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EDITORIAL

We have again had a very successful season of meetings and excursions. Our thanks are due to Sheila Ward for organising the meetings, and to Alan Brickstock for the excursions.

Last year, owing to ill-health, it was not possible to produce no.42 of the Reading Naturalist by the usual means - that is by relying on the good work of Hugh Carter. So we thank June Housden who organised the duplicating, and Dora and George Lucy for helping June with the collating. Ivy Brickstock has also done a good job each year in distributing a large number of copies to members in this area who do not manage to collect them. Thankfully we are able to carry on this year as usual.

OBITUARIES

ROBERT MOYLAN GAMBLES

On 11th December 1990, Robert Gambles passed away after an unsuccessful operation in the Royal Berkshire Hospital in Reading; he was eighty years old. I am sure that all of us will miss his enthusiasm, knowledge, intellectual sparkle and friendship immensely.

I first met Robert in 1976 when I gave an illustrated talk on the local dragonflies to Reading Natural History Society. Robert and his wife Margaret, who were in the audience, introduced themselves and a visit was arranged to their bungalow in the Chiltern Hills in South Oxfordshire. I was very impressed by his immaculate collection of West African Odonata and it quickly became apparent that Robert was an expert in this field. Indeed as we got to know them better it became obvious that they were immensely knowledgeable about many things. Robert had been a classical scholar and his interest in Greek and Latin literature had been maintained throughout his life. He was interested in music, theology and English literature, in addition to his professional expertise in vetinary medicine. Margaret was keen on botany and their trips to Greece and the eastern Mediterranean continued until just before Margaret's death.

He was no museum boffin and he regularly went out on field trips locally. He had been interested in the British fauna as an undergraduate at Cambridge and although he was rather rusty when I knew him, he was enthusiastic in the field. He was very encouraging and showed great interest in the developments of the British 'scene' - the recording scheme, the British Dragonfly Society, Kimminsia, Key Site Project etc.

In fact Robert's undergraduate dragonfly interests had been rekindled in 1948 when he met Cynthia Longfield in Cyprus where he was working. Shortly afterwards, he went out to take a senior veterinary post in Vom, Northern Nigeria and his life's work began. He was interested in all aspects of dragonfly biology and he did pioneering work on life histories and ecology. He became the undisputed world authority on the Odonata of West Africa (from the Cameroons to the Gambia). It was part of his nature that, for one of such expertise, his list of published works is not as long as that of some other authorities; perhaps he was too self-critical and it is most unfortunate that his handbook of the dragonflies of Nigeria never reached completion. If he had allowed Margaret to help in their retirement years, she might have been able to direct his work and help him to commit to paper even more of his knowledge; but it was not to be. A biography and bibliography (to 1980) was written by

Mike Parr and Roger Lindley (1980, Odonatologica 9(4);279-283). His work on the difficult genus Macromia is particularly outstanding.

I received great encouragement from Robert and he possessed the qualities that are so important in a good teacher: he could lead someone who was less experienced than himself in the right direction without in any way deterring him with his vast knowledge.

The funeral took place in the small parish church at Whitchurch Hill, Oxfordshire, where Robert had been a helper; many friends attended, including some from his old colonial days in Nigeria. He will be sadly missed by all of us.

Graham Vick

MISS JOYCE WATSON

Members will be saddened that Miss Joyce Watson died just a few days before Christmas 1990, one month after her 95th birthday.

She came to Reading to convalesce after the traumatic experience of nursing in London during the Blitz.

Although a much travelled lady and a very keen alpine plant grower, she was a very unassuming person. She tended to remain in the background, but always came forward with help and advice when asked, and gave help and encouragement to both new and young members of the Society.

In 1958 Reading University was the venue of the South-Eastern Union of Scientific Societies annual conference, jointly hosted by the Zoology Department of the University and by our Society. Joyce served on the committee and became field excursion secretary to the conference. In 1959 Joyce was secretary for both the winter programme and the summer field excursions, and the first winter walks took place.

We shall miss her very much. She will be remembered with affection both by members of the Society who had the pleasure of knowing her, by the many people of Tilehurst who were taught by her in Sunday Schools etc. Her lively mind and unassuming personality will long be remembered.

Sheila Ward

MRS. S. HAWKINS

We also sadly record the recent death of Mrs. Hawkins, widow of Professor Hawkins.

MEETINGS

These were held from October to December 1989 at the Abbey Gateway and from January to March 1990 in the Abbey Room of the Reading Public Library. Following a vote by a show of hands it was decided that the Abbey Room should be the venue for future meetings.

The A.G.M. on 12th October 1989, attended by 37 people, was followed by the Presidential address given by Neville Diserens. This was entitled "Getting High in the Alps" and beautifully illustrated with colour slides. On October 26th (attendance 37) Dr. Stephen Jury talked on "The Future of Plant Recording". On November 9th Graham Vick talked on "Trekking in Nepal Himalaya", emphasising dragonflies and scenery, (attendance 39). "A History of Mountain Flowers" was given by Mel Williams on November 23rd, (attendance 55). On January 11th 1990 Cyril Leeke spoke on "The New World" (attendance 38). On the very stormy evening of January 25th the Rev. George Neal talked on "Birds I have Known - the good and bad habits"; Nigel Phillip's subject on February 8th was "Local Mammals (attendance 47). Paul Brough talked on "Conservation in Hampshire" on February 22nd. A practical and entertaining evening on March 8th, including some natural history-based "party games", was much enjoyed when Robin Robbins talked about her work with children (attendance 28).

There were two members' evenings. The first part of each was a "mini-lecture" as an introduction to a particular subject. On December 7th 1989 (attendance 37) Jim Newman gave a summary of the classification of insects, and on March 22nd 1990 (attendance 48) Dr. Watson talked on identifying mosses and liverworts. After each there was the usual excellent supply of refreshments by Ivy and Alan Brickstock, followed by member's contributions of colour slides.

Winter Walks 1989-1990

The first of these was led by Eileen Holly in the Henley area on November 11th 1989, with 10 members present. Hugh Carter showed 8 of us tracks of various animals left in the excellent mud at Knowle Hill on December 9th. On January 13th 1990, Martin Sell led a party of 10 to the New Forest, where Dartford Warblers and a Hen Harrier were seen. We then went on to Keyhaven for a good variety of coastal birds. On February 10th Norman Hall led 8 members to Dorchester pits, where several Great Northern Divers and a party of Goosanders were seen, and then to a cold and windswept Farmoor reservoir, where there were numerous waders and a large group of feral Greylag Geese. Finally on March 10th Dr. E.V. Watson led a party of 17, who much enjoyed his exposition of Mosses and Liverworts in College Wood, and in his garden, and also the excellent tea and cakes provided afterwards by Mrs. Watson.

Summer Walks, 1990.

These began on April 7th with a walk in Fence Wood, led by George Lucy. A feature of this outing was the large number of ladybirds. Attendance was 17. On April 22nd, Trish Marcouse led 13 peope round Dinton Pastures and Sandford Mill, where a good show of Kingcups and Loddon Lilies were seen. 22 members and guests enjoyed an evening walk at Stratfield Saye led by Renee Grayer on May 22nd, to see a good display of Fritillaries. On May 25th, 20 early risers met at Jocelin Whitfield's house for a very enjoyable dawn chorus walk, led by Martin Sell. Afterwards Jocelin and George entertained us all to an excellent breakfast in their garden. Martin and three other stalwarts then went bird watching on the South Coast, returning after a marathon 17 hour outing. This was a most outstanding success. On the evening of May 16th, Martin Sell was again the leader, this time taking a party of 13 to the canal and gravel pits at Theale, where numerous birds, including Nightingale, were seen or heard. A party of 18 were led on an attractive walk round Ashampstead by Sheila Ward on May 19th .

The annual BBONT open day was held on May 27th at the Englefield Estate, by kind permission of Mr. & Mrs. Benyon. On a lovely sunny day, with walks through the woods and gardens, the sale of goods, books and plants, and an excellent tea served by BBONT members, a large crowd thoroughly enjoyed themselves. Profits for the afternoon were nearly £1,300.

A good variety of flowers, including a large number of superb Spotted Orchid/Marsh Orchid hybrids, were seen on an outing to Brimpton Gravel Pits, led by Gordon Wilson, on June 3rd. Alan Brickstock led round the National Trust property at The Holies at Streatley on June 16th. 24 people enjoyed superb scenery over the Thames Valley, and a good variety of downland flowers. 50 people enjoyed a superb coach outing to Hod Hill and Winfrith Down in Dorset on June 23rd, led by the inimitable Humphry Bowen. A wide variety of heath, downland and marsh flowers were seen. A superb specimen of Lizard Orchid was photographed by many of us on a roadside verge. Neville and Mary Diserens led a party of 11 round the Chequers Reserve on July 7th. On July 13th, over 30 people enjoyed an excellent barbecue, combined with birthday celebrations for Eileen Holly, both organised by Jocelin Whitfield, followed by a mothing evening led by Brian Baker. On July 22nd, Michael Keith-Lucas led 12 of us round the attractive Aston Rowant reserve, where numerous orchids and a good variety of grasses were seen. Other features of this walk were Wild Candytuft and numerous Burnet Moths.

On July 28th, the outing to White Horse Hill, led by Jim Newman, was notable for the large number of fine specimens of Knapweed Broomrape, and also the uncommon Spiny Restharrow. The expert description of the geology of the area given by Jim was also much enjoyed by the party of 16. Norman Hall led a mothing evening at Padworth Common on August 11th, with 12 members present. The weather on August 19th was so bad that Graham Vick's dragonfly outing to Hartley Wintney was abandoned -a rare event for the Society. On August 25th, 16 of us enjoyed a picturesque walk along the River Pang, led by Jocelin Whitfield. The highlight of this outing was a visit to the beautiful Blue Pool, where we had tea and watched the trout in the crystal clear water. Owing to an unfortunate injury to Eileen Holly, Alan Brickstock took over as leader on the experimental Wednesday afternoon walk in the Fawley area. Although only 6 people turned up, largely due to an unfortunate choice of date, this walk was much enjoyed. On September 15th 19 members visited the Hawk Trust near Andover. After an introductory talk, a wide variety of raptors was seen at close range, and numerous demonstration flights were watched. This was an informative and highly enjoyable day. Walter Dunn's very pleasant walk on the Gallowstree Common area on September 29th deserved many more than the 5 people who turned up.

There were, as usual, two fungus forays. The afternoon one led by Paul Cook at Lambridge Wood on October 5th was much enjoyed by a party of 20. One of the highlights here was finding two meadows full of large rings of Field Mushrooms. Several of the party collected and susequently enjoyed good samples of these. The all-day foray on October 14th, led by Neville Diserens and Alan Brickstock, was to Bottom Wood, with 13 people, and after lunch to Lackmore Wood, with 9 present. There were some very good species found on both these forays.

Many thanks to the leaders of all these outings.

Presidential address, 11th October 1990
"Spring Orchids of the Mediterranean"
J.N. Diserens.

In introducing his talk Mr. Diserens explained that whilst in Britain at Easter one might find two orchid species, those of the Mediterranean were then at their peak. He hoped, with the help of colour slides, to give some indication of the wide range of species which could be found even on a short visit at that time of year.

The orchids are a difficult family, particularly the Ophrys and Seraphis groups. There is a wide range of variation within many species, and no general agreement on nomeclature. He used as his guide Davies and Huxley's "Wild Orchids of Britain and Europe" which followed Flora Europea, although this was now recognised to be out of date.

In addressing the question "Where should one look for orchids in the Mediterranean?", Mr. Diserens suggested that it was easier to say where they were not likely to be found -under the concrete jungle, around the coasts, on the sea shore, in regularly cultivated areas, and wherever there were goats. The most promising areas were scrubby hillsides and pine woods.

Mr. Diserens noted that his account of the orchids of the Mediterranean could not be comprehensive, and was based on his visits at Easter over the previous seven years to Portugal, Southern Spain, the Camargue in France, Majorca, Corsica, Crete and Cyprus. He had some difficulty in deciding how to present his talk, since an account based on location would have involved considerable repetition, whilst one based on habitat would have had most orchids grouped under scrubby hillsides. In the end he had settled for a mixed approach.

In opening his account of the orchid species he turned first to those found in woodland. These included the Violet Limodore (Limodorum abortivum), a saprophytic orchid with rich violet flowers that was widespread in the area. Being a late flowerer, he had seen it only once in full flower.

He then described a number of species in the Ophrys group, together with some of the many sub-species and varieties. These included all three members of the group found both in Britain and in the Mediterranean, the Bee Orchid (O. apifera), the Early Spider Orchid (O. sphegodes), and the late Spider Orchid (O. fuciflora, now known as O. holoserica). He also noted in particular some of the more striking species such as the Woodcock Orchid (O. scolopax), the Sawfly Orchid (O. tenthredinifera), the Mirror Orchid (O. speculum), and Bertoloni's Bee Orchid (O. bertolonii). He commented in passing on the

similarity of some species to the faces of humans or animals.

After describing a miscellaneous group, including the Man Orchid, (Aceras anthropophorum), and the early flowering Giant Orchid (Barlia robertiana), Mr. Diserens turned finally to the Orchis group. This contained the largest number of species and some of the most handsome of all the Mediterranean orchids. Particular mention was made of the Wavy-Leaved Monkey Orchid (Orchis italica), the Long-Spurred Orchid (O. longicornis), the Yellow Punctate Orchid (O. punctulata), and his own favourite, the Pink Butterfly Orchid (O. papilionacea).

In his concluding remarks Mr. Diserens said that he hoped he had stimulated others to go to the Mediterranean at Easter to enjoy the orchids at first hand.

The Composition of Sediment and Water in the River Pang

R.J. Cook, A Parker, and J.E. Rae.

Introduction

The River Pang (figure 1) is a small stream, 25 km long, which joins the Thames west of Reading. Its source is near Compton (Grid Ref. 528796) and it subsequently runs through farmland and a number of small villages. This paper describes the course of the river, presents results of the analysis of river water and bed and bank samples, and comments on the environmental quality of the river.

Stream Description and Sampling Sites

Samples of stream water, stream-bed sediments and bank soils were taken at points P.1-P.26 (Figure 2).

