.0°C). Rainfall dominated the month giving an aggregate 36% above normal and the highest number of rain days (25) for any December since 1960. Interestingly, the heaviest rainfall was recorded at night and so the hours of sunshine were not affected and remained close to average (actually 2% above).

Postscript

It is useful to summarise the 1993 weather at Reading with a close look at the seasonal trends indicated in Table 3 (again based on data from the Department of Meteorology).

Winter was generally mild, very dry and dull, with barometric pressure well above average (8 mb) due to persistent anticyclones/blocking highs in the second half of December and most of February. Indeed, apart from the former period (and the cold spell reported for December 1992 in last year's issue), the weather remained remarkably winter-less like that of 1991-92 (with a mere 71 hours below 0°C recorded in January and February). Consequently, the winter was the ninth-warmest recorded since 1960.

Following a very wet autumn (1992), the winter was dry with aggregate rainfall 23% below normal, making it the eighteenth-driest since 1920. A drought was recorded between the 20th December and 3rd January. Sunshine hours were 24% below normal due to the dominant anticyclonic 'gloom' and, indeed, the winter turned out to be the third-dullest recorded since 1955-56 (after 1971-72 and 1956-57).

Spring was reasonable weatherwise with mild, dry if dull conditions. Temperatures remained above normal in the three months concerned so that the season became the fourth-warmest since 1971 (and indeed the seventeenth-warmest since 1921). Rainfall was slightly (5%) below average but was most variable with marked concentrations in late March/middle of April and towards the end of May. Consequently, the number of rain and wet days (i.e. with more than 1.00 mm per day) were the fourth-lowest since 1971 and a drought was recorded from the 27th February to the 16th March. Hours of sunshine were 11% below normal with only the March totals exceeding the average.

Summer was by no means outstanding and the weather (as in 1992) varied quite dramatically over the three months concerned. Like last year, June provided the best summer weather in terms of warmth (the hottest day of the year) and sunshine - not the best conditions for school and college examinations! Overall (and especially due to the poor July and August weather conditions), the season was disappointing being cool and dry, with sunshine totals a little (6%) below average.

Autumn failed to produce the hoped-for 'Indian Summer' weather, which would have partly compensated us all for such a disappointing summer. It was generally cold, with below-average spells recorded in every month especially the unseasonal cold weather of October and November (including the 'Little Freeze' between the 18th and 26th November). Rainfall was 29% above average with most of the rain falling in the very wet five-week period following the ending of a drought on the 7th September. However, there were dry spells especially in the second half of October and November, when the only drought of the season was observed. The season was miserably dull due to all the early-season cloud and later anticyclonic 'gloom' and sunshine hours totalled 21% less than normal, making it the fourth-dullest autumn since 1956 (after 1976, 1968 and 1984).

TABLE 1

WEATHER RECORDS: 1993

STATION: READING UNIVERSITY (WHITEKNIGHTS)

		Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Mean Daily Temperatures °C	Max.	9.6	6.8	11.1	13.5	16.8	20.6	20.5	20.6	16.5	12.4	8.2	8.7	13.8
	Min.	3.3	2.4	2.7	6.4	8.0	11.2	11.8	10.6	8.8	6.2	2.0	3.4	6.4
	Mean	6.5	4.6	6.9	10.0	12.4	15.8	16.2	15.6	12.7	9.3	5.1	6.1	10.1
	Range	6.3	4.4	8.5	7.1	8.8	9.4	8.7	10.0	7.7	6.2	6.2	5.3	7.4
Extreme Temperatures °C	Extreme Max. Date	13.1 13th	10.4 2nd	18.3 15th	20.4 30th	24.3 11th	26.5 8th	26.4 4th	25.1 19th	23.6 1st	17.1 3/11	15.2 5th	14.0 19th	26.5 8/6
	Extreme Min. Date	-5.7 3rd	-3.0 28th	-3.0 26th	0.4 3rd	1.9 5th	8.0 22nd	5.2 11th	5.8 29th	4.1 26th	-2.4 16th	-4.8 23rd	-2.9 27th	-5.7 3/1
	Extreme Grass Min. Date	-10.2 3rd	-7.5 23rd	-11.1 26th	-6.0 3rd	-5.6 5th	1.5 22nd	-1.5 12th	-2.2 14/28	-3.5 5th	-8.1 20th	-9.5 23rd	-8.0 27th	-11.1 26/3
Days with air frost		5	2	8	0	0	0	0	0	0	4	12	6	37
Days with ground frost hours at or below 0.0°C		17 45.5	17 25.5	18 32.5	9 0.0	7 0.0	0 0.0	2 0.0	7 0.0	8 0.0	7 13.0	19 110.0	18 10.0	129 236.5
Sunshine Hours	Sum	30.8	53.6	120.5	113.5	170.8	200.5	154.4	199.8	85.8	105.0	58.3	49.6	1343
	% of possible	11.6	19.0	32.8	31.9	35.5	40.6	31.1	44.4	22.6	31.6	21.6	19.9	29.9
	Daily Mean	1.0	1.9	3.9	3.8	5.5	6.7	5.0	6.5	2.9	2.9	1.9	1.6	3.7
Precipitation	Amount in mm	75.6	3.2	21.0	76.6	41.7	44.3	44.1	27.7	85.7	95.2	33.3	86.9	635
	Rain Days	22	3	4	14	13	11	14	6	16	13	7	25	148
Maximum rain in one day "		17.9	1.5	11.1	22.0	24.4	12.2	9.7	15.4	16.2	25.4	7.9	11.8	25.4
Date		10th	25th	31st	9th	20th	16th	13th	11th	7th	12th	29th	14th	12/10
Longest run of consecutive rain days		13	2	2	9	3	9	5	3	4	6	2	13	13 Jan & Dec
Longest run of consecutive dry days		2	14	15	10	7	13	8	9	6	6	15	3	15 March & Nov
Snow or sleet days		1	3	1	0	0	0	0	0	0	0	2	0	7
Days with snow lying		0	1	1	0	0	0	0	0	0	0	0	0	2
Visibility	Days with fog at 0900 GMT	4	6	0	0	0	0	0	0	0	0	4	0	14
Thunderstorm Activity	Days of thunder	0	0	0	0	4	3	3	0	1	2	2	0	15
	Days of hail	0	0	0	0	1	0	0	0	0	0	0	0	1
Barometric Pressure mb	Mean Highest Date	1019.3 1035.9 1st	1031.4 1042.0 3rd	1021.8 1036.1 25th	1009.7 1022.8 16th	1013.9 1032.6 4th	1016.7 1025.6 25th	1016.1 1032.2 6th	1019.5 1031.0 17th	1011.3 1030.8 1st	1014.0 1036.9 18th	1019.8 1036.1 16th	1005.8 1026.9 5th	1016.6 1042.0 3/2
	Lowest Date	989.8 11th	1011.1 26th	1008.5 22nd	994.0 5th	996.6 14th	1001.3 11th	1004.7 9th	1004.7 12th	989.0 13th	986.0 1st	1005.0 10th	981.5 15th	981.5 15/12

TABLE 2 MONTHLY AND ANNUAL WEATHER AVERAGES
UNIVERSITY OF READING (WILTENIGHTS)

