A fallen oak tree blocks the path in Sixty Acre Wood *Meg Game*

Sixty Acre Wood in autumn *LEU / Ian Yarham*

A clearing in Sixty Acre Wood is a mass of bluebells in spring *Meg Game*

As the sludge settles and the lagoons begin to dry out, floating rafts of sludge appear and become colonised in the summer by annual plants, including orache and marsh yellow-cress. These areas can be used by birds such as starlings, wagtails, pipits and finches, which come to feed on seeds or on the brine flies which swarm over the wet mud.

In the final stages of drying up, a treacherous crust of sludge covers most of a lagoon, together with residual shallow pools of water. Depending on the timing of drying, the sludge may remain largely bare or become partly vegetated by annual weed species. At this stage the lagoons become favourable for nesting waders such as lapwings and redshanks, both rare breeding species in London. The redshank is mainly a coastal breeding bird in southern England, and this is the only known breeding locality in west London. In winter the sludge lagoons are frequented by dozens of snipe and the occasional jack snipe, and a wide variety of other wading birds, including lapwings, green sandpipers and common sandpipers. During the winter months the works is also used as a roost by hundreds of pied wagtails.

One standby lagoon to the north of the Hogsmill River is full of fresh water. The main damp-loving plants to be found here are great hairy willow-herb and fiorin, which grow well out into the water and provide nesting cover for coots and reed buntings, the former feeding on the abundant filamentous algae growing in the water. This lagoon is situated in an area scheduled for recreational development, along with the adjacent Kingsmeadow, in the Local Plan. Apart from recreation facilities such as sports pitches, it is also proposed to provide informal open areas incorporating a riverside walk. The lagoon could be retained in this development as it occupies a peripheral position. The banks would need regrading and further aquatic vegetation would have to be introduced, after which it could be managed as a visually attractive parkland pond with potential for educational use.

Bird ringing is carried out regularly at the sewage works. The importance of the site for migrant birds is shown by the count of over 15,000 wood pigeons flying south one morning in 1989. Scarcer migrants include ring ouzel and wood warbler.

This section of the Hogsmill River can be viewed from the bridge at Villiers Road as well as from Kingston Cemetery on the north bank. There are, however, as described under that site (KI.L4), only a few places where the river can be properly appreciated. Views across to the other side and the sewage works are also limited.

The sewage works is still in operational use by Thames Water. Because of the health hazards and the dangers of deep water and sludge, there is no public access to the site. Apart from the occasional glimpse from Lower Marsh Lane and from Kingston Cemetery, the best view obtainable by the general public is from the up platform at Berrylands station.

KI.BI 2 Hogsmill Valley

Grid ref TQ 204 671
Area 32 ha

The Hogsmill Valley forms a long ribbon of open land penetrating deep into the built-up areas in the north of the Borough from the Green Belt in the south: a landscape feature which is clearly visible even on satellite imagery. The central part of this valley, between Riverhill in the south and the Surbiton railway line in the north, is the most significant area for wildlife interest. This consists of the Elmbridge and Southwood Open Spaces and Old Malden Conservation Area, together with an area of countryside to the south of Old Malden. Much of this section is owned by the Borough and managed as an informal linear park, but some of the east bank is used as playing fields and these are excluded from site. Habitats represented here include woodland, neutral grassland, alluvial flood meadow and riverine communities. A small block of woodland just to the north of the Kingston By-pass, called Hogsmill Wood Nature Reserve, is manage by the London Wildlife Trust, under agreement with the Borough.

Maps of the nineteenth century show the Hogsmill Valley as a patchwork of fields, those close to the river being meadows and pasture whilst arable fields lay further away, presumably out of reach of flooding.

In the early years of the nineteenth century there were no less than twelve gunpowder mills beside the Hogsmill River within the parish of Malden, concentrated especially near Malden church. At one o'clock in the morning of 2nd January 1742, one of these powder mills blew up with the magazine which contained 40 barrels of gunpowder. Great damage was done to surrounding houses and the windows of the church, 400 metres away, were shattered. The explosion was heard in London and for 20 kilometres around. In 1854 two of the mills closer to the road also blew up (see also Chapter 2, *The history behind the landscape*).

The Hogsmill is a "chalk stream" since most of its water comes from the dip-slope springs at Ewell. It is about three to four metres wide and flows over a gravelly bed in a rather steep-sided channel which is occasionally overtopped in spates to flood the adjoining fields. This site lies upstream of the Hogsmill Valley Sewage Works and contains water of reasonable quality, which supports a varied fish population. Three-spined sticklebacks are the most abundant fish, but minnows and stone loach, both species of limited distribution in London because they require clear, flowing water, are also present. The banks of the stream are fringed in places with growths of bur-reed, reed sweet-grass, reed-grass, water cress and water figwort. Green streamers of horned pondweed and Nuttal's pondweed trail in the water. However, where the stream is shaded by trees, aquatic vegetation is absent.