The Pang has its source at Compton, near Church Farm (P.1 on Figure 2), where the bedrock is Middle Chalk. At this point the stream is small, only a few cms. deep and wide, and the sediment and surrounding soil have a high organic content. The surrounding land is used as pasture and the plants in the area are trees, grass and nettles. From here the river runs due south. Downstream the bedrock changes to a flinty gravel. At P.2 the stream and surrounding countryside have not changed fron the source.

The river remains unchanged for about the first 3 km. After this it becomes wider and deeper as it is fed by run-off from the surrounding fields. At P.4, 5 km from the source, the river is 20 cm. deep and 1m. wide, and flowing at a rate of 0.1 m/sec. As before, the land is used for pasture and the river sediment is organic-rich.

At about 6 k. from the source (P.5), the river forms a series of pools with high organic contents.

Further downstream (P.6) the flow of the river increases to 0.2 m/sec. The depth increases to 2 m. and the width to 5 m. In the immediate vicinity of the river the land is very marshy. The stream

bed consists of very fine sediment with some flints and the organic content still appears to be high.

At P.7, about 7.5 km from the source, the river passes under the motorway and is fed by run-off from the fields and nearby roads. The stream is now 8 m. wide and 1 m. deep and flows at about 0.4 m/sec. There is no change in the bed sediments or the vegetation. Surrounding land is still used for pasture, but is more forested and less marshy than before.

Sample point P.8 is very much like P.7 in terms of surrounding countryside, the river bed and sediment. The river itself, however, is shallower and flows at only 0.1 m/sec. The banks are steeper than before but there is no obvious change in the soil type.

At P.9 changes in the stream bed begin to be seen. The bed now consists of coarse sand and flint pebbles with very little organic matter. The flow of the river is 0.5 m/sec, which means that finer material would tend to be washed away. The bank soil has also changed. It is now more of a brown colour with flint pebbles and appears to have a lower organic content than before. Here the river flows through a farmyard and under a road. The banks are shallow and the river is probably fed by run-off from the fields which are still mainly pasture land.

Just downstream from P.9 the river is joined by a smaller stream. This smaller stream brings in an influx of fine sediment and organic material.There also appears to be a great deal of erosion of the banks and in some places they are supported by corrugated iron sheets.

For the next few hundred metres the river is criss-crossed by bridle paths and iron bridges. There is a large amount of decaying material in the river. The river bed is pebbles of flint and coarse-grained sediments. This is reflected in the bank soil which is very gravelly and has a sandy appearance, more so than previously. Soil 'A' and 'B' horizons are exposed. The 'A' horizon is about 10 cm. thick and is a sandy black colour. The 'B' horizon, greater than 30 cm. thick, is a pale brown colour and appears to have a high clay content.

At P.13 the river passes over a concrete ford and under an iron bridge. Here the river swings round to run ENE. To the north the geology is still Chalk while to the south there are clay deposits (Tertiary Reading Beds). The river itself is now 4m wide and 10cm deep with a flow of 0.6m/sec. The surrounding countryside and soil are as previously described. The bed of the stream is also unchanged except for fine sediment about 1cm thick which is seen in some places. There are signs of oil on the water, which may be from vehicles crossing the ford.

P.14 is just after the river has flowed through a small village. A few fields are now ploughed. The stream and stream bed are very similar to P.13 and 'A' and 'B' soil horizons can be seen in the bank.

At about 13.5 km from the source, sample point P.15, the river enters a small valley and the surrounding ground becomes very marshy. This continues for the next few hundred metres, past sample point P.16. In this area the river is fed by a series of small streams with a fairly high organic content.

After 15 km the river begins to pass through farmland that has been ploughed. Fields used for pasture become less frequent, although a few are still seen next to the river. At P.17 the river is 50 cm deep and 2m wide, with a flow rate of 0.5 m/sec. The river has a high organic content and also has large amounts of water cress growing in it. Smaller streams, running from a nearby farm, feed the river.

Downstream at P.18 the river itself changes very little, only becoming a little wider, and the flow increases to 0.8m/sec. The sediment is more sandy, and the surrounding area is forested.

Point P.19 is like P.18. Some nearby fields have been ploughed but in the immediate vicinity the land is forested. The area is fairly marshy and the river is fed by smaller streams. In the bank, 'A' and 'B' soil horizons can be seen. The 'A' horizon is about 15cm. thick and black, possibly indicating a high organic content. The 'B' horizon is a grey-brown colour and has a clay texture.

At P.20 the river widens to about 7m. and the flow drops to 0.3 m/sec. Algae are found growing in the stream. The fields at this point are all ploughed and none is used for pasture. This sample point is just downstream from a village and a sewage works.

Sample point P.21, at about 20 km. from the source, is similar to P.20. The river is flanked by a forest on the northern side, and ploughed fields on the south.

At P.22 the river swings round again and runs due north. It is surrounded by forest, although there are some ploughed fields just a few hundred metres away. Also in this area there are some drainage ditches leading from the nearby road into the river.

Further downstream the depth increases and the flow is about 0.4 to 0.6 m/sec. A few smaller streams join the river. The major difference is in land use. The river now passes through built-up areas and woodland and passes under several small bridges made of concrete and steel. These conditions continue up until P.26 where the River Pang joins the River Thames at Pangbourne.

Analytical Techniques and Results

A selected number of stream water samples, stream-bed and bank samples were chosen for analysis, taking into account stream confluences and changes in land use. The field determination of pH was an electrode measurement. Water samples were analysed by

ion chromatography for major cations and anions. Sediment and bank samples were analysed for mineralogy by X-ray diffraction, and for their element chemistry by X-ray fluorescence spectroscopy. Results are presented in Tables 2 to 5.

Discussion and Conclusions

The Pang water is alkaline, with pH values in the narrow range of 8-9. This is typical of a Chalk stream, since alkalinity of natural waters is primarily due to relatively high concentrations of the bicarbonate anion, with lesser contributions from carbonate and silica.

The average composition of Pang river water is compared to world average river water in Table 2; there is close agreement for most of the ions. Calcium is widely distributed in the minerals of rocks and soils and is the most abundant dissolved cationic constituent of natural fresh water, but calcium is even higher in the Pang than in world average river water, as would be expected for a Chalk stream. The water chemistry of potassium is similar to that of sodium because it seldom enters into precipitation reactions but does undergo ion exchange reactions. Sodium and potassium both appear to be relatively high in the Pang, but the average values are significantly affected by four particularly high values (locations P.1, P.2, P.14 and P.26). Water samples from locations P.1 and P.2 have correspondingly high values of chloride, sodium, magnesium and potassium, the sample from P.14 has high sodium and potassium, and the water from P.26 contains high chloride, sodium, sulphate and potassium. This indicates local introductions of these ions at specific points along the river course.

European Community Surface Water Directive Values are available for nitrate and sulphate (Table 1). In each case, the Pang values are well below the suggested limits, although the value of nitrate is above what may be considered an unpolluted value (1.4 mg/litre Faust & Aly, 1981).(It must be noted that it is difficult to establish precisely a range of concentrations for nitrate in unpolluted natural waters). Nitrate and other nitrogen species occur in natural waters mainly from biological systems and sources. Nitrate is usually considered the end product from a sequence of biologically mediated reactions in which organic nitrogen compounds are oxidised. Industrial and domestic wastewaters are sources of nitrogen, as are fertilizers and residues from farm animals.

The main minerals present in bed and bank sediments are, in order of abundance, quartz, calcite, microcline feldspar, and the clay minerals, kaolinite, illite and smectite, This mineral suite reflects the geology of the catchment area which is predominantly Middle Chalk with contributions from the clay-rich overlying Tertiary sediments and the more recent Valley Gravel and Clay-with-Flints. The chemistry of the clay minerals is particularly interesting since they have a high

surface-area-to-weight ratio, and are able to adsorb many pollutants onto their surfaces.

The concentrations of major elements in bed and bank samples clearly reflect, to a large extent, their mineralogical make-up. Values of SiO_2 do indeed relate to quartz content and similarly CaO and calcite content are correlated with one another. The aluminium and potassium concentrations reflect principally the feldspar and clay components of the sediments. The small percentages of sodium and magnesium may result from their incorporation in feldspars and carbonates respectively, and from their concentration on ion-exchange sites of the clays. Titanium is probably present as the mineral rutile (TiO_2) in amounts below the detection limit of the X-ray technique, and iron is commonly present as oxides and hydroxides. Finally phosphorus is different from the other elements mentioned since its main association is with the organic component of the sediment.

In conclusion it can be said that the chemistry and mineralogy of the Pang demonstrates that it can be classified as a relatively unpolluted Chalk Stream. The over-riding influence on the concentration of major elements and ions in water and sediments is the catchment geology, but local influences (e.g. variations in land use) can, in some instances, be important.

References

Faust, S.D. and Aly, O.M. 1981. Chemistry of Natural Waters, Ann Arbour, 400pp.

Table 1. Average composition (mg/litre of River Pang compared with world average river water and EC surface water Directive 75/440/EEC.

	Cl	No3	So4	Na	Mg	Ca	K
River Pang	11.8	9.4	13.1	17.2	1.2	24.3	6.3
World Average	7.8	1.0	11.2	6.3	4.1	15.0	2.3
EC Directive	-	50	250	-	-	-	-

Table 2. Mineralogical analyses of clay (fractions under 2μm diameter).

	P.1	P.4	P.7	P.14	P.18	P.19	P.24
%Kaolinite	11	12	15	12	13	10	13
% illite	47	35	45	42	48	51	47
% expendable mixed-layer	42	53	41	46	39	39	40

Table 3. Major ion concentrations mgl^{-1} in Pang stream water.

Sample	Cl^-	NO_3^-	SO_4^{2-}	Na^+	Mg^{2+}	Ca^{2+}	K^+
P1	22.3	8.5	3.3	41.8	3.3	21.4	27.0
P2	17.0	12.9	2.7	43.3	1.7	17.7	19.4
P3	NA	NA	NA	NA	NA	NA	NA
P4	10.4	11.3	-	12.8	0.5	25.2	3.8
P5	14.5	8.5	6.7	13.2	0.6	26.2	3.5
P6	14.2	9.3	-	10.9	0.6	25.7	4.4
P7	14.7	12.4	5.0	10.0	0.6	25.2	4.1
P8	11.8	12.3	-	9.5	0.6	27.1	2.9
P9	-	-	-	10.0	0.6	25.3	2.6
P10	9.9	9.2	8.6	11.1	0.7	25.5	4.7
P11	8.5	9.0	29.6	7.8	0.8	16.8	4.2
P12	9.3	9.9	13.3	11.9	0.9	28.0	5.3
P13	10.2	9.6	9.7	8.9	0.9	37.0	3.3
P14	10.4	7.8	40.0	45.2	1.5	20.8	6.3
P15	NA	NA	NA	NA	NA	NA	NA
P16	NA	NA	NA	NA	NA	NA	NA
P17	9.7	9.0	11.6	9.6	1.2	15.8	3.6
P18	9.6	8.3	10.3	10.6	1.2	16.8	2.5
P19	9.8	8.4	5.3	11.2	2.0	26.4	3.9
P20	10.4	7.2	10.7	13.1	1.2	24.8	1.9
P21	11.1	8.4	6.0	14.6	1.5	28.2	5.7
P22	12.8	7.7	-	13.8	1.5	30.1	NA
P23	11.5	8.8	6.0	11.0	1.3	16.5	4.7
P24	10.8	10.0	-	14.5	1.2	24.8	5.6
P25					2.0	28.2	NA
P26	20.1	9.6	41.0	44.7	2.2	26.2	12.6
Average Values	12.30	9.44	13.11	17.27	1.2	24.3	6.3

NA = Not analysed

Table 4. Bulk Mineralogy of Selected Soil and Sediment Samples (% Values).

	Quartz	Microline	Calcite	Kaolinite	Illite	Smectite
P21	87.1	7.2	2.8	3.0	-	-
P58	48.0	38.4	13.6	-	-	-
PS21	79.3	10.5	7.0	3.2	-	-
PS1	46.1	4.7	39.8	1.0	4.3	3.9
PS24	55.6	2.9	34.8	0.9	3.2	2.7
PS7	48.6	4.0	31.8	2.3	6.9	6.3
P12	89.6	3.3	4.1	3.0	-	-
PS13	88.6	4.3	6.8	-	-	-
P1	44.7	1.8	51.1	2.3	-	-
PS14	77.0	1.2	10.0	1.4	3.1	5.4
P26	64.0	3/1	29.7	3.2	-	-
P7	95.0	1.7	3.2	-	-	-
P4	69.5	7.4	23.0	-	-	-
PS4	67.1	2.1	21.9	1.2	3.6	4.2
P19	97.2	2.8	-	-	-	-
PS22	91.0	1.9	7.1	-	-	-
P22	90.2	5.9	1.7	2.2	-	-
PS12	95.8	-	4.2	-	-	-
PS18	84.9	2.1	7.0	0.8	2.9	2.3
P14	83.6	7.4	5.2	1.8	-	-
PS19	91.9	1.2	2.6	0.4	2.2	1.7
PS13	76.4	13.7	9.9	-	-	-