1971 - 1990

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
MEAN BAROMETRIC PRESSURE	1014.2	1015.2	1014.0	1015.8	1014.9	1016.5	1017.2	1016.6	1017.0	1015.2	1015.9	1015.0	1015.7
MEAN TEMPERATURE	4.2	4.2	6.3	8.2	11.6	14.5	17.0	16.7	14.0	10.8	6.9	5.5	10.0
MEAN MAXIMUM TEMP.	7.0	7.3	9.8	12.4	16.2	19.1	21.9	21.4	18.4	14.5	10.1	8.2	13.9
MEAN MINIMUM TEMP.	1.3	1.2	2.6	4.0	7.0	9.9	12.2	11.9	9.7	7.1	3.7	2.7	6.1
DAILY RANGE TEMP.	5.7	6.1	7.2	8.5	9.3	9.2	9.7	9.6	8.8	7.4	6.3	5.5	7.8
SOIL TEMP. 5cm	3.1	2.9	5.1	8.8	13.6	17.2	19.3	18.1	14.5	10.1	5.9	4.2	10.2
" " 10cm	3.3	3.1	4.9	8.0	12.4	15.9	18.1	17.1	13.9	10.0	6.1	4.5	9.8
" " 20cm	4.0	3.9	5.3	7.9	11.8	15.1	17.5	17.0	14.3	10.8	7.1	5.2	10.0
" " 30cm	5.0	4.7	6.1	8.4	11.7	14.8	17.0	16.9	14.8	11.9	8.4	6.2	10.5
" " 50cm	5.5	5.2	6.3	8.4	11.4	14.4	16.5	16.8	15.1	12.4	9.2	6.8	10.7
" " 100cm	6.6	5.9	6.4	8.0	10.5	13.1	15.1	15.9	15.0	13.0	10.5	7.9	10.7
AGGREGATE RAINFALL (mm)	58.6	41.3	54.5	41.1	50.9	51.9	40.6	52.6	52.1	60.8	53.6	64.4	622.3
RAIN DAYS (0.2mm or MORE)	16	13	16	13	14	11	11	11	10	14	13	15	157
WET DAYS (1.0mm or MORE)	11	8	12	9	10	9	7	8	8	10	9	9	112
SUNSHINE (No. of HOURS)	55.9	69.3	106.3	155.6	193.4	189.0	206.5	193.0	144.5	97.1	71.9	48.7	1531.2
MEAN DURATION	1.80	2.48	3.43	5.19	6.24	6.30	6.66	6.23	4.82	3.13	2.40	1.57	4.19
DAILY MEAN DURATION POSSIBLE AT LATITUDE 51°	8.51	10.05	11.86	13.83	15.51	16.45	16.03	14.53	12.65	10.73	8.97	8.04	12.27

Table 3 Seasonal Weather Data Reading**A) Winter 1992/93 (Dec., Jan., Feb.)**

	1992/93	1971/90
Mean barometric pressure:	1022.6 mbs	1014.8 mbs
Mean temperature:	5.1°C	4.6°C
Mean maximum temperature:	7.8°C	7.5°C
Mean minimum temperature:	2.3°C	1.7°C
Aggregate rainfall:	126.6 mm	164.3 mm
Rain days:	36	44
Wet days:	28	28
Hours of sunshine:	132.6	173.9
Number of sunless days:	44	33

(B) Spring 1993 (Mar., April, May)

	1993	1971/90
Mean barometric pressure:	1015.1 mbs	1014.9 mbs
Mean temperature:	9.7°C	8.7°C
Mean maximum temperature:	13.8°C	12.8°C
Mean minimum temperature:	5.7°C	4.5°C
Aggregate rainfall:	139.3 mm	146.5 mm
Rain days:	31	43
Wet days:	21	31
Hours of sunshine:	404.8	455.3
Number of sunless days:	12	10

(C) Summer 1993 (June, July, August)

	1993	1971/90
Mean barometric pressure:	1017.4 mbs	1016.8 mbs
Mean temperature:	15.9°C	16.1°C
Mean maximum temperature:	20.6°C	20.8°C
Mean minimum temperature:	11.2°C	11.3°C
Aggregate rainfall:	116.1 mm	145.1 mm
Rain days:	31	33
Wet days:	20	24
Hours of sunshine:	554.7	588.5
Number of sunless days:	4	5

(D) Autumn 1993 (Sept., Oct., Nov.)

	1993	1971/90
Mean barometric pressure:	1015.0 mbs	1016.0 mbs
Mean temperature:	9.0°C	10.6°C
Mean maximum temperature:	12.4°C	14.3°C
Mean minimum temperature:	5.7°C	6.8°C
Aggregate rainfall:	214.2 mm	166.5 mm
Number of rain days:	36	37
Number of wet days:	27	27
Hours of sunshine:	249.1	313.5
Number of sunless days:	19	16
Number of days with fog:	5	5