Further up the banks are thick growths of nettles, hemlock, hogweed and persicaria. Policeman's helmet, a tall waterside plant up to two metres high, with translucent, succulent stems, provides a colourful display of pink flowers here in summer. Another name for this plant is "touch-me-not" since its fruit when mature explodes, shooting out the ripe seed in all directions. Children love to tap the fruits to set them off and use them as missiles in mock battles. Unfortunately, policeman's helmet poses a severe problem to park managers as it is a highly invasive weed, originally from the Himalayas, which has spread rapidly along our rivers and tends to smother the native riverside plants. It appears to have arrived in the Hogsmill Valley after 1974.

Most of the valley floor is covered by grassland with a mosaic of different management regimes. At the northern end of the site, immediately south of the Waterloo to Surbiton railway line, is an area of unmanaged grassland, scattered with "wasteland" wild flowers. Oat grass, tall fescue and rye-grass are the main components, with a wide variety of associated common plants including yarrow, mugwort, common mallow, bindweed, docks and burdock.

Heading south up the valley, one walks through the fields and hedgerows of the remnants of what was, at the turn of the century, a large area of farmland between Surbiton and New Malden. This green strip has been saved from development by virtue of its being the floodplain of the Hogsmill. From the path, which joins Raeburn Avenue eastwards to Green Lane, down to the A3 (Elmbridge Open Space), the landscape is a mixture of closely-mown, broad pathways and taller-growing, infrequently-mown grassland, with a few patches of wet alluvial meadow. The taller grasslands have only recently been transformed from more closely-mown lawns by the Leisure and Recreation Department, who have reviewed their mowing regimes. Now a good range of grassland wild flowers can be found here and new species arrive each year. Cock's-foot, fescues, Yorkshire fog, bent-grass, rye-grass, meadow barley and meadow foxtail are amongst the grasses making up the sward. Scattered amongst these are members of the pea family, including the bluish-purple spikes of tufted vetch, grass vetchling with its single crimson flowers, and meadow vetchling and birdsfoot-trefoil with yellow flowers. Adding further colour or interest to the sward are crow garlic, hardheads, sorrel, ox-eye daisy, lesser stitchwort and field woodrush.

Throughout this central section of the Hogsmill Valley site, small patches of marshy alluvial meadow lie in a line roughly parallel to the river. Mature willows arch over this damper ground, the latter clearly delineated by tall growths of reed, reed-grass, great and lesser pond sedges and reed sweet-grass. This swampy jungle of one to two metre grasses tends to be fringed with meadow-sweet, tufted hair-grass, sedges and comfrey. The willow clumps also contain a few ash and birch trees.

A number of hedgerows and lines of trees traverse the site and include some fine mature oaks and crack willows. These same hedgerows can be traced on Bacon's map from 1904 and indeed are probably much older. Tree seedlings, shrubs and plants adapted to shady conditions are beginning to spread out from these hedgerows onto the neighbouring grassland, producing valuable wildlife habitats. However, care should be taken so that species-rich grasslands are not taken over in this way. Although the sports fields to the east of the Hogsmill have not been included within the site boundaries, they are still divided by remains of the old hedgerows and these provide a valuable habitat for wildlife. Tall crack willows, white willows and a few alders also occur along much of the river bank.

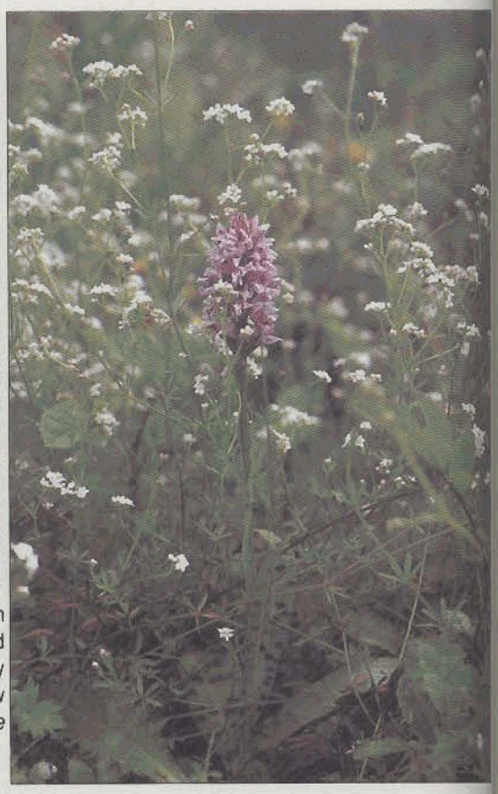
Immediately to the north of the Kingston By-pass is a small rectangular block of woodland, fenced off from the public and managed by the London Wildlife Trust. Tall oak trees shelter a dense shrub layer of old hawthorns, creating heavy shade and so restricting the growth of woodland flowers. Sycamores are abundant at the margins of the wood, excepting the river bank where crack willows lean over the water. Ivy covers much of the woodland floor, but in spring the glossy yellow flowers of lesser celandine show through, followed quickly by the arrow-shaped leaves of Lords-and-Ladies and then ground ivy, cow parsley, hogweed, cleavers and stinging nettle. Public access to the woodland (called the Hogsmill Wood Nature Reserve) is limited to work days and guided walks run by the London Wildlife Trust. For details on access contact the Trust.