	P1		P4		P7		P12		P13		P14		P18		P19		P22		P24		P26	
	Sed.	Soil.	Sed.	Soil	Sed.	Soil	Sed.	Soil	Sed.	Soil	Sed.	Soil	Sed.	Soil	Sed.	Soil	Sed.	Soil	Sed.	Soil	Sed.	Soil
%Na_2O	0.18	0.16	0.03	0.06	0.12	0.18	0.03	0.43	0.16	0.09	0.13	0.19	0.07	NA	0.03	0.27	0.20	0.26	0.0	NA	NC	0.09
%MgO	0.51	0.46	0.17	0.18	0.28	0.49	0.05	0.66	0.52	0.21	0.24	0.61	0.18	"	0.08	0.61	0.17	0.59	0.16	"	"	0.51
% Al_2O_3	3.39	3.46	1.55	1.63	2.71	6.42	0.68	8.79	2.24	3.07	3.57	8.27	2.74	"	1.92	9.08	1.81	8.37	1.47	"	"	5.02
% SiO_2	31.40	36.13	62.11	61.11	31.22	63.24	92.96	80.09	74.37	83.09	81.14	77.31	80.84	"	92.81	81.17	81.93	75.69	52.12	"	"	42.26
% P_2O_5	1.47	1.33	0.38	0.49	0.85	1.14	0.07	0.24	0.24	0.26	0.44	0.39	0.28	"	0.15	0.35	0.19	0.20	0.42	"	"	0.63
%K_2O	1.27	1.28	0.43	0.46	0.86	1.83	0.15	1.37	0.54	0.53	0.87	1.82	0.74	"	0.43	1.53	0.43	1.26	0.49	"	"	1.13
%CaO	30.83	30.86	21.39	21.51	17.87	3.97	3.13	3.70	13.38	5.11	8.49	4.95	9.41	"	2.25	1.11	8.26	3.03	32.06	"	"	29.0
% TiO_2	0.11	0.13	0.06	0.07	0.14	0.41	0.04	0.56	0.11	0.17	0.21	0.52	0.13	"	0.11	0.74	0.12	0.55	0.05	"	"	0.16
% MnO	0.04	0.04	0.01	0.01	0.01	0.06	0.01	0.03	0.03	0.02	0.02	0.03	0.01	"	0.01	0.10	0.02	0.04	0.01	"	"	0.04
%Fe_2O_3	0.88	0.96	0.71	0.53	0.80	2.95	1.08	2.08	2.03	1.44	1.60	2.60	0.52	"	0.67	3.61	0.90	2.81	0.43	"	"	2.15
Organic Content	29.93	25.2	13.15	13.96	45.16	19.29	1.80	2.06	6.39	6.02	3.30	3.32	5.08	"	1.44	1.43	5.97	7.21	12.00	"	"	19.0

Table 5. Chemical compositions of stream-bed sediments and bank soils.
NC - not collected
NA - not analysed

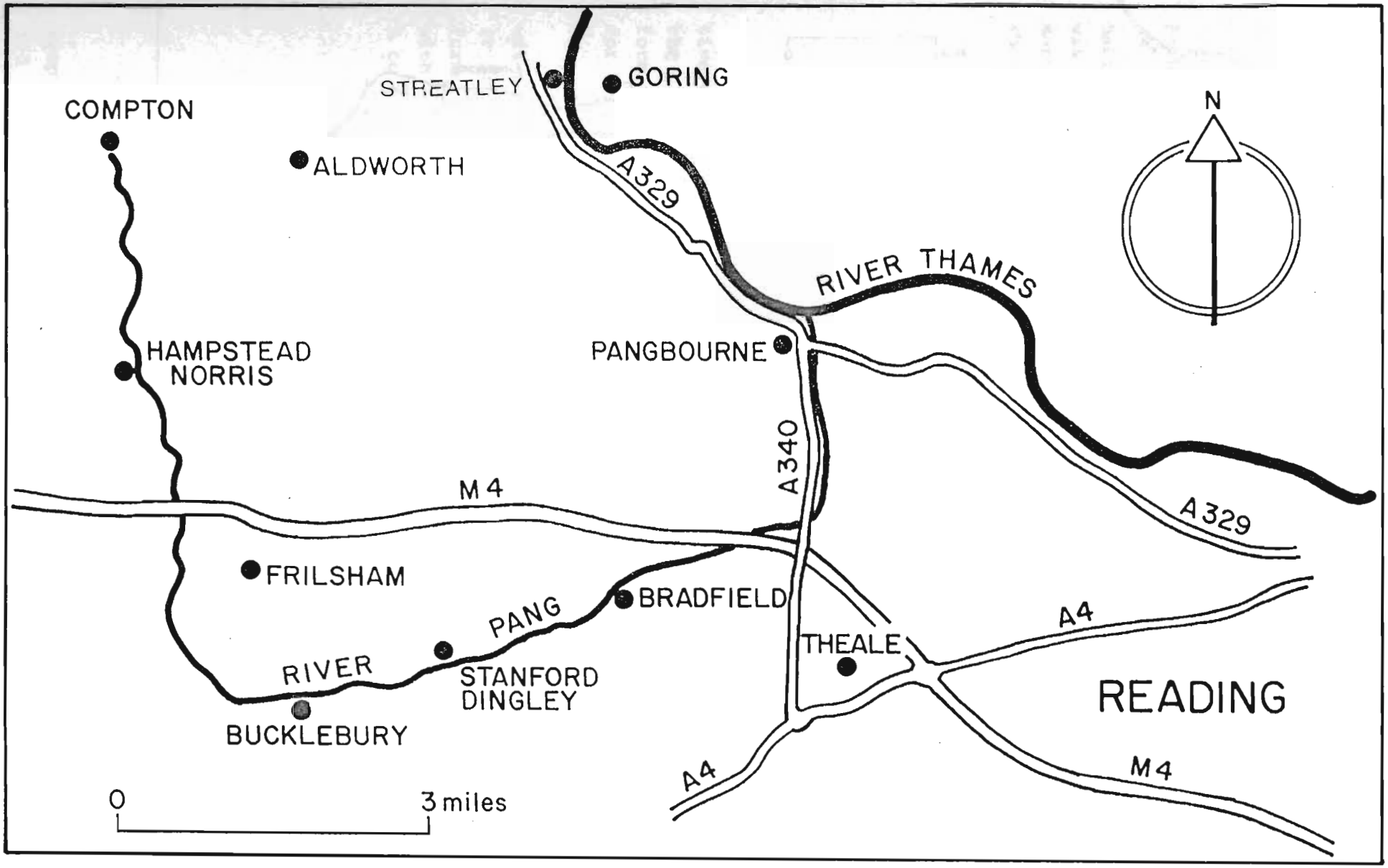

Figure I. LOCATION MAP OF RIVER PANG

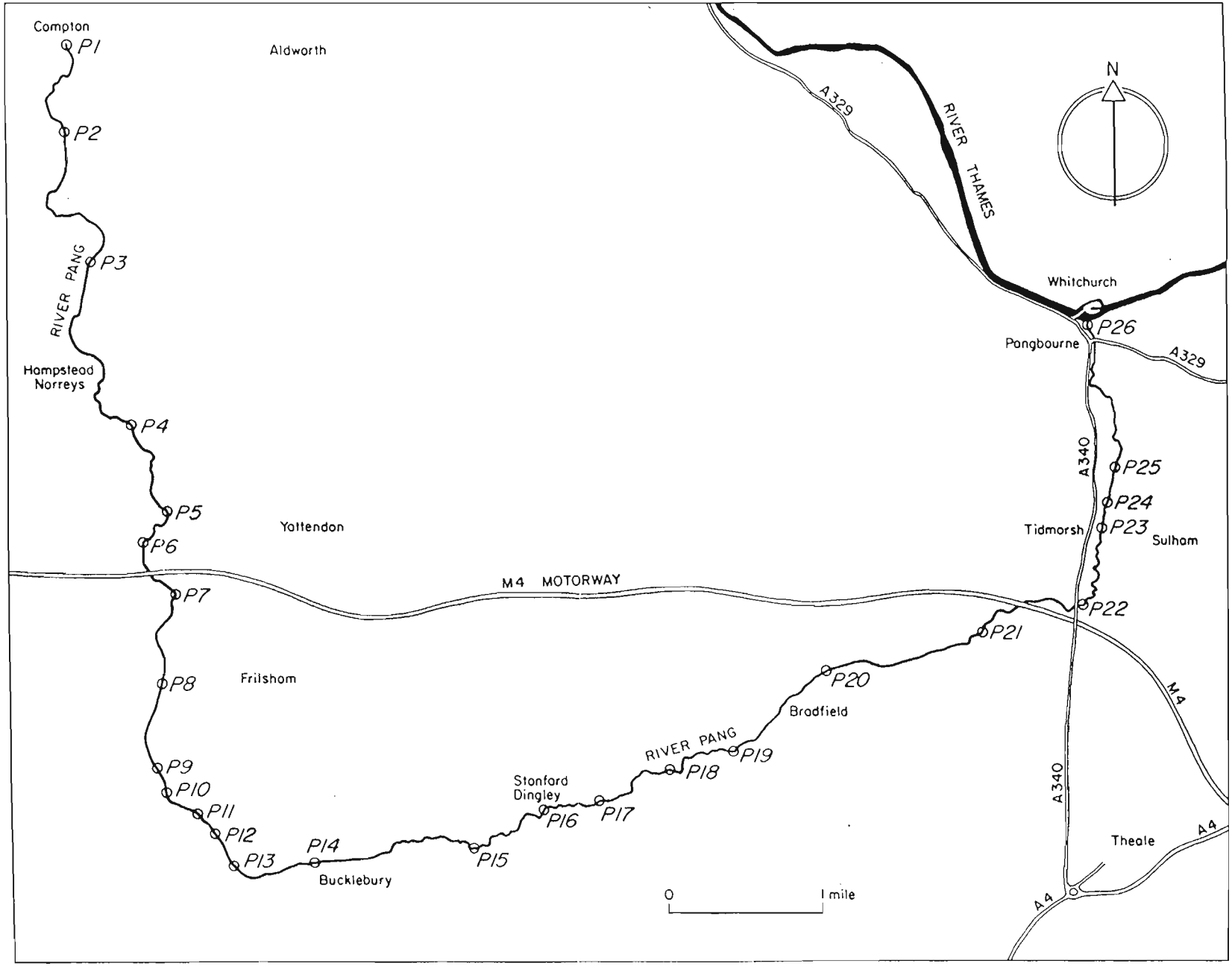

Figure 2: LOCATION OF SAMPLE POSITIONS ON RIVER PANG

The Work of Reading Urban Wildlife Group

Linda Carter and Trish Marcouse

Wildlife lives, not only in the countryside, the place where most of our nature conservation activities have been targeted, but also side by side with people in towns and cities. Reading is no exception, and the shower of butterflies on our buddleia in Summer and fox cubs on the railway banks in Spring delight local people.

In response to the need to maintain and provide open space and habitats for the wildlife of our town, Reading Urban Wildlife Group was founded in 1985 by local people, and soon became affiliated to Berkshire, Buckinghamshire and Oxfordshire County Naturalists' Trust, known to most of us as BBONT.

RUWG's specific aims are to:

Carry out a survey of flora and fauna of the Reading area.

Protect important sites of natural history value.

Advise landowners on the management of land and maximise its value to wildlife, consistent with its other uses.

Develop Urban Wildlife Areas in the town.

Promote the enjoyment and understanding of wildlife by everyone in Reading.

Nature Conservation is constantly changing and naturally, as time passes, Reading Urban Wildlife Group changes its emphasis to suit the greatest need for wildlife of the town. The following activities form a review of our activities over the last five years and our plans for the future.

The Reading Habitat Survey.

Reading Urban Wildlife Group's greatest need in the early days was to find out how much open space remains in the town and what value it is to wildlife. About 500 sites were surveyed by the end of the formal part of the survey, entirely manned by volunteers -local people with enthusiasm and dedication. The results have all been collated by a co-ordinator and the very best highlighted for protection.

What a detailed survey like this achieves is:

An evaluation to be made of the habitat scarcity within Reading.

A realistic assessment to be made of the value of any site should its future come into question.

Eases the production of management advice on sites, as the biological data would already be available from the Survey.

Makes it possible for the best of our sites to be protected through the Local Plan for Reading and in future a Nature Conservation Strategy.

We have not collected the data, then tucked it under the bed to keep it snug and gather dust. That would achieve nothing. With grant aid from Reading Borough Council, Tilehurst Parish Council and Wokingham District Council, a series of reports of our findings have

been compiled and received by all those organisations as an aid to their work. We hold the original maps and records for anyone with an interest in their area to view.

Offering Advice.

Reading Urban Wildlife Group is willing and able to provide advice to landowners and land managers, and those with the responsibility for land development in Reading. This means that sometimes RUWG stands against developers at local inquiries. It is surprising that despite all the interest and expertise of naturalists and conservationists, few councils have manpower amongst their staff to offer expert advice. The exception to this is Berkshire County Council who appointed Paula Cox as County Ecologist in 1990.

Reading Urban Wildlife Group

Monitors planning applications and makes representations to the planning authorities.,

Monitors development proposals and offers sound ecological advice on the landscaping of urban sites.

Provides written reports to landowners, particularly Reading Borough Council, on ecological aspects of the management of public open spaces and woodland. More than 20 such reports have been produced to date.

Establishes Urban Wildlife Areas.

One of our latest campaigns was that to retain the open fields east of Withy and Oliver's Copse, the closed Blagrave Hospital site. In this case we proved that badgers used the open ground for foraging, but the case was lost on other grounds and the land will be used for housing.

One of our earliest cases was Hemdean (Bugs) Bottom, where we stood at the local inquiry against the developers back in late 1985. Our evidence still stands in that case as the final determination is still in the balance.

RUWG keeps its finger on the 'national pulse' in urban conservation by its affiliation to the Fairbrother Group, and is in close contact with the Urban Development Officer at RSNC. Through this link we wrote our own book on getting urban groups started, called "Green it Yourself", which received national coverage and went into a second print run. A few copies are still available.

Urban wildlife areas.

A great deal of Reading Urban Wildlife Group's time and effort is dedicated to work on the ground; directly managing sites for their enhancement for wildlife. Urban wildlife sites suffer from the same problems of vandalism, litter and too many feet as other nature reserves in the area, but with knobs on!

Our first site was Devil's Dip, Circuit Lane, Southcote, an old gravel and clay pit which had been used as a dumping ground for soil from the Meadway shopping precinct development and collected the roadside drainage from the Bath Road and Liebenrood Road area. It was also the local dump for mattresses,old tyres, etc. etc. Reading Urban Wildlife Group members reckon that development work on this site is finished when we don't unearth any more bed springs!

On the positive side, this site contains an elm copse, an area of mixed native and introduced trees, including walnut, ash, horse chestnut and the ever present sycamore, a sunny grassed area and masses of nettle, bramble and elder. It is best visited in teh spring when the lesser celandine. bluebells and Queen Anne's Lace are in flower amongst the elms.

Over the years Reading Urban Wildlife Group and other voluntary groups have fenced in the Dip, provided a safe access, laid an elm hedge, planted new hedges along the boundaries and introduced wildflowers into the grassed areas and one of the banks of the Dip. We have been hampered by British Gas digging up plants,vandals smashing seats, and worst of all, raw sewage flowing into the Dip, killing the willows, rushes and sedges in the base. Nevertheless it provides a breeding site for woodland birds, a reservoir of nettles for its symbol, the Peacock butterfly, and the local fox is still digging for food in the banks. Reading sewage permitting, we will tackle the base of the site again during 1991.

From the naturalist's point of view our best site is the area of alder carr and pond between High Wood and Woodlands Avenue. This area is marked "The Canal" on old maps of the area and has a wide range of pond life despite drying up over the last two summers. Underneath the coke tins, old Christmas trees and the oil slick from the van that was dumped there last year are water stick insects, water scorpions and a breeding colony of smooth newts. There is also a great crested newt - we find one on each pond-dipping expedition, but never any efts. The local house martins use the site to gather mud for their nests, and as a feeding ground.

Most of our members think Heron Island in the Holy Brook is the best Urban Wildlife site in our collection, probably because it is away from the traffic, has less litter, and its access is via a fallen poplar tree. This island suffered severe storm damage in 1987 and 1990, losing most of the poplars, crack willows and weeping willows fringing the site. Our work over the last two years has been removing fallen trees from the stream and encouraging regrowth. A part of the island is underwater during the winter months and waterlogged for much of the year. This has resulted in a clear division betrween the south of the island with a magnificent London plane tree, surrounded by elm and hawthorn, and the northern section which is a sedge bed fringed with willow and contains some of the largest marsh marigolds in

Reading. The site is being taken over by Himalayan balsam and by small boys. Reading Urban Wildlife Group is removing some of the balsam and trying to remove the small boys by taking out some of the fallen trees that provide access. Unfortunately the vegetation cannot cope with the damage inflicted by so many feet, and the grass snakes and toads have been noticeable by their absence over the last twelve months.

In addition to these three main sites we have created and maintained a wildflower garden for Maiden Erleigh School, managed Rushey Way Pond, and have done a lot of work building footpaths in Maiden Erleigh woods, to encourage walkers to stick to the paths and keep off the wet woodland flora.

We propagate large numbers of plants fron local stock for use on our sites, and sell the surplus to wildlife gardening enthusiasts or local councils. For instance we supplied the marginal plants to stock Emmer Green Pond after the desilting work last year.

Keeping going.

Reading Urban Wildlife Group cannot keep going without local people and funds. Local organisations, in particular Reading Borough Council, with an annual grant, but others as well, have given us money. Other funds we have raised through sheer hard work, determination and fun along the way.

All the above pales into insignificance against the commitment of our members. Many have supported Reading Urban Wildlife Group, and continue to offer their practical help as well as their membership subscription. For everyone there is the quarterly newsletter to maintain contact and the flow of news of our activities. Most weeks there is the invitation to join us, either on a task or for a talk, or for the monthly meeting. If you happen to have joined the group but have not yet come out with us, why not give it a try? Whatever your interests in natural history, there is a place for you.

Some interesting fungi from the Reading area with notes on their ecology and distribution.

Paul E. Cook

Several uncommon or unusual basidiomycete fungi were found in the Reading area in 1990. These appear in Alan Brickstock's list of fungal records for last year and I will comment on a few which are either uncommon, unusual or have an interesting ecology. Since information on the geographical distribution of fungi in Britain is poorly documented I have consulted collections at the Royal Botanic Gardens, Kew to obtain information for some of the species. The comprehensive fungal Floras of Warwickshire (Clark 1980), Yorkshire (Bramley 1987) and Hebrides (Dennis 1986) have also been searched for records and in some cases have provided valuable information on distribution and substrates. Other literature sources provided information on distribution and substrates in Europe and other regions of the world.

CORIOLACEAE

Tyromyces wakefieldiae Kotlaba & Pouzar 1989

This substantial white polypore was first described from material collected at Brettenham, Suffolk in 1935 and was formerly known as Tyromyces or Leptoporus ellipsosporus. Recently Kotlaba & Pouzar (1989) have renamed the fungus T.wakefieldiae since the original name was invalidly published.

The whole fruit-body of this polypore is generally white in colour although in many collections the upper surface is slightly to markedly chestnut brown and occasionally weakly zonate. One diagnostic feature is that some collections show a spot or zone of blue colour in the flesh when broken. Two collections have been found in the Reading area in 1990 one at the Wilderness, Whiteknights Park on a fallen deciduous log, 25.10.90 and one on a Fagus log at Cucumber Wood, Emmer Green, 6.12.90. Both collections showed the spot of blue in the flesh.

The distribution of T.wakefieldiae in Britain is shown in Figure 1a. Most records are in the south and east although the fungus probably occurs in other parts of Britain. The fungus has been found on a variety of deciduous (Crataegus, Fagus, Ulmus) and coniferous substrates (Cupressus, Picea and Taxus). Surprisingly, outside the United Kingdom it is known only from France.

Tyromyces placenta (Fr.) Ryvarden 1973

This distinctive polypore is characterised by its pinkish coloured flesh and pore surface. A collection was made from an old stump of unidentified conifer at the Wilderness, Whiteknights Park, 6.12.90. Because of its distinctive colour this fungus is unlikely to be overlooked and is undoubtedly a rare polypore in Britain. The only other records in Britain are a couple of collections from Scotland including one on Larix in Perthshire. In Europe the fungus has been reported on Larix and Picea and recorded from Austria, Czechoslovakia, Germany, France, Italy, Poland, Sweden, Switzerland, Finland and USSR. It is also known from the USA and Canada where it occurs on Picea, Pinus, Pseudotsuga, Thuja, Tsuga and also Populus.

STEREACEAE

Stereum subtomentosum Pouzar 1964

This is the rarest of the six Stereum species known to occur in Britain. Distinctive features of this fungus include the thin flesh with short tomentum, the narrow almost stalked point of attachment and the yellow bruising of the flesh when the under-side is damaged. S. subtomentosum was found on Acer at The Wilderness, Whiteknights Park, 26.10.90 and on Fraxinus at Berry Brook Wood, Caversham, 10.11.90. In previous years it has been recorded from Sonning on Salix and Clayfield Copse, Emmer Green on Acer. Although at one time considered a rare species in Britain it is now being found in a number of places in southern England.

In Europe this species has been recorded on dead wood of a variety of broad-leaved trees but particularly Alnus, Fagus and Salix. Kotlaba (1987) reported that in Czechoslovakia it occurred on 18 species of tree with 37% of collections on Alnus and 21% on Fagus. Its distribution in Europe includes Austria, Bulgaria, Czechoslovakia, Denmark, Germany, Hungary, Italy, Finland, France, Germany, Norway, Poland, Romania, Sweden, Switzerland, European USSR, and Yugoslavia. Also known from North America (Canada, USA) and Asia (Mongolia, Iran, Siberia, Soviet Far East, China).

GLOEOCYSTIDIELLACEAE

Laxitextum bicolor (Pers.: Fr.) Lentz 1955

This uncommon fungus is rather like a Stereum in appearance but differs from that genus in its softer less leathery texture, white to off-white under-side as well as a number of microscopic features. L.bicolor typically forms whitish patches and small reflexed lobes with a brownish upper surface. The fungus is usually found on the sides and under-sides of fallen logs and branches.

Figure 1b shows the distribution of Laxitextum bicolor in Britain based on material at Kew, literature records and material collected by the author. The cluster of records in central England is primarily due to the Warwickshire fungus survey which recorded this species in a number of woods in that area. Around Reading, Laxitextum bicolor was found on Quercus on the Society's foray on 14 October 1990 at Lackmore Wood, Oxfordshire. It has also been found in previous years at Nuney Green and Heath End, Oxfordshire so it appears to be well established in our area. In Britain the fungus has also been reported as growing on Fagus, Betula and Crataegus. In Czechoslovakia Kotlaba (1989) reported that L.bicolor occurred on 14 species of indigenous trees with 60% of collections on Fagus and 12% on Quercus. Laxitextum bicolor appears to be a truly cosmopolitan species occurring in Austria, Czechoslovakia, Germany, France, Norway, Sweden, Switzerland, Finland and is reported from Africa, Asia (China), North, Central and South America (Brazil) as well as Australia.

SPARASSIDACEAE

Sparassis laminosa Fries 1836

This large distinctive fungus is closely related to Sparassis crispa which is well known to many forayers. It differs from S.crispa in its more lax growth form with numerous wavy, leaf-like, crowded, grey to cream coloured lobes arising from a fleshy trunk. Sparassis crispa has thicker and more cauliflower-like branches with crisped and entangled ends. Microscopically both species are very similar but S.laminosa appears to lack clamp connections on the hyphae. This rare fungus was collected by Ivy Brickstock from the base of a Pinus stump at Ufton Nervet, Berkshire on 29 October 1990. There were many other specimens present all appearing to grow at the base of Pinus stumps. Figure 1c shows the distribution in Britain based on herbarium records at Kew. Most of the records are from central southern England eg. New Forest, Alice Holt Forest, Haslemere and Ufton Nervet. Five of the 7 specimens at Kew were collected before 1945 with the only other recent record being from Wrecclesham near Alice Holt in 1984. At one time S.laminosa was thought to be exclusively associated with deciduous trees and S.crispa with conifers. However, the record from Ufton Nervet and one from Haslemere both report this species with Pinus. According to the literature S.laminosa has been found growing with Fagus, Quercus, Abies, Larix, Picea and Pinus. The fungus has also been recorded from Czechoslovakia, France, Germany, Sweden and Switzerland.

Another Sparassis species, S.simplex was described from Box Hill, Surrey by Reid (1958). This species was growing on Pinus debris and differs from the other Sparassis species in having one or more lobes which arise from a fertile resupinate patch.

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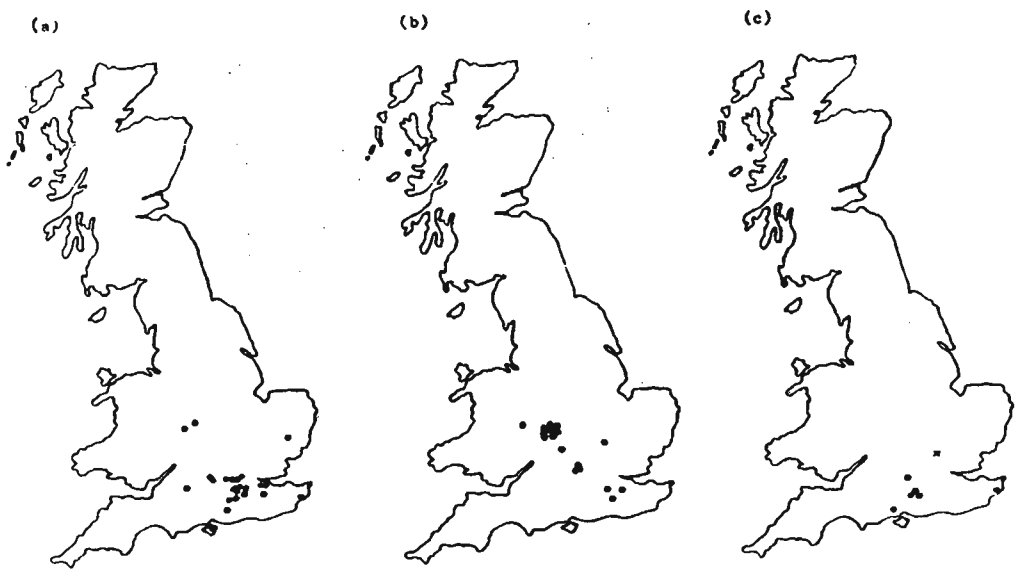

Figure 1. Distribution of a) Tyromyces wakefieldiae, b) Laxitextum bicolor and c) Sparassis laminosa in Britain. (x County record only)

THE RECORDER'S REPORT FOR BOTANY 1990

B.M.Newman

The warm summer of 1990 followed a mild winter, a similar pattern to 1989. Plants again developed early. Mr. and Mrs. Diserens reported Blackthorn (Prunus spinosa L.) in flower at Burnham Beeches on January 20th. By late summer many plants had completed their flowering period and the countryside looked brown and scorched. Some plants withstood the hot dry weather much better than others. Yarrow (Achillea millefolium L.) was one that flourished among the brown grasses of roadsides and lawns.

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

List of members' records for 1990

OPHIOGLOSSACEAE

Ophioglossum vulgatum L. Adder's tongue
Brimpton 3.6.90 (A.B.)

ASPIDIACEAE

Dryopteris affinis (Lowe) Fraser-Jenkins Scaly male fern
Nettlebed woods, Oxon, one magnificent specimen 20.5.90 (KMH)

BLECHNACEAE

Blechnum spicant (L.) Roth Hard Fern
Fence Wood, Hermitage 7.4.90 (AB)

AZOLLACEAE

*Azolla filiculoides Lam. Water Fern
Hurst Pond 4.10.90 (AB).

RANUNCULACEAE

Helleborus foetidus L. Stinking Hellebore
Sulham Woods 10.6.90 (AB).

Helleborus viridus L. Green Hellebore
The Ridgeway, Nuffield and Mongewell Woods 10.11.90 (AB).

Ranunculus lingua Greater Spearwort
Dinton Pastures 22.4.90; Aston Rowant 22.7.90 (AB).

CRUCIFERAE

*Cardaria draba (L) Desv. Hoary Cress
By the Kennet and Avon Canal between Burghfield Bridge and Fobney Lock (AB).

Iberis amara L. Candytuft
The Holies 16.6.90; Aston Rowant 22.7.90 (AB).

*Bunias orientalis L. Warty Cabbage
Mill Lane, Henley 8.7.90 (KMH).

Rorippa palustris (L.) Lesser Marsh Yellow-Cress
Dinton Pastures, on the banks of the Loddon 20.6.90 (AB).

Rorippa amphibia (L.) Besser Great Yellow-Cress
Stratfield Saye 2.5.90 (AB).

*Hesperis matronalis L. Dame's Violet, Sweet Rocket
Nettlebed, Oxon 20.5.90 (KMH).

CARYOPHYLLACEAE

Spergularia rubra (L) J & C. Presl. Sand Spurrey
The Holies 16.6.90 (AB).