The Kingston By-pass can be crossed by walking a short distance to the west. South of the by-pass the Hogsmill stretches on through another series of fields which have again been cut with a variety of mowing regimes, providing short turf for easy public access as well as long grass and wild flowers. Blocks of young trees have been planted in places and once again the original hedgerows, together with some fine mature hedgerow trees, have survived, providing good cover and a food source for wildlife. The former existence of large elm trees in the hedges is indicated by the belts of elm scrub which have grown up from the roots of trees destroyed by Dutch elm disease.

A second area of more extensive woodland lies south of the Chessington railway line. Here the path turns eastwards uphill towards Old Malden, past an area of sycamore, ash and hawthorn woodland. The ground flora is poor; a thick carpet of ivy and fallen trunks and branches cover the soil. A ditch, flooded in winter, winds through the woodland, providing conditions for mosses and liverworts.

Upstream of Old Malden, the Hogsmill River flows through a pastoral setting of fields, hedges and belts of trees. There is no access to this section of the river, which forms the Borough boundary, although glimpses of its wooded surroundings can be obtained from the busy Old Malden Lane. The site

Sixty Acre Wood harbours an impressive colony of early purple orchids *Meg Game*



Common spotted orchid surrounded by marsh bedstraw *Meg Game*

Tutsan, our showiest native St John's wort *Meg Game*

Some of the uncommon wild flowers found in Sixty Acre Wood

Primroses flourish where trees have been coppiced recently *LEU / Meg Game*

Broad-leaved helleborine is one of the five species of orchid which grow in Sixty Acre Wood *Michael Waite*

described here ends at the bridge carrying the access road to Riverhill House. Beyond, the river forms part of the Riverhill House site.

The extent of the site, and its function as a wildlife corridor linking the countryside in the south of the Borough to the built-up north, makes this one of the most important sites in Kingston. To the north the site adjoins the Hogsmill Valley Sewage Works, and to the south it is contiguous with Old Malden Common and Riverhill House. The diversity of the plants and animals of the site can be expected to increase as the effects of less intensive grassland management as well as tree planting are felt. At present the valley supports a good population of woodland, wetland and garden birds, including kingfishers, herons, willow warblers and turtle doves. The uncut grass and meadow flowers, together with large banks of nettles, attract many butterflies, particularly orange tips.

There is unrestricted public access to most of the site, except at the extreme south and to the two woods. The southern wood is privately owned. A popular footpath, signposted as the Hogsmill Valley Walk, runs the whole length of the site, which is scheduled as Metropolitan Open Land.

Ki.BI 3 Chessington Wood

Grid ref TQ 174 618
Area 9 ha

Chessington Wood forms the main feature of this site, but a hedgerow, bridleway and an abandoned railway embankment are also included. The damp woodland is dominated by oak and lies on a flat area of London Clay, providing suitable conditions for a range of moisture-loving plants to thrive. It is roughly triangular in shape, with its longest side facing Leatherhead Road (A243). The bridle path extends as a long arm southwards, mirrored to the north by the disused railway. Drier conditions can be found on the railway embankment, which was constructed by Royal Engineers as a training exercise during 1941-42, using chalk excavated from elsewhere. Post-war Green Belt policy meant that the proposed railway never progressed much beyond Chessington South station.

The Chessington Tithe Map of 1839 indicates that the main body of what is now Chessington Wood was then called "Furze Field" and was used for gathering furze or gorse (widely used for fodder in the past) and for pasture. The Ordnance Survey Map of 1866 at 25 inches to the mile shows the Furze Field but the south-west corner is shown as being covered by broad-leaved trees. By the time of Bacon's map of 1904 the Furze Field is labelled Chessington Wood and there are indications that the adjoining fields had also been colonised or planted with trees, making the wood roughly the same shape as it is today.

From Rushett Lane at the southern end, the site extends almost directly north, following the route of a bridleway. The clay of the bridle path itself cracks deeply after dry summer weather but for much of the year it is wet and muddy, as shown by the tall spikes of the grey-green hard rush and the brighter green conglomerate rush. Other plants sharing these wet places are false fox-sedge, hammer sedge, marsh woundwort, upright hedge-parsley, stone parsley and great hairy willow-herb.