PORTULACEAE

*Montia perfoliata (Willd.) Howell Springbeauty
On waste ground in front of Alfred Sutton School canteen, Wokingham Rd., (MVF).

MALVACEAE

Malva silvestris L. Common mallow
A plant which has spread widely in gardens and waste places, Henley. This rapid spread has been noted in many parts of the country. (KMH).

GERANIACEAE

*Geranium phaeum L. Dusky Cranes-bill
Crocker End, Nettlebed, Oxon 20.5.90 (KMH).

Geranium pyrenaicum Burm. fil. Hedgerow Cranes-bill
Ashampstead 19.5.90 (KMH); Fawley 5.9.90 (JLW).

LEGUMINOSAE

Ononis spinosa L. Spiny restharrow
The Holies 16.6.90. (AB)

Medicago sativa L. Lucerne
Sulham 5.5.90 (AB).

Hippocrepis comosa L. Horseshoe Vetch
The Holies 16.6.90 (AB).

*Onobrychis viciifolia Scop. Sainfoin
By the Kennet and Avon Canal between Burghfield Bridge and Fobney Lock (AB).

ROSACEAE

Sanguisorba officinalis L. Great Burnet
Brimpton 3.6.90. (AB).
Prunus spinosa L. Blackthorn
In flower at Burnham Beeches 20.1.90 (N & MD).

CRASSULACEAE

Sedum album L. White Stonecrop
Long established in thin turf near railway bridge, Shepherd's Hill, Reading (MVF).

*Sedum reflexum L. Reflexed Stonecrop
Long established in thin turf near railway bridge, Shepherd's Hill, Reading (MVF).

SAXIFRAGACEAE

Saxifraga granulata L. Meadow Saxifrage
In turf by the drive, Reading School grounds, Erleigh Rd.,Reading (MVF).

Chrysosplenium oppositifolium L. Opposite-leaved Golden Saxifrage
Old Beenham Copse 17.3.90 (AB).

LORANTHACEAE

Viscum album L. Mistletoe
Near the river Pang, Bradfield 16.4.90 (AB).

UMBELLIFERAE

Berula erecta (Hudson) Coville Lesser Water Parsnip
By the river Pang, Bradfield 16.4.90.

ERICACEAE

Vaccinium myrtillus L. Bilberry, Whortleberry
Fence Wood, Hermitage 7.4.90 (AB).

BORAGINACEAE

*Pentaglottis sempervirens (L.) Tausch Green Alkanet
Ashampstead 19.5.90 (JLW).

Lithospermum officinale L. Common Gromwell
Fawley 5.9.90 (JLW).

CONVOLVULACEAE

Cuscuta epithymum (L.)L. Greater Dodder
By the river Pang, Bradfield 25.8.90(AB).

SOLANACEAE

Atropa bella-donna L. Deadly Nightshade
Ashampstead 19.5.90; Bottom Wood Mapledurham 8.6.90 (AB).

SCROPHULARIACEAE

*Mimulus guttatus DC Monkeyflower
In streambed, Hambleden village, Bucks 14.8.90 (KMH).

OROBANCHACEAE

Orobanche elatior Sutton Knapweed Broomrape
Sulham Woods 10.6.90 (AB);many plants along the Ridgeway 21.7.90 (BMN).

PLANTAGINACEAE

Plantago coronopus L. Buck's Horn Plantain
On bare soil in the central reservation of the A.4 at the bottom of Shepherd's Hill (MVF).

RUBIACEAE

Asperula cynanchica L. Squinancywort
The Holies 16.6.90; Aston Rowant 22.7.90 (AB).

Cruciata laevipes Opiz Crosswort
Moor Copse 28.4.90 (JLW); Dinton Pastures 22.4.90; Theale, Fox and Hounds pit and canal 11.6.90; The Ridgeway, Nuffield and Mongewell Woods 10.11.90 (AB).

ADOXACEAE

Adoxa moschatellina L. Moschatel
Old Beenham Common 17.3.90; Woodland along the Kennet and Avon canal from Burghfield Bridge 12.5.90(AB); Gangsdown Hill, Huntercombe, Nettlebed, Oxon 2.4.90 (KMH); Fence Wood, Hermitage 7.4.90 (JLW).

COMPOSITAE

*Galinsoga ciliata (Rafin.) S.F.Blake Shaggy Soldier
In a garden, Shepherd's Hill; Queen's Road, Reading (MVF).

Inula conyza DC. Ploughman's Spikenard
Hartslock Reserve and lane from Coombe Farm 30.8.90 (AB).

Erigeron acer L. Blue Fleabane
On a walltop Brighton Road, Reading. Scarce, only two plants survived the summer drought (MVF).

Conyza canadensis (L.) Cronq. Canadian Fleabane
Aston Rowant 22.7.90; by the Kennet and Avon Canal from Burghfield Bridge towards Reading 31.8.90 (AB); an explosion in streets and gardens, southern Henley, August 1990 (KMH).

Chrysanthemum segetum L. Corn Marigold
Brimpton 3.6.90 (AB).

Carlina vulgaris L. Carline Thistle
Aston Rowant 22.7.90 (AB).

Lactuca serriola L. Prickly Lettuce
Dinton Pastures, Winnersh Berks. 12.5.90 (KMH).

*Hieracium aurantiacum L. Fox-and-cubs
At foot of bank outside a house in Harpsden Road, Henley August 1990. Possibly a garden escape (KMH).

ALISMATACEAE

Alisma plantago-aquatica L. Water plantain
Fence Wood, Hermitage 7.4.90; Moor Copse 28.4.90 (JLW).

BUTOMACEAE

Butomus umbellatus L. Flowering Rush
By the Kennet and Avon Canal from Burghfield Bridge towards Reading 31.8.90 (AB).

POTAMOGETONACEAE

Potamogeton natans L. Broad-leaved Pondweed
In the Kennet and Avon Canal from Burghfield Bridge towards Reading 31.8.90 (AB).

LILIACEAE

Polygonatum multiflorum (L.) All. Solomons-seal
Ashampstead 19.5.90 (JLW); by the River Pang, Bradfield 16.4.90; Moor Copse 13.5.90; in the grounds of AWE Aldermaston (AB).

Ornithogalum umbellatum L. Star-of-Bethlehem.
Medmenham, Bucks 13.5.90 (KMH).

*Allium vineale L. Wild Onion
Several plants beside the Ridgeway 21.7.90 (BMN).

AMARYLLIDACEAE

*Galanthus nivalis L. Snowdrop
Old Beenham Copse 17.3.90 (AB).

Narcissus pseudonarcissus L. Wild daffodil
Old Beenham Copse 17.3.90 (AB).

IRIDACEAE

Iris foetidissima L. Stinking Iris, Gladdon, Roast-beef plant
Ashampstead 19.5.90 (JLW); by the river Pang, Bradfield (AB);in a small wood by the Ridgeway 21.7.90 (BMN).

ARACEAE

Arum italicum Miller Italian Lords-and-Ladies
Medmenham, Bucks 13.5.90 (A possible garden escape but two or three plants seen at an appreciable distance from each other) (KMH).

CYPERACEAE

Carex appropinquata Schumacher Fibrous tussock-sedge
By the river Pang, Bradfield 25.8.90 (AB).

GRAMINEAE

Hordelymus europaeus (L.) Harz Wood Barley
Aston Rowant 22.7.90. Growing with wood millet (Milium effusum L.) in an ancient beechwood (AB).

Thanks are due to the following contributors;
Dr. A. Brickstock (AB), Mr N. Diserens & Mrs M. Diserens (N & M.D), M.V. Fletcher (MVF), K.M. Horswell (KMH), Mr.J.L. Ward ((JLW) and Mrs.S.R.Ward (SRW).

THE RECORDER'S REPORT FOR FUNGI 1990.

ALAN BRICKSTOCK

The exceptionally dry summer and autumn resulted in a very poor fungus season. Although the total number of species, 314, was not as low as might have been expected, this figure did not show the real picture. Many of the species recorded were represented by only one or two specimens, whereas we might have expected tens or hundreds. A further indication of the paucity of fungi was that many of the species were recorded from only one or two locations.

As an example, Sulham woods, normally one of the best local areas for fungi, and which I now walk two or three times a week, were almost devoid of all but a very few species, with only two species of Russula, two species of Lactarius, one of these only found on December 26, one Bolete, and NO Cortinarius, which are usually a speciality of these woods.

The total number of species found there was 50, but most of these were very few and far between. Amanita muscaria (L.)Hook. were abundant however, as they were at a number of locations.

Two species, Hygrophorus hypothejus (Fr. ex Fr.) Fr. and Baeospora myosura (Fr. ex Fr.) Sprig., were found only on the last day of the year, at Ufton Nervet.

There were some very large displays of field mushrooms, particularly near Lambridge woods, where there were two meadows full of large rings of them, with probably several thousand specimens.

The 'LBJ' Tubaria furfuracea (Pers.) Gillet was also found in great numbers, most notably growing on shredded bark in the heather garden at Virginia Water,

Libertella faginea Desm., an imperfect stage of an Ascomycete, looking rather like small tufts of orange moss, was abundant on beech wood felled in the gales of October 1989.

Thanks especially to Paul Cook, who identified many species we might otherwise have passed hurriedly by, to Barrie Bristow for his species list from the Newbury District Field Club foray at Benyon's Enclosure at Mortimer, and to Mary and Neville Diserens who shared many forays with me.

It would be nice to have a few more people interested enough to send in records.

The following are a few of the more interesting records for the year:

1. AGARICALES

Agaricus bitorquis (Quél.) Sacc.
Near The Holies, in a pavement edge,20.8.90 (B).
Stout white mushrooms, with a rather unpleasant smell, forcing their way through asphalt edge.

Agaricus cuprebrunneus (J.Schaeff. & Steer) Moller
Virginia Water,20.10.90 (MS).
Has a red-brown, glossy cap and a stout stipe, which is floccose in young specimens.

Agaricus porphyrizon Orton
Ufton Nervet,29.10.90 (IB).
Has purple/lilac fibrils on a yellowish background.

Boletus edulis Bull. ex Fr. subsp. trisporus Duncan & Watling
Burnham Beeches,4.11.90 (MS).

Calocybe carnea (Bull. ex Fr.) Kühn.
Virginia Water,20.10.90 (MS).
A distinctively flesh-pink species.

Clitocybe americana Bigelow
Burnham Beeches,4.11.90 on wood (MS).

Coprinus ellisii Orton
Benyon's Enclosure,6.10.90 (BB).

Cortinarius sanguineus (Wulf. ex Fr.) Fr.
Burnham Beeches,4.11.90 (MS).
An unmistakably blood red species.

Crepidotus luteolus (Lambotte) Sacc.
Burnham Beeches,4.11.90 (MS).

Deconia coprophila (Bull. ex Fr.) Karst.
Burnham Beeches,4.11.90 (MS).
An 'LBJ' growing on dung. Has a detachable, viscid pellicle.

Flammulaster carpophila (Fr.) Earle
Burnham Beeches,4.11.90 (MS).
A tiny ochre-coloured fungus growing on beech-nut shells.

Flammulaster limulata (Weinm. ex Fr.) Watling
Burnham Beeches,4.11.90 (MS).
A brown species with golden-yellow gills.

Hypholoma sublateritium (Fr.) Quél.
Burnham Beeches,4.11.90 (MS).

Lentinellus cochleatus (Pers. ex Fr.) Karst.
Benyon's Enclosure,6.10.90 (BB); Burnham Beeches,4.11.90 (MS).

Lepiota aspera (Pers. in Hofm, ex Fr.) Quél.
Sulham,5.12.90 (B).
A group of large specimens on a road-side verge.

Lepiota bucknallii (Berk. & Br.) Sacc.
Crowsley Park,28.10.90 (PC).

Lepiota fulvella Rea
Crowsley Park,28.10.90 (PC).

Leucocoprinus cretatus Locq.
Lackmore Wood,14.10.90 (NH).
Pure white and covered in powdery meal.

Melanophyllum echinatum (Roth ex Fr.) Sing.
Virginia Water,20.10.90 (MS).
A small fungus with a brown, mealy cap and deep pink gills.

Micromphale brassicolens (Romagn.) Orton
Burnham Beeches,4.11.90 (MS).
An 'LBJ', Smells strongly of rotting cabbage.

Naucoria bohemica Vel.
Benyon's Enclosure,6.10.90 (BB).

Panellus serotinus (Schrader ex Fr.) Kühn.
Blundell's Copse,3.11.90 (B); Burnham Beeches,4.11.90 (MS); Wilderness, Whiteknights Park,30.11.90 (PC).
An attractive olive-green fungus. Kidney-shaped attached to wood by a short lateral stipe.

Pluteus atromarginatus (Konrad) Kühn.
Benyon's Enclosure,6.10.90 (BB).

Pluteus leoninus (Schaeff. ex Fr.) Kummer
Bottom Wood,14.10.90 (NH).

Psilocybe cyanescens Wakef.
Blundell's Copse,3.11.90 (B); Windsor Great Park,20.10.90 (MS).
A reddish-buff, hallucinogenic species, bruising blue-green on handling. Normally rare, but more common this year.

Rhodotus palmatus (Bull. ex Fr.) Maire
Kimber's Lane, Maidenhead,28.10.90(B); Wilderness, Whiteknights Park,25.10.90 (PC).
A beautiful apricot-coloured fungus, becoming rarer again as dead elms disappear.

Tephrocybe rancida (Fr.) Donk
Burnham Beeches,4.11.90 (MS).
A grey species with a strong smell of rancid oil.

2. APHYLLOPHORALES

Amylostereum chailletii (Pers.) Boidin
Bottom Wood,14.10.90 (NH); Wilderness, Whiteknights Park, 31.10.90 (PC). A grey-brown resupinate fungus.

Amylostereum laevigatum (Fr.) Boidin
Bottom Wood,14.10.90 (NH).
A grey-ochre resupinate, on bark of living yew.

Athelia epiphylla Pers.
Lambridge Woods,6.10.90 (NH).
A soft, cottony resupinate, white to cream coloured, on plant remains.