Either side of the bridle path grows a colourful patchwork of wild flowers and low shrubs, interspersed with tussocks of tufted hair-grass and bent-grasses. Fleabane, with its yellow, daisy-like flowers and scented leaves, is a major element of the vegetation, together with thistles, silverweed, Michaelmas daisy, bristly ox-tongue, hardheads, ragwort, red clover, teasel with its tall spikes crowned with thorns, and, in spring, the white, starry flowers of greater stitchwort. Trailing through these can be seen the purple-flowered bittersweet, and hairy tare with its delicate creeping stems.

The bridle path follows a straight route to Chessington Wood between a line of well-spaced oaks to the west with an open field beyond, and an old hedgerow to the east. The hedgerow consists of lofty oaks interspersed with hawthorn, blackthorn and willows. These shrubs merge into tangled banks of dog rose and brambles closer to the path, while nearer to Chessington Wood gorse can be found. The abundant wild flowers form a bountiful food source for butterflies during the flowering season, while flocks of linnets and greenfinches feast on the seed heads of thistles in autumn.

The bridle path continues north until it meets Chessington Wood, at which point it crosses the Bonesgate Stream on a plank bridge. Upstream, where it runs alongside Chessington Wood, the stream is included as part of this site. Downstream it wends its way beneath trees through a pleasant, quiet countryside of rolling fields and this is described under the site we call "Bonesgate Stream". The bridle path beyond the bridge turns slightly to the west and the compacted clay track becomes a churned up ride between the trees. A pipeline has been installed here recently, disturbing the ground in a strip several metres wide, and so allowing plants of disturbed ground to colonise.

The majority of the woodland lies to the west of the bridle path. Nineteenth century maps of the area depict a small block of woodland here, suggesting that it is of some antiquity. Oaks, some of them old coppice, are the most abundant canopy trees but ash and birch trees are also common. The wood has a good structure, with hawthorn, old hazel coppice, field maple and ash saplings and elder bushes forming the shrub layer. Holly appears to be regenerating on the forest floor, although mature bushes are not

much in evidence. Carpeting the ground are large patches of bramble, with ivy and woodland grasses, such as tall brome and hairy brome, achieving local dominance. A scattering of moisture-loving plants can be found amongst the commoner species. These include hard rush, remote sedge and the rare soft shield-fern. Examples of other typical woodland plants found here are the graceful arching clumps of male and lady ferns, slender false-brome, honeysuckle, bluebell, ground ivy, hedge woundwort, red-veined dock and wood melick. Butcher's broom, a low-growing, spiky, evergreen shrub, also grows here, a species normally associated only with ancient woodland. Within the wood, dead but still standing birch trunks can be seen, riddled with woodpecker holes. Other woodland birds recorded here include treecreepers, chiffchaffs, coal tits and blackcaps. The dappled sunlight of the woodland edge is frequented by speckled wood butterflies.

The woodland to the east of the bridle path, south of the railway embankment, is similar to the larger western block, although the shade appears to be denser and so the understorey is a little less well-developed. A small pond lies in this section but is too heavily shaded to support wetland plants. This could be remedied if the canopy was cut back to allow more light through and the pond was dredged to remove accumulated silt and rubbish. The wooded slopes of the railway embankment are drier, and wood melick, a grass with tiny, drop-like flowers, carpets large areas.

A small area of woodland extends north-west to the main Leatherhead Road, and appears to be more recent in origin, consisting largely of hawthorn.

If, about half way along the length of bridle path within the wood, you leave the track and head north, you come across the old railway embankment. This runs roughly northwards, parallel to the main road. Its banks are wooded with oak, hawthorn and field maple on the west side, and mainly with birch to the east. The summit of the embankment bears a grassy path with many wild flowers, including thistles, common St John's wort, hardheads, meadow vetchling and great hedge bedstraw. In about 1981 a cut was made through the embankment to improve the drainage of surrounding agricultural land. This is now covered in rank grasses and herbs. Woodland continues along the embankment to the north of the cut up to the limit of the site, beyond a minor road called Chalky Lane.

This mixture of open and woodland habitats throughout the site supports varied invertebrate populations. Butterflies include meadow brown, skippers, large white, speckled wood and common blue, and day-flying moths such as burnets and cinnabar can also be seen.

All of the Chessington Wood site lies within the Green Belt. Motor cycling activities within the wood should be curtailed as these are incompatible with the wildlife conservation interests, and out of keeping with the essentially rural aspect of the area. Otherwise, no urgent management is required, except occasional mowing or grazing of the bridleway to prevent scrub encroachment. The section through the woodland which has recently been dug up could be managed as a woodland ride, mowing the first metre either side of the path in early September each year, the next metre strip outwards every two to three years and the remaining edge every five to ten years. This would maintain its openness and allow the ride to merge gradually into the woodland.