Botryobasidium candicans J. Erikss.
Benyon's Enclosure,6.10.90 (BB).
A soft, fibrous resupinate, forming thin, open patches on dead wood.

Coltricia perennis (Fr.) Murrill
Burnham Beeches,4.11.90 (MS).

Dendrothele acerina (Pers. ex Fr.) Lemke
Gallowstree Common,29.9.90 (NH); Shiplake Copse,28.10.90 (PC).
A greyish-white resupinate, on living maple.

Ganoderma lucidum (Fr.) P. Karst.
Whiteknights Park,24.10.90 on Platanus orientalis (PC).

Ganoderma pfeifferi Bres.
Whiteknights Park,20.2.90 (PC).

Ishnoderma resinosum (Schrad. ex Fr.) P. Karst.
Wilderness, Whiteknights Park,31.10.90 (PC).

Laxitextum bicolor (Pers. ex Fr.) Lenz
Lackmore Wood,14.10.90 (NH).
A white-cream resupinate, with distinctly banded margin. Forms small brackets with a brownish upper surface.

Leucogyrophana mollusca (Fr.) Pouz.
Wilderness, Whiteknights Park,12.11.90 (PC).
Orange wrinkled fruiting surface with sclerotia under bark of confer logs.

Oxyporus latemarginatus (Dur. & Mont. ex Mont.) Donk
Virginia Water,20.10.90 (MS); Wilderness, Whiteknights Park, 20.11.90 (PC).

Peniophora laeta (Fr.) Donk
Wilderness, Whiteknights Park,26.10.90 (PC); Shiplake Copse, 28.10.90 (PC); Lower Hailey Wood, Shiplake,28.10.90 (PC).
Salmon coloured resupinate fungus occurring under peeling bark of Carpinus twigs and branches.

Phlebiopsis gigantea (Fr.) Jülich
Virginia Water,20.10.90 (MS); Benyon's Enclosure,6.10.90 (BB).
A thin, greyish-white resupinate. Margin rolled back when dry. On dead coniferous wood.

Ptychogaster albus Corda
Virginia Water,20.10.90 (MS).

Serpula himantioides (Fr.) P. Karst.
Wilderness, Whiteknights Park,10.12.90 on Pinus (PC).
Woodland counterpart of the dry rot fungus with an olive green rather than rusty brown wrinkled fruiting surface.

Sparassis laminosa Fr.
Ufton Nervet,28.10.90 (IB).
An uncommon species. Two or three dozen specimens, up to 18 inches across, growing at the base of old pine stumps.

Stereum subtomentosum Pouzar
Wilderness, Whiteknights Park,26.10.90 (PC); Berry Brook Wood, Caversham,10.11.90 on Fraxinus (PC). Flesh bruises yellow.

Tyromyces placenta (Fr.) Ryvarden
Wilderness, Whiteknights Park,6.12.90 (PC).
Distinctive pink coloured polypore.

Tyromyces wakefieldiae Kotlaba & Pouzar
Wilderness, Whiteknights Park,25.10.90 (PC); Cucumber Wood Emmer Green,6.12.90 (PC).
White polypore which often shows blue in the flesh.

Vesiculomyces citrinus (Pers.) Hagström
Wilderness, Whiteknights Park,10.10.90 on fallen conifer (PC).
Uncommon cream to yellow coloured resupinate.

3. GASTEROMYCETES

Cyathus striatus (Huds.) Pers.
Bottom Wood,14.10.90 (NH).
A delightful little 'birds-nest' fungus.

4. HETEROBASIDIOMYCETES.

Eichleriella deglubens (Berk. & Br.) Reid
Bottom Wood,14.10.90 (NH).
A flesh-coloured resupinate, turning wine-red when bruised. Surface has warts or spines.

Tremella foliacea (Pers. ex S.F. Gray) Pers.
Burnham Beeches,4.11.90 (MS); Wilderness, Whiteknights Park, 12.12.90. (PC). Forming clustered lobes, brown to orange-brown.

Tulasnella violea (Quél.) Bourd. & Galz.
Lackmore Wood,14.10.90 (NH).
A pinkish, resupinate jelly fungus.

5. ASCOMYCETES.

Hypoxylon cohaerens (Pers.) Fr.
Burnham Beeches,4.11.90 (MS).

Rosellinia mammiformis (Pers.) Ces. & de Not.
Wilderness, Whiteknights Park,15.11.90 on Fraxinus (PC).

6. FUNGI IMPERFECTI

Libertella faginea Desm.
Gallowstree Common,29.9.90 (NH); Lambridge Wood,6.10.90 (NH); Bottom Wood,14.10.90 (NH); Burnham Beeches 4.11.90 (MS).
This is the imperfect state of the ascomycete Quaternaria quaternata (Pers.) Schröter.

Trichoderma auroviride Rifai
Bottom Wood,14.10.90 (NH).

Trichoderma viride Pers.
Virginia Water,20.10.90 (MS).

7. MYXOMYCETES.

Ceratiomyxa fruticulosa (Mull.) Macbr.
Bottom Wood,14.10.90 (NH); Benyon's Enclosure,20.10.90 (MS).

Leocarpus fragilis (Dicks.) Rost.
Virginia Water,20.10.90 (MS).
A slime mould growing on pine needles.

Contributors and abbreviations.
Ivy and Alan Brickstock (B), Ivy Brickstock (IB), Barrie Bristow (BB), Paul Cook (PC), Mary and Neville Diserens (D), Society foray (NH), Mycological Society foray (MS).

THE RECORDER'S REPORT FOR ENTOMOLOGY 1990

B. R. Baker

The order and nomenclature used in this Report are those given in Elliott and Humpesch, Ephemeroptera, 1983; Kloet and Hinks, A check List of British Insects, Part 1: Small Orders and Hemiptera, 1964; Lepidoptera, 1972; Part 3: Coleoptera, 1977; Part 4: Hymenoptera, 1978 and Part 5: Diptera, 1975.

EPHEMEROPTERA — Mayflies

Baetis scambus Eaton
River Pang, nr. Bradfield 25.8.90 (JA).

Centroptilum luteolum (Mull).
River Pang, nr. Bradfield 25.8.90 (JA)

ODONATA — Dragonflies

Pyrrhosoma nymphula (Sultz.).
25 Beech Lane Earley, 2.5.90, many pairing 3-4.5.90, many egg-laying 26,28.5.90 (BMN); Pamber Forest, 14.7.90 (N&MD).

Ischnura elegans (van de Lind.)
Runnymede Meadows, 8.7.90 (N&MD).

Enallagma cyathigerum (Charp.)
Runnymede Meadows, 8.7.90 (N&MD).

Coenagrion puella (L.)
25 Beech Lane,Earley,Pairing 3.5.90, egg-laying 26,28.5.90 & 19.6.90 (BMN).

Erythromma najas (Hanse.)
Runnymede Meadows, 8.7.90 (N&MD).

Agrion splendens (Harris)
25 Beech Lane, Earley male 26.5, 16.6.90 (BMN).

Agrion virgo (L.)
Pamber Forest, 14.7.90.(N&MD).

Cordulegaster boltonii (Don.)
Pamber Forest, 14.7.90. (N&MD).

Aeschna juncea (L.)
25 Beech Lane Earley, 18.7.90, 4,11,12.8.90, 2.9.90 (BMN).

Anax imperator Leach
Runnymede Meadows, 8.7.90 (N&MD).

Orthetrum cancellatum (L.)
Runnymede Meadows, 8.7.90 (N&MD).

Sympetrum sanguineum (Mull.)
Runnymede Meadows, 8.7.90 (N&MD).

S. striolatum (Charp.).
Pamber Forest 14.7.90, (N&MD);Sevenoaks Road Earley, 22.8.90; 25 Beech Lane Earley, 29.8.90, 13.9.90 (BMN).

HEMIPTERA — Plant bugs, Water bugs, Leaf Hoppers, Aphids, Scale Insects

Palomena prasina (L.)
Maidenhead, 3.7.90 (MA).

Pentatoma rufipes (L.)
Padworth Common, 11.8.90, common at u.v.light (BRB).

Coreus marginatus (L.)
Maidenhead, 15.10.90 (MA).

Conomelus anceps (Germar)
Bowdown Woods, N.R. male 24.7.90 (old record from Tubney and Cothill c. 1920 (HHC).

TRICHOPTERA Caddis flies

Plectrocnemia conspersa (Curt.)
Padworth Common, 11.8.90 (JA)

Hydropsyche pellucidula (Curt.)
Padworth Common, 11.8.90 (JA)

Limnephilus auricula Curt.
Padworth Common, 11.8.90 (JA)

L.griseus (L.)
Padworth Common, 11.8.90 (JA)

L. marmoratus Curt.
Padworth Common, 11.8.90 (JA)

L. sparsus Curt.
Padworth Common, 11.8.90 (JA)

Triaenodes bicolor (Curt.)
Blue Pool, 25.8.90 (JA)

LEPIDOPTERA Butterflies and moths

Papilio machaon L. The Swallowtail
Hartslock N.R. 5.5.90. Good views were obtained over a period of five minutes when the butterfly settled several times on boundary shrubs at the top of the reserve, -too high to get any sort of photograph (N&MD) (Occasionally immigrant swallowtails, P. machaon gorganus Frühstorfer, are noted in southern England, especially in Kent. R.F. Bretherton informs me that no 1990 records of ssp. gorganus have been received, the Hartslock butterfly was therefore probably an escape from someone's breeding programme) (BRB).

Strymonidea w-album (Knoch) White-letter Hairstreak
Reading, one, 5.7.90, four 13.7.90, all flying round Ulmus procera Salisb. (PC).

Lysandra bellargus (Rott.) Adonis Blue
Berks Downs, 14.8.90, in exceptionally good numbers at an early date for the second brood (BRB).

Celastrina argiolus (L.) Holly Blue
Abundant in both broods and noted by all recorders for the second year running.

Apatura iris (L.) Purple Emperor
Pamber Forest, 8.7.90, a female flying low across a ride, (BRB); 14.7.90 N&MD).

Cynthia cardui (L.) Painted Lady
Surley Row, one 7.4.90, one 2.9.90 (PS); 25, Beech Lane, Earley, 1.8.90 (BMN); Caversham, 17.8.90 (BRB).

Eurodryas aurinea (Rott.) Marsh Fritillary
Berks Downs, four 25.5.90, flying amongst Succisa pratensis Moench. A larval winter nest 7.9.90 (BRB).

Lasiommata megera (L.) The Wall Brown
Aldermaston, two 15.5.90 (PS). A welcome record of a species which has been scarce in recent years.

Tethea or (D.& S.) Poplar Lutestring
Burghclere, one 27.6.90, one 21.7.90 (GGE-F).

Chloroclysta siterata (Hufn.) Red-green Carpet
Burghclere, one 18.2.90, eleven from 14.9.90 to 12.1.90 (GGE-F); Wash Common, one 20.10.90, two 12.11.90, one 15.11.90 (NC).

Euphyia biangulata (Haw.) Cloaked Carpet
Wash Common, one 11.8.90 (NC). A notable record of a moth last recorded in Berkshire in 1911.

Perizoma bifaciata (Haw.) Barred Rivulet
Aldermaston, 10.6.90 (PS)

P. didymata (L.) Twin-spot Carpet
Burghclere, one 18.7.90, two.3.8.90 (GGE-F).

Eupithecia irriguata (Hubn.) Marbled Pug
Burghclere, two 1,4.5.90. Lowest number since records started in 1984 (GGE-F); Wash Common, singletons 2,4.5.90 (NC).

E. expallidata Bleached Pug
Burghclere, one 27.8.90 (GGE-F).

E. subumbrata (D&S) Shaded Pug
Burghclere 6.7.90 (G.G.E-F).

Gnophos obscuratus (D.& S.) The Annulet
Aldermaston, 12.8.90 (PS).

Macroglossum stellatarum (L.) Humming-bird Hawk-moth
Burghclere 17.7.90. Singleton feeding on buddleia and phlox for about two hours in bright sunshine (GGE-F). Wash Common, one very late, 17.11.90. (NC).

Euproctis chrysorrhoea (L.) Brown-tail
Wash Common, one 15.7.90 (NC).

Utetheisa pulchella (L.) Crimson Speckled Footman
Near Bray 14.10.90, one discovered in the porch of the house of a Mr. & Mrs. Blade (MA). A notable record of a rare immigrant and the first for Berkshire, others having been recorded in southern England from August to October. The year 1990 has been the best for this moth since 1961 when more than 30 were recorded over a wide area of the British Isles.

Lithophane socia (Hufn.) Pale Pinion
Burghclere, six from 7.3.90 to 17.5.90 (GGE-F).

L. ornitopus (Hufn.) Grey shoulder-knot
Aldermaston 25.10.90 (PS); Wash Common, singletons 12,17.10.90 (NC).

Conistra rubiginea (D.& S.) Dotted Chestnut
Wash Common 15.3.90 (NC). A very interesting record of a local and uncommon species only previously recorded in Berkshire from Reading eastwards to the border with Surrey.

Craniophora ligustri (D.&S.) The Coronet
Burghclere 1.6.90 (GGE-F).

Heliothis peltigera (D.& S.) Bordered Straw
Aldermaston 21.10.90 (PS).

Eustrotia uncula (Cl.) Silver Hook
Lower Denford 7,13,20.7.90 (NC).

COLEOPTERA Beetles

Mr. T.D. Harrison, in submitting this year's detailed list, has asked that the record for Asaphidion curtum Heyden included in last year's Report should be deleted. My thanks go to HHC for the pre-selection of records from Mr. Harrison's 1990 comprehensive list, full details of which may be seen in the Museum's Biological Records Index.

Cercyon quisquilius (L.)
Nr. Path Hill 21.4.90, floating on a puddle in an area given over to pig farming (TDH). Last Berkshire record, Theale 1925 (HHC).

Nicrophorus vespilloides Herbst.
Benyon's Inclosure 16.9.90, four under a dead shrew in area of woodland (TDH).One recent and one old record for the County,-ecology of interest. (HHC).

Scaphisoma boleti Panzer
Moor Copse N.R. 18.12.89, amongst fungus on inside of piece of bark in log pile (TDH). No previous record (HHC).