Ki.BI 4 Barwell Estate Lake

Grid ref TQ 166 626
Area 8 ha

This lake was created between 1977 and 1981 at the same time as the building of the Esher By-pass, which now runs along its north-west boundary. Its construction was in part "planning gain" to offset the building of the road, but it also receives some run-off from the road and therefore has a river regulatory role. The lake is situated on the site of a former pond, which still survives in the centre of a small wooded island. The presence of an existing water body on the site has probably aided colonisation by aquatic flora and fauna. The lake lies just to the north of Sixty Acre Wood on the London Clay, and at the foot of Winey Hill, which is composed of Claygate Bed sands. A spring line at the junction of these two formations is marked by another small pond and by wet flushes in the pastures. Viewed from the lower, western flanks of Winey Hill, the lake forms a picturesque addition to the rural scene, marred only by the ribbon of by-pass which separates the lake from Claygate Common and the stately white Ruxley Towers (formerly Ruxley Lodge), dating from 1870.

The springs around Barwell give it its name "Ber-ewell" (possibly "spring where barley grows"). Rocque's map of 1762 marks "Burrel Court" to the north, and in later maps this becomes "Berewell" or "Barwell Court". It seems likely that a farmhouse of some kind existed at Berewell as far back as the fourteenth century, and it may well be that the fields to the south, including Winey Hill, became attached to it at this time. In 1375 the earnings of the Vicar of Kingston included "tithes of 8 cows, 2 sows, 5 geese, 5 ducks, 10 hens and a dovecote at Berewell".

Berewell was annexed into the "Honour" of Hampton Court and it remained in Royal possession until 1587 when Elizabeth I granted it to Thomas Vincent. The estate has been in private ownership ever since.

The lake lies in a valley between Winey Hill and the wooded slopes of Claygate Common. To the south a dark wall of trees, marking the beginning of Sixty Acre Wood, rises

majestically up the hillside. The lake itself is surrounded to the east and north by extensive sloping banks, fenced off from the surrounding farmland. Willow and alder have been planted here, but most of the vegetation is a mixture of grasses and wild flowers. A path encircles the lake, wandering through grassland largely dominated by oat grass. However, patches of finer grasses are present, including common bent-grass, timothy, crested dog's-tail and tall fescue. Centaury, with its delicate, five-petalled, pink flowers can be found here. Its strange English name is derived from a Greek myth concerning the Centaur Chiron who is said to have cured himself with the plant after accidentally receiving a wound from an arrow poisoned with the blood of the hydra, a many-headed snake. Red bartsia (a semi-parasite on the roots of grasses), yarrow, cat's-ear, birdsfoot-trefoil, hairy tare, common St John's wort, hardheads, goat's-beard, coltsfoot and spear thistle also provide splashes of colour throughout the grassland, which vibrates with grasshoppers in late summer.

The margins of the lake are colonised by large patches of developing emergent vegetation. Clumps of great reedmace, yellow flag, galingale and hard rush line the water's edge, having gained a footing on the stony beaches. Immediately behind this spiky fringe grows a colourful mixture of fleabane, water mint, gipsy-wort, trifid bur-marigold and great hairy willow-herb.

The water is very clear, allowing extensive growths of submerged plants over much of the lake bottom. Nuttal's pondweed predominates but other submerged species are almost certainly present, especially in the deeper central part, which is over a metre deep. Emergent vegetation is abundant in the northern and eastern parts of the lake, forming dense stands which provide cover for a range of water birds. Here the island cuts off a quiet corner of water, where motor boats seldom go, and where herons, with their long graceful necks and soft grey plumage, stand poised, ready to snap up the fishes below. The island is ringed with trees and shrubs (white willow, alder, ash, oak, hawthorn, rose and brambles), while the pond takes up the centre. Further trees occur in a small spinney to the north of the lake where sweet chestnut, lime, Scots pine and oak have been planted.

A major part of the lake's wildlife interest rests with its wildfowl population. Canada geese, mallards and coots all breed here, some on the island and some in the reed growth around the lake margins. These breeding populations will almost certainly increase in abundance and diversity as the marginal vegetation communities spread further around the lake margins.

Bird species which can be seen but do not actually breed here include the aforementioned herons, which come to feed on the frogs, tadpoles and introduced fish, and swallows, swifts and martins which swoop and dive for insects above the water. In summer the lake attracts flocks of Canada geese and mute swans. In winter, it supports a small but varied population of ducks, coots, grebes and gulls.

A ditch and outflow from the lake provide an additional wetland habitat for wildlife. Typical species to be found here are celery-leaved crowfoot, brooklime, persicaria, gipsy-wort, jointed rush, hard rush and scarlet pimpernel. At the end of the outflow pipe a small, muddy basin has formed and in summer is an excellent spot for watching the common darter dragonfly, as it darts above the water's surface hunting for its insect prey. In late summer, the red-bodied male can be seen flying in tandem with the khaki-bodied female in their mating flight, hovering and then dipping to the water as each egg is laid.

The lake is privately owned and there is no public access. A public right of way along the hill to the east and north does, however, afford views over the site. The fishing rights are leased to the Central Association of London and Provincial Angling Clubs. The boundaries of this site follow the wooden fence separating the lake and its surrounds from the agricultural land.

KI.BI 5 Castle Hill and Bonesgate Open Space

Grid ref TQ 191 635
Area 6.6 ha

Mature oak woodland, young woodland, scrub and grassland, with the addition of the Bonesgate Stream, combine to make this an interesting and varied wildlife site.

An ancient track runs along the eastern side of the site. This used to be known as Chessington Park Lane and is followed now by the Borough boundary. Additional interest is supplied by the earthworks beneath the vegetation. These are believed, though not proved, to be the remains of a medieval hunting lodge. This was situated at the northern end of a deer park of the same period, owned by Merton College, Oxford, which stretched south as far as Park Farm and was bounded to the west by the Bonesgate Stream and to the east by Chessington Park Lane.

The main part of Castle Hill occupies a level terrace of London Clay, about five metres above the alluvial floodplain of the Bonesgate Stream. Here a mature oak woodland forms a high canopy above what appears to have been hazel coppice. Part of this woodland conceals the steep slopes of the earthwork's elliptical banks.

Old maps show the site as being wooded, but most of the trees were cleared, as nineteenth century maps portray a mixture of meadow and arable fields, together with furze (i.e. gorse) and a small block of woodland in the region of the earthwork. The main area of woodland must be a nineteenth

century plantation in part but it has a good structure and some plant species typical of ancient woodland are present. The cool, shady atmosphere under these majestic, towering oak trees comes as a welcome respite during the hot sunny days of summer. In the dappled depths beneath the green canopy, hazel coppice with some hawthorn, holly and field maple form a shrub layer. Young ash and gean trees can be seen here and there but no mature specimens challenge the oaks' supremacy. Numerous well-worn tracks thread through the site, but between this network a dense undergrowth of brambles, ivy and honeysuckle trails amongst the shrubs. Here and there on the woodland floor bluebells can be seen in spring, followed a little later by cow parsley, red-veined dock, bush vetch and wood avens. Typical woodland grasses such as wood millet, tall brome, wood poa and wood melick are also common features of Castle Hill's ground flora.

Wetter areas of the woodland floor and the sides of the occasional ditch provide ideal spots for luxuriant growths of mosses, some like dark green velvet pin-cushions while others are more like lime-green, shag-pile carpet. Fallen trunks and branches have been left *in situ* to decompose, providing food and homes for an abundance of invertebrates, together with festoons of fungi, including the stacked plates of the many-zoned polypore.

A belt of trees extending southwards, alongside the Borough boundary and Chessington Park Lane, from the main block of woodland of Castle Hill, has also been included as part of this site.

To the west of the main woodland area, down a five metre slope onto the alluvial flood plain of the Bonesgate Stream, is a grassland strip which separates the site's two wooded areas. This is largely dominated by tall oat grass and creeping thistle amongst other common wild flowers. However, the extent of the grassland is being reduced rapidly by an advancing tide of colonising scrub which is forming an impenetrable tangle of barbed, arching bramble stems, wild rose bushes and hawthorn and oak saplings. In winter, some of the young oaks are bare, while others keep their rusty-brown leaves as if they are reluctant to relinquish their autumn finery.

The westernmost strip of this varied site is about 40 metres wide and is split in two by the Bonesgate Stream, which winds its way through relatively young woodland. The woodland is composed of sparse ash and oak, with a dense scrub of hazel, blackthorn, hawthorn, Midland hawthorn, elder and immature holly below. Consequently, the floor is heavily shaded and is bare of vegetation in places. Elsewhere, a scattering of wood sedge, slender false-brome, lesser celandine, bluebell, male fern and greater stitchwort can be found but ivy and cow parsley form the majority of the ground cover. The land has been raised into steep hummocks suggesting artificial excavations in the past, thought by some to be a dam across the Bonesgate Stream for a long-lost mill.

The Bonesgate Stream is here about two metres wide and meanders through the dense woodland in a down-cut channel with vertical clay banks and a gravelly bed. The water at this point is clear but there is little or no bankside or aquatic vegetation because of the heavy shading. To the south the Bonesgate Stream forms the site of that name, while to the north the stream flows beneath Filby Road and continues north-north-east between earthen banks, lined with old, many-stemmed, coppiced hazel trees. Occasional mature English oak trees rise above the hazels and hawthorns, whilst the shady banks beneath are covered by woodland-floor plants such as wood anemone, lesser celandine, male fern, slender false-brome, red-veined dock and wood melick.