Acidota cruentata Mannerheim
Leighton Park School, Reading 6.12.89, in pit-fall trap amongst leaf litter at side of ditch in tree-lined hedgerow (TDH). Last record, Wytham, 1920 (HHC).

O. rugatum Mulsant & Rey
Leighton Park School, Reading, 22.10.89,at the base of grass plants which had overgrown a paving stone in a grass lawn (TDH). No previous record (HHC).

Omalium italicum Bernhauer
Leighton Park School, Reading 25.10.90, obtained by shaking leaves from bottom of ditch over a sheet. No previous record (HHC).

Carpelimus corticinus (Gravenhorst)
Moor Copse N.R.27.12.89 obtained by treading into water the vegetation on the bank of a pond in deciduous woodland (TDH). No previous local record (HHC).

C. elongatus (Erichson)
Moor Copse N.R. 27.12.89,obtained by treading into water the vegetation on the bank of a pond in deciduous woodland (TDH). One previous record, Reading 1916 (HHC).

Stenus bifoveolatus Gyllenhal
Nr. Shinfield Grange, Reading 11.10.89, obtained by sweeping plants of Glyceria sp. which were growing on the margins of stream. (TDH).No previous record. (HC).

S. rogeri Kraatz
The Ridges, Finchampstead 3.1.90, obtained by shaking out grass tussocks over a sheet, tussocks located in area of Sphagnum beside a pond in open birch wood (TDH). No previous record (HHC).

Xantholinus jarrigei Coiffait
Lough Down, Streatley 6.9.90, under a log on short grass turf on downland (TDH). No previous local record (HHC).

Hygronoma dimidiata (Gravenhorst)
Nr. Shinfield Grange, Reading 11.10.89, obtained by sweeping plants of Glyceria sp. on margin of stream (TDH). No local record (HHC).

Callicerus obscurus Gravenhorst)
oor Copse N.R.27.12.89 obtained by treading into water the vegetation on the bank of a pond in wet deciduous woodland (TDH). No previous local record (HHC).

Oxypoda elongatula Aube
The Ridges, Finchampstead, obtained by shaking handfuls of Polytrichum sp. and Sphagnum sp. over a sheet. Moss growing beside pond in open birch wood (TDH). One old local record, Theale 1925, N.H. Joy (HHC).

O. lividipennis Mannerheim
Leighton Park School,10.11.89, in pit-fall trap amongst dead leaves at side of ditch, in tree-lined hedgerow (TDH). One previous record, Surrell's Wood 1981, V.W.H.Lorimer (HHC).

Cyphon ochraceus Stephens
Leighton Park School, Reading 12.7.90, attracted to a mercury vapour lamp in a garden between 0040 and 0100 hours (TDH). No previous record (HHC)

Agrilus pannonicus Piller & Mitterpacher
Pamber Forest 13.6.90, resting on the cut surface of a tree stump in a clearing in an oak wood. The presence of this species at Pamber was brough to my attention by Mr, Mike Edwards (TDH). No previous record but see TDH's note (HHC).

Psilothrix viridicoeruleus (Fourcroy)
Nr. Old Burghclere 15.4.90, resting on the flower head of a Taraxacum sp. in disused chalkpit (TDH). No local records (HHC).

Ahasverus advena (Waltl.)
Leighton Park School, Reading 25.10.89, in leaves on ground beside ditch in tree-lined hedge (TDH). No previous record (usually an indoor pest sp.). (HHC).

Halyzia sedecimguttata (L.)
Leighton Park School, Reading 24.8.90, attracted to a mercury vapour lamp in a garden at 2300 hours (TDH). No previous record (HHC).

Anaspis costai Emery
Nr. Bear Wood Lake 6.7.90, resting on umbel of Heracleum in deciduous wood (TDH),Only one previous local record, Hardwick 1917 (HHC).

Phymatodes alni (L.)
Pamber Forest 2.5.90, found running over logs in log pile, in a clearing in an oakwood (TDH). One local record, Wasing Pit 1988 S.J.Grove (HHC).

Prasocuris junci (Brahm)
Moor Copse N.R. 18.12.89,obtained by treading into water the vegetation on the bank of a pond in deciduous wood (TDH). One previous record, Sulhamstead 1984 TDH (HHC).

Prasocuris phellandrii (L.)
Moor Copse N.R. 18.12.89,obtained by treading into water the vegetation on the bank of a pond in deciduous wood (TDH). One previous local record, Reading c.1900 (HHC).

Longitarsus exoletus (L.)
Nr. Gatehampton Farm, Goring 16.6.90 on plants of Echium vulgare on calcareous slope beside hedgerow (TDH). Only previous records are Reading 1917 & 1918 (HHC).

Psylliodes weberi Lohse
Moor Copse N.R. 18.12.89,obtained by treading into water the vegetation on the bank of a pond in deciduous wood (TDH). No previous record, sp. described in 1955 (HHC).

Cassida viridis L.
Pamber Forest 16.5.90, found resting on the leaf of a plant of Stachys sp. on bank of a pond in deciduous wood (TDH). Only previous record Sheffield Bottom 1985 TDH (HHC).

Apium modestum Germar
Nr. Arborfield Cross 6.7.90, obtained by sweeping plants of Lotus uliginosus at side of ditch (TDH). Discovered in Britain 1973, new Berkshire record.

Leiosoma deflexum Panzer
Moor Copse N.R. 27.12.89,obtained by treading into water the vegetation on the bank of a pond in deciduous wood (TDH). Only previous record, Leighton Park School 26.3.88 TDH (HHC).

Anoplus roboris Suffrian
Pamber Forest 16.5.90, resting on Alnus sucker on cut stump beside stream in oak woodland (TDH). Only previous record, Baynes Wood N.R. 11.5.86 TDH (HHC).

Rutidosoma globulus (Herbst)
Pamber Forest 16.5.90, resting on saplings of Populus tremula in oak wood (TDH). Only records, Cothill 1908 and 1926 (HHC).

Ceutorhynchus asperifoliarum (Gyllenhal)
Pamber Forest 16.5.90, obtained by sweeping herb layer in area of willow and alder scrub (TDH). Only local record, Tubney 1918 (HHC).

Rhynchaenus rusci (Herbst)
Pamber Forest 2.5.90, obtained by sweeping young birch trees in open oak wood (TDH). No other record (HHC).

HYMENOPTERA Saw-flies, Ichneumon flies, Ants,Bees and Wasps.

Empria alector Benson
Bowdown Wood N.R. male 24.7.90 (HHC).

DIPTERA True flies

Procladius sagittalis (Kieffer)
Bowdown Woods N.R. male 24.7.90 (HHC).

Polypedilum acutum Kieffer
Bowdown Woods N.R. male 24.7.90 (HHC).

Simulium angustitarse Lundstrom
Bowdown Woods N.R. female 2.10.90 (HHC).

The Society's Entomological Evening, 13th July 1990

We are indebted to Wokingham District Council for their permission to hold our barbecue and mothing night at Dinton Pastures Country Park, where the facilities were excellent for such a night. After the barbecuse, expertly organised by our president, Jocelin Whitfield, two mercury vapour lamps were operated close to Mungell's Pond until the early hours. The species total (50), was low compared with previous mothing nights, but in this fairly new and maturing habitat it was of interest to see that Bulrush Wainscots were already present and particularly so, another Typha feeder, the micro. Calamatropha paludella (Hubn.). My thanks go to Norman Hall for providing the additional amount of mercury vapour equipment.

Contributors

The Recorder expresses his thanks to ;

M. Albertini (MA); Dr. J. Andrews (JA); N. Cleere (NC); Dr. P. Cook (PC); H.H. Carter (HHC); N. & M. Diserens (N&MD); Lt Col. G.G. Eastwick-Field (GGE-F); T.D. Harrison (TDH); Mrs. B.M. Newman (BMN); and P. Silver (PS).

Recorder's Report for Vertebrates 1990

FISH

No records received

AMPHIBIA

Rana temporaria Linnaeus — Frog
Large numbers in pond at Frog Hall. Wokingham (AHM). Several in garden adjoining Christhurch meadow 16.6.90 (MJC).

Bufo bufo (Linaeus) — Toad
Fourteen dead on road through Hardwick Stud 25.2.90. One dead in Queensway, Caversham Park Village, 30.9.90. (These dates mark the normal spring and autumn migrations). One in garden of house adjoining Christchurch Meadow 16.6.90 (MJC).

REPTILIA

Natrix natrix (Linnaeus) — Grass snake
Bottom Wood 14.10.90 (NMD).

MAMMALLIA

Talpa europeaea Linnaeus — Mole
One dead on Inkpen Hill 10.6.90

Erinaceus europaeus Linnaeus — Hedgehog
One seen crossing Hertford Close, Caversham Park Village 29.3.90 (EMC). One at 12 Nortbrook Road, Caversham Park Village 20.4.90. One dead on road in Caversham Park Village, 22.4.90, 15.5.90, 21.5.90, 24.5.90, 9.6.90, 2.8.90. One dead on Gravel Hill, Rotherfield Peppard 27.5.90. Juvenile dead on road in Sonning Common 11.11.90.

Vulpes vulpes (Linnaeus) Fox
One dead on A329M east of M4 16.6.90. One dead on M4 near junction 11 3.11.90. One seen in garden adjoining Christchurch Meadow before 16.6.90 (MJC). One in garden at 27 Fernbrook Road, Caversham Heights before December.

Meles meles Linnaeus Badger
Signs of badger at Multifreight depot, King's Meadow 11.3.90. There are old records from this area.

Mustela nivalis Linnaeus Weasel
One at Aston Upthorpe Reserve 8.10.90 (BRB). Dinton Pastures 16.12.89 (NMD).

Capreolus capreolus Linnaeus Roe Deer
Dead doe at the Fish Pond, Wokefield Common 2.12.90 (BTP). Pamber Forest 14.7.90 (NMD) Lyde Green, Mattingley 7.10.90 (NMD).

Muntiacus reevesi Ogilby Muntjac
One in Crowsley Forest 16.5.90. Pamber Forest 14.7.90 (NMP). One in garden at 27 Fernbrook Road, Caversham Heights 3.12.90.

Oryctolagus cuniculus (Linnaeus) Rabbit
7 at Hardwick Stud 25.2.90.3 On Kennylands Field, Sonning Common 16.4.90. One dead on Inkpen Hill 10.6.90. A juvenile on Shaylor's Pightle 24.6.90, 2 dead on Peppard Road between Sonning Common and Emmer Green, 24.8.90 and 28.8.90, one juvenile 4.9.90. Pamber Forest 14.7.90 (NMD).About 50 in Sonning Common before 27.8.90 (KC). One dead in road by Aldermarston tip, 11.11.90. Juvenile dead on road at AWE 16.12.90.

Lepus capensis Pallas Hare
One dead at Hog's Hole (SU 370 595) 10.6.90. 2 at Burghclere Pits 2.6.90.(NMD).Mortimer 3.9.90.

Sciurus carolinensis Gmelin Grey Squirrel
Dead ones on Peppard Road 5.3.90 and 23.3.90; Emmer Green 22.6.90;Cane End 15.4.90, nearby at Withy Copse 25.11.90; Coppid Hall, Binfield Heath 16.5.90; Newbury 10.6.90; Pennyroyal, Goring Heath 11.11.90. Live squirrels seen as follows one on the sports ground by Clayfield Copse 6.2.90 (EMC). One in Spring Wood, Sonning Common 20.5.90, 2 in Blackhouse Wood, Emmer Green about the same date (MJC), 6 there, 4.11.90 (MJC and recorder). Occasional, up to 3 seen in trees by drive, Reading School, May-June 1990 (MVF). 1 in Lowfield Road, Caversham Park Village 7.6.90. 1 in Northbrook Road in isolated oak tree 23.12.90. 1 in Clayfield Copse nearby 23.9.90. 1 at Waterloo Meadows, Whitley 23.10.90

Thanks are due to the following contributors;
Brian Baker (BRB); Elizabeth Carter (EMC); Mary Carter (MJC); Dr. Ken Crush (KC); Neville and Mary Diserens (N&MD); Michael Fletcher (MVF); Anne Murray (AHM); Basil Parsons (BTP).

The Weather at Reading during 1990

by

Dr Russell D. Thompson, F.R.Met.Soc.,
Department of Geography
University of Reading

1990 proved to be another remarkable year weatherwise, particularly in terms of temperature, sunshine and wind speed. Indeed, winter-less weather conditions existed for the third year running and the number of air frosts was the lowest since 1974, with only 3.5 hours recorded below 0°C in January and February. Springtime was the third warmest in 30 years and the 'heatwave' in early August gave us four consecutive days over 30°C. The 35.5°C maximum temperature on the 4th August was the highest recorded at Reading in 79 years. Overall, only June and December experienced below average mean temperatures and the year as a whole turned out (along with 1949) to be the warmest since 1920.

1990 was also a very dry year, despite the deluges in January and February giving us the wettest winter for over 70 years. The dry period between March and November provided the lowest total rainfall recorded since 1921, when only 43% of the average rainfall was recorded. Overall, the amount of rainfall during the year was only 75% of the average total. 1990 was also a very sunny year, with the number of sunshine hours some 12% above average. Indeed, it was the fourth sunniest year in Reading since records commenced in 1956, with four months exceeding 200 hours of sunshine (with June an exceptionally dull month, to spoil the record). Finally, perhaps the main weather event of the year was the severe hurricane-type storm on January 25th when the highest gust recorded of 88mph represented the strongest wind in the last 30 years.

The following monthly weather summaries are based on the table of Weather Records included, along with the monthly and annual averages for the station between 1971 and 1990. All these data have been kindly provided by the Department of Meteorology at the University of Reading.

January was a particularly mild month with temperatures about 3°C above average, and the mean daily maximum the highest since 1921. Consequently, only two air frosts were recorded in the month (the lowest number since 1975) with only a handful of hours below 0°C, compared with 317 hours during the January 1987 'Big Freeze'.

The month was very wet, some 46% above average, and the associated high frequency of wave depressions gave us the highest wind speeds since 1983. The hurricane-type storm on January 25th produced the highest-ever gust recorded at the station, reaching 88mph at 1500 hours. Indeed, between 1000 and 1600 hours, there were 10 gusts over 80 mph and 42 over 70 mph, which caused considerable structural damage to buildings and trees in southern England. Sunshine totals were close to average.