The eastern side of this green corridor, which is known as Bonesgate Open Space, stretches past the back gardens of houses. The grass of the open space is mown regularly and a track leads people from Filby Road through to Moor Lane, following a line of pylons the whole way. Although the stream is heavily shaded for most of its length, some patches of water plants manage to cling to the water's edge, including fool's watercress and brooklime, the latter bearing tiny, attractive, cobalt-blue flowers.

The western side of Bonesgate Open Space is much more leafy, and constant bird song adds to the enjoyment of this part of the site. Mature hawthorn and blackthorn scrub lines much of the western bank of the stream, and mature ashes and oaks rise above. Steep banks lead up to the back gardens of the houses in Thrigby Road. Many old tree trunks have been left tumbled down on this side of the stream and the whole area makes an excellent bird sanctuary. No proper path leads through here and so this part is mostly undisturbed by people and dogs.

Further along on the western side are some allotments, screened by dense hawthorn scrub. The third of the allotments closest to the stream has been uncultivated since the mid 1980s and is now derelict. This part recently has been fenced off and designated by the Council as Moor Lane Nature Conservation Area. There are a number of common grasses and wild flowers to be found here. Some of these, such as bluebell, lesser celandine, holly and Lords-and-Ladies are woodland or woodland edge species and have clearly colonised from Bonesgate Open Space. There is no public access to the allotments and no management plan at present, although the Council do intend to monitor future natural establishment of species.

Beyond Moor Lane the Bonesgate Stream forms the boundary with Surrey, flowing northwards between low-diversity improved grassland of rye-grass and couch grass on the Kingston side and scrub consisting of hazel, willow and hawthorn on the Surrey side. Broad-leaved pondweed can be seen growing in the stream here. Immediately beyond where the stream flows between Drake Road and Gatley Avenue it

The view across Hogsmill Valley Sewage Works from the up platform at Berrylands station *LEU / Ian Yarham*

Common wild flowers provide a splash of colour in the Hogsmill Valley *John Hodge*

The pink flowers of policeman's helmet can be seen in the Hogsmill Valley alongside the river *LEU / Meg Game*

The multiple stems of oak over hazel indicate past coppicing of both species in Chessington Wood *John Hodge*

passes into the Tolworth Court Farm site (Ki.BI 7), although the first field encountered after the transition (a large horse pasture) is still technically part of Bonesgate Open Space.

Animal life on the Castle Hill site includes many birds, among which are green and great spotted woodpeckers. The mixture of habitat types also provides suitable conditions for a wide range of butterflies, such as meadow brown, gatekeeper, speckled wood and Essex skipper. A lucky visitor to the site may even catch a glimpse of roe deer amongst the trees.

The woodland of Castle Hill is intensively used for walking, horse riding, and especially for cycling and motorcycling. Unofficial tracks have been laid out for the latter two activities, involving construction of ramps and destruction of parts of the ancient earthworks. These activities are clearly incompatible with the archaeological and ecological interest of the site. Facilities for these pursuits should be provided at other, less sensitive open spaces in the area. The Lower Mole Countryside Management Project has now produced management proposals for Castle Hill, aiming to improve its amenity and wildlife value.

To the south the woodland opens on to arable farmland, while to the east lies Horton Country Park in the District of Epsom and Ewell. There is free public access throughout and several paths cross the site. The north-west corner, as well as Bonesgate Open Space, is owned by Kingston Borough Council, but the remainder has been leased by the Borough from Merton College since August 1988. Castle Hill marks the northernmost extent of the Green Belt in Kingston.

Ki.BI 6 The Grapsome

Grid ref TQ 170 636
Area 1.1 ha

The Grapsome is a small copse on the western edge of the Borough, immediately to the west of the Esher By-pass (A3). It lies on a gentle slope with Claygate Gravels at the top and London Clay towards the base. A small fragment of woodland and an ancient hedgerow on the opposite side of the by-pass have also been included in this site.

Both historical and botanical evidence suggests that this rectangular block of coppiced, broad-leaved woodland is of some antiquity. The Grapsome is believed to be a medieval Manor site dating very probably from before the Norman Conquest. The name itself may well be of Old English origin, derived from a nick-name of the owner ("grap" meaning "grasp"). In medieval times these environs were called "Graplingeham", but over the centuries this altered to "Grapham", then "Grapson" and finally to "The Grapsome". On the First Edition Ordnance Survey Map of 1865, The Grapsome is clearly marked as deciduous woodland. The present-day woods are a small fraction of their former size, the latest reduction being made in 1974/5 by the construction of the Esher By-pass through the eastern half. At this time archaeologists excavated ahead of the road-builders but little evidence of human occupation was found. Much of the archaeological site suffered from the construction of the by-pass, although some of it still remains.