February continued the remarkable winter-less conditions and was the thirteenth month in the last 15 with mean temperatures exceeding the monthly average. In fact, the daily mean of 8.1°C was almost 4° above average, the highest value for any February since records began in 1921. No air frosts were recorded for the first time in 25 years, compared with 24 such frosts and 460 hours below 0°C in the February 1986 'Big Freeze'. It was also a very wet month with more than twice the average total rainfall which, after 1951, was the second highest since 1921. Winds remained strong, since it was the windiest month since wind measurements started in 1960, with a record February gust of 82mph on the 26th. Despite the dominant cyclonic conditions and large number of rain days, it was a very sunny month with the hours of sunshine some 31% above average.

March proved to be a delightfully warm, dry and sunny month giving us the best early Spring weather for almost 30 years. After a cool start, very warm conditions mid-month gave temperatures over 20°C, the highest recorded since 1968. Another warm spell occurred towards the end of the month (approaching 18°C) and, overall, mean temperatures were almost 2.5°C above normal. It was a very dry month, with only 20% of the expected monthly rainfall recorded, making it the driest March for almost 20 years. The anticyclonic dominance provided sunshine hours some 22% above average, with only 3 sun-less days recorded.

April continued the pleasant Spring weather since it was a very dry and sunny month, with temperatures a little above average. However, temperatures were most variable throughout the month with a warm start, a frosty middle period and a warm finish, with temperatures in excess of 22°C for the first time this year. Rainfall was generally light with a monthly aggregate only 38% of normal, and most of this was recorded during the unsettled cyclonic weather mid-month. Sunshine amounts were 36% above average and exceeded 200 hours, which represented half of the maximum total sunshine possible.

May was a superb month, very warm, 'bone' dry and gloriously sunny although the cloud-free anticyclonic weather resulted in a record number of ground frosts

and associated gardening head-aches. There were two warm periods in the month, one in the first week when 26.6°C was reached and another in the last 10 days when 20°C was exceeded on five occasions. Overall, the month's maximum and mean temperatures were some 3°C above average, the second-highest since 1960 and only bettered by May 1989. Although no absolute drought was recorded at the station, the aggregate rainfall was a meagre 6% of that expected, making it the driest May in the last 70 years. Lawns died and gardens suffered in the extremely arid conditions. Another feature of the month was the abundant sunshine which equalled 261 hours, some 35% above normal although 34 hours less than record-breaking May 1989. The combination of heat and sunshine was responsible for the highest evaporation rates for a decade, which further aggravated gardener's problems.

June came as a complete shock to us all after such extraordinary weather in the previous five months. It was a very dull, grey month compared to April and May when well-over 200 hours of sunshine were recorded in each month. In June, the sunshine total was 42% below normal, with a miserable average of 3.7 hours per day. This pitiful total represented January-type conditions with only 22% of the maximum possible, compared with 54% in the previous month and 61% in May 1989. Temperatures were slightly below average so June was the first month since April 1989 to experience a mean maximum temperature below the monthly average. Rainfall, for the fourth month running, was well below the monthly average and was about half of that expected.

July was a vast improvement over the previous month with over twice as much sunshine and above average mean and maximum temperatures. However, cool conditions prevailed during the first week, with a grass minimum of -1.8 °C being recorded on the 3rd (the lowest for 20 years). Temperatures increased steadily towards the middle of the month, to peak at 32°C on the 21st with maxima exceeding 22°C for the rest of the month. Once again, it was a very dry month with the rainfall total only 23% of that expected, the lowest since 1955. Indeed, most of the rainfall was recorded in the first five days of the month and there followed a twenty-two day drought which only ended on the 29th with a pathetic fall of 0.4mm . It was also a sunny month, with the monthly total equalling 244 hours, some 18% above average.

August continued the glorious summer weather with very warm, dry and sunny conditions. The month started very hot with the first four days recording maximum temperatures above 31°C, with the record-breaking 35.5°C recorded on the 3rd (a little below the Cheltenham value of 37.1°C, the highest-ever recorded

in the U.K at an official weather station). Overall, temperatures were up to 3.5°C above normal and the monthly mean was the highest since 1947, and the second highest since 1921. August was the sixth consecutive month where total rainfall was below normal, some 32% below that expected. On the 13th, a drought lasting 15 days was recorded, the second such dry spell of the Summer. This was the sunniest August in a decade with totals some 14% above normal, and in excess of 200 hours for the fourth month this year.

September was a sunny and dry month, with temperatures about average. Indeed, the first half of September was pleasantly warm, with maxima exceeding 20°C on 9 days. Cooler weather characterised the second half with four ground frosts observed, with the lowest grass minimum (-3.6°C) for a decade recorded on the 27th. The month was very dry apart from the last two days when 87% of the total rain fell. However, the aggregate for September was still 27% below normal (for the seventh consecutive month). Total sunshine hours were 14% above normal making it the sunniest September since 1978.

October provided delightful 'Indian Summer' weather with dry and warm conditions generally, although the last week was wetter and cooler. Temperatures approached 2°C above normal, no air frosts were recorded while only two ground frosts occurred (half the June number). Total rainfall was yet again below average, by some 45%, and two-thirds of the aggregate was recorded on just two days at the end of the month. Sunshine hours were slightly above average for the month, but the number of sun-less days was the lowest for over a decade.

November was a reasonable month, remaining dry throughout, with temperatures slightly above normal but with below average sunshine. The middle of the month was pleasantly mild, with a maximum temperature of 15.7°C recorded on the 17th. Colder weather characterised the first and last 10-day periods, when 17 ground frosts were experienced and the first air frost since April occurred on the 6th. Total rainfall was some 54% below normal and November was the ninth month in a row to record such a shortfall. However, sunshine hours were below average (by 8%) for the first time since dull June.

December provided temperatures below normal for the first time since June, with values almost 1°C below average. In fact, the warmest part of the month was experienced over Christmas and the 13.2°C maximum on Boxing Day was the highest festive season temperature for 30 years. Even though the precipitation aggregate remained just below normal yet again, December proved to be the wettest month of the year since the February deluge. Also, Winter came early to Reading with snow

fall recorded on the 8th, 9th and 18th, with 3cm of snow lying on the first two days. For the second month running, hours of sunshine were below average by about 8%, which represented a disappointing 18% of the maximum possible at this time of the year.

Postscript It is interesting to examine the 1990 weather in the Reading area by summarising the seasonal regimes. Winter (December - February) was the warmest and wettest on record (viz. since 1959 and 1961), the sunniest since 1939 and the driest since 1920. Summer (June - August) was the seventh warmest since 1956, the fifteenth sunniest since 1956 and the third driest since 1921. This season's trends were influenced considerably by the relatively cool and dull June weather. Autumn (September - November) was the fourth warmest since 1960, the eighth sunniest since 1956 and the seventh driest since 1920.
The unusual warmth (for the second year running) has convinced many people that the enhanced greenhouse effect has arrived, and that global warming is now an apparent fact of life. It is far too early to come to this conclusion (the year 2050 will provide more realistic evidence) and the weather of 1990 has been characterised by similar extreme deviations as those mentioned in my 1989 postscript. Indeed, as I finish this report in early February 1991, we are facing the first major 'big freeze' since January 1987 which will shake us out of our atmospheric complacency and moderate our global warming optimism.

WEATHER RECORDS: 19 90

STATION: READING UNIVERSITY (WHITEKNIGHTS)

		Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Mean Daily Temperatures °C	Max.	9.9	11.1	12.7	13.7	19.5	18.5	23.8	24.9	18.8	15.9	10.2	7.1	15.5
	Min.	4.0	5.1	4.6	3.4	7.5	10.2	12.0	13.7	9.1	9.2	4.7	2.1	7.1
	Mean	7.0	8.1	8.7	8.6	13.5	14.4	17.9	19.3	14.0	12.6	7.5	4.6	11.4
	Range	5.9	6.0	8.0	10.3	12.0	8.7	11.8	11.2	9.7	6.7	5.5	5.0	8.4
Extreme Temperatures °C	Extreme Max.	12.9	17.0	20.4	22.3	26.6	24.0	32.0	35.5	23.9	22.9	15.7	13.2	35.5
	Date	15th	23rd	17th	30th	3rd	26th	21st	3rd	2nd	12th	13th	26th	3/8
	Extreme Min.	-1.2	1.0	- 1.7	- 3.3	3.2	5.9	7.0	9.5	3.0	0.4	- 1.0	- 3.0	- 3.3
	Date	2nd	16th	27th	5th	26th	7th	3rd	8th	27th	8th	6th	15th	5/4
	Extreme Grass Min.	-6.2	-3.5	-8.3	-10.0	-5.0	- 1.4	-1.8	6.0	-3.6	-5.6	- 7.0	- 6.8	-10.0
	Date	2nd	16th	27th	5th	26th	7th	3rd	8th	27th	8th	6th	14th	5/4
Days with air frost		2	0	3	4	0	0	0	0	0	0	1	9	19
Days with ground frost		17	10	20	20	15	4	1	0	5	2	17	20	131
Hours at or below 0.0°C		3.5	0	2	18.5	0	0	0	0	0	0	1	43	68
Sunshine Hours	Sum	54	91	130	212	261	109	244	221	165	106	66	45	1709
	% of possible	21	32	35	51	54	22	49	49	44	32	25	18	36
	Daily Mean	1.7	3.2	4.2	7.0	8.5	3.7	7.9	7.1	5.5	3.5	2.2	1.5	4.7
Precipitation	Amount in mm	85.4	108.5	10.7	25.4	3.1	28.0	9.5	35.7	38.0	33.4	24.7	60.6	463
	Rain Days	19	17	5	6	6	12	4	6	6	11	12	15	126
Maximum rain in one day "		15	15	5	5	1	8	6	14	20	10	8	11	20
Date		30th	1st	19th	2nd	10th	21st	4th	19th	30th	27th	25th	25th	30/9
Longest run of consecutive rain days		5	5	2	6	3	4	2	3	2	4	5	4	6 April
Longest run of consecutive dry days		3	3	12	7	13	9	22	13	11	8	8	6	22 July
Snow or sleet days		0	1	0	1	0	0	0	0	0	0	0	3	5
Days with snow lying		0	0	0	0	0	0	0	0	0	0	0	2	2
Visibility	Days with fog at 0900 GMT	2	0	0	1	0	0	0	0	0	1	1	2	7
Thunderstorm Activity	Days of thunder	1	0	0	0	0	0	0	0	1	1	1	0	4
	Days of hail	0	0	1	1	0	0	0	0	0	1	0	0	3
Barometric Pressure mb	Mean	1014	1006	1027	1017	1021	1013	1018	1018	1018	1017	1013	1017	1016
	Highest	1031	1035	1044	1029	1032	1024	1028	1026	1030	1028	1031	1036	1044
	Date	8th	22nd	3rd	28th	2nd	13th	11th	8th	15th	8th	6th	2nd	3/3
	Lowest	979	985	1006	1002	1012	997	995	1005	998	978	980	986	978
	Date	25th	12th	1st	2nd	11th	22nd	5th	15th	23rd	28th	24th	8th	28/10

MONTHLY AND ANNUAL WEATHER AVERAGES

UNIVERSITY OF READING (WHITENIGHTS)

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

WEATHER RECORDS: 19 90

STATION: READING UNIVERSITY (WHITEKNIGHTS)

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	Mean	7.0	8.1	8.7	8.6	13.5	14.4	17.9	19.3	14.0	12.6	7.5	4.6	11.4
	Range	5.9	6.0	8.0	10.3	12.0	8.7	11.8	11.2	9.7	6.7	5.5	5.0	8.4
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	Extreme Min.	-1.2	1.0	- 1.7	- 3.3	3.2	5.9	7.0	9.5	3.0	0.4	- 1.0	- 3.0	- 3.3
	Date	2nd	16th	27th	5th	26th	7th	3rd	8th	27th	8th	6th	15th	5/4
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Hours at or below 0.0°C		3.5	0	2	18.5	0	0	0	0	0	0	1	43	68
Sunshine Hours	Sum	54	91	130	212	261	109	244	221	165	106	66	45	1709
	% of possible	21	32	35	51	54	22	49	49	44	32	25	18	36
	Daily Mean	1.7	3.2	4.2	7.0	8.5	3.7	7.9	7.1	5.5	3.5	2.2	1.5	4.7
Precipitation	Amount in mm	85.4	108.5	10.7	25.4	3.1	28.0	9.5	35.7	38.0	33.4	24.7	60.6	463
	Rain Days	19	17	5	6	6	12	4	6	6	11	12	15	126
Maximum rain in one day	"	15	15	5	5	1	8	6	14	20	10	8	11	20
	Date	30th	1st	19th	2nd	10th	21st	4th	19th	30th	27th	25th	25th	30/9
Longest run of consecutive rain days		5	5	2	6	3	4	2	3	2	4	5	4	6 April
Longest run of consecutive dry days		3	3	12	7	13	9	22	13	11	8	8	6	22 July
Snow or sleet days		0	1	0	1	0	0	0	0	0	0	0	3	5
Days with snow lying		0	0	0	0	0	0	0	0	0	0	0	2	2
Visibility	Days with fog at 0900 GMT	2	0	0	1	0	0	0	0	0	1	1	2	7
Thunderstorm Activity	Days of thunder	1	0	0	0	0	0	0	0	1	1	1	0	4
	Days of hail	0	0	1	1	0	0	0	0	0	1	0	0	3
Barometric Pressure mb	Mean	1014	1006	1027	1017	1021	1013	1018	1018	1018	1017	1013	1017	1016
	Highest	1031	1035	1044	1029	1032	1024	1028	1026	1030	1028	1031	1036	1044
	Date	8th	22nd	3rd	28th	2nd	13th	11th	8th	15th	8th	6th	2nd	3/3
	Lowest	979	985	1006	1002	1012	997	995	1005	998	978	980	986	978
	Date	25th	12th	1st	2nd	11th	22nd	5th	15th	23rd	28th	24th	8th	28/10

MONTHLY AND ANNUAL WEATHER AVERAGES

UNIVERSITY OF READING (WHITENIGHTS)

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