On the Chessington side of the by-pass, the wood is approached from the east via a public footpath and from the north via a bridleway, the two converging at the old hedgerow and leading west to the wood. The hedge is composed of field maple, elder, hawthorn, blackthorn, elm scrub and ash, this diversity suggesting it is of ancient origin. Some of the field maple, ash and elm suckers reach a fair size. The glossy black berries of the elder and small red haws of the hawthorn (its leaves turning red to match its berries) provide a colourful display amongst the autumn leaves and provide ample food for birds as the cold season begins. The landscape to the south, viewed from the footpath, is surprisingly rural considering the proximity of the by-pass to the west and development to the east, and includes a crescent-shaped plantation of majestic oak, horse chestnut and lime trees which provides shelter for the cattle from the surrounding fields.

Following the combined footpath and bridleway westwards, the hedge thickens with elm scrub until, by the time it reaches the by-pass, it widens to form a corner of elm-dominated woodland. Due to heavy shading, the ground layer is not very diverse, with ivy and mosses predominating. The bases of the corky-barked elm shoots are covered in shaggy green mosses like a badly-fitted carpet, while the large, disintegrating elm stumps from which suckers have arisen are draped in trailing dark-green strands of ivy and play host to a range of fungi. Other shrubs and trees are present, though in lesser numbers, including a large field maple, hawthorn and elder.

After turning briefly to the north to avoid the wooded corner, the path turns west again and dips down under the by-pass. Before reaching this it passes banks of planted gorse with a tangle of bramble and dog rose, and wild flowers such as autumnal hawkbit, red bartsia, water mint, black medick, ox-eye daisy and ragwort, with oat grass and couch. A similar array clothes the banks on the other side, but soon gives way to a dense thicket of field maple, oak seedlings, English elm, mature and immature ash, elder, hazel and goat willow as the woodland proper is entered.

The concrete of the tunnel beneath the by-pass quickly gives way to an old muddy track which continues westwards, cutting The Grapsome into two parts. Beneath the thicket is a lush ground layer of black bryony, nettle, ivy, ground elder, bush vetch, wood avens, herb Robert, slender false-brome and hairy brome. Either side of this track is a ditch immediately followed by a bank. In bygone days a ditch and then an

earthen bank were used to keep livestock out of coppiced woodland as they would damage the regrowth from recently cut stools. Across the southern ditch, the bank is topped with old hazels, last coppiced many years ago. These also form a substantial part of the understorey of the southern part of the woodland, which exhibits a good structure and species range. Tall oak standards and mature hawthorns shade the understorey which also includes holly, field maple, elder, elm suckers, yew saplings and the odd sycamore seedling. Below these grows a diverse ground flora, with abundant tussocks of wood millet, together with Lords-and-Ladies, bluebell, slender false-brome and bramble.

A ditch and bank also runs north-south along the western boundary of the woodland, while a thick hedgerow follows the track westwards, beyond the wood and into Surrey.

The woodland to the north of the bridleway is of a similar nature to that of the south side, although it is harder to penetrate the initial scrub of guelder rose and bramble to reach its interior. A spring line at the junction of the Claygate Beds and the London Clay produces the source of the Tolworth Brook and a series of wet flushes along the eastern edge of the woodland. These provide a niche for wet-loving plants such as star-wort, remote sedge, brooklime and marsh bedstraw. Associated with these wetter areas, willows and alder take over from the ash, oak, elm, field maple and birch of the rest of the woodland. Beneath the canopy sprawls a dense understorey comprising hazel, hawthorn, common osier, blackthorn and gorse. The ground flora is again quite diverse, particularly at the edges of the copse where more light can penetrate. Dog's mercury, another ancient woodland indicator, can be found in deeply-shaded places. The plant's extensive system of rhizomes (underground stems) sends up many leafy shoots. Each plant is either male or female, and, curiously, male plants seem to be able to tolerate higher light levels than female ones. Other typical woodland plants growing here include the strong-smelling hedge woundwort (try sniffing a rubbed leaf), both black and white bryony, common figwort, bluebell, wood avens (with its round heads of dry, hooked fruit), common hemp-nettle, greater stitchwort and slender false-brome. Patches of mosses and liverworts form brilliant green carpets over dead wood, trunks and exposed parts of the woodland floor. The eastern edge of the wood is delimited by a drainage ditch and a track heading north from the by-pass tunnel. The ditch and its grassy banks support a wide range of wild flowers including hairy tare, thistles, common St John's wort, lucerne, bush vetch, bittersweet, persicaria and soft and hard rushes. This ditch is actually the infant Tolworth Brook.

Outside the southern boundary of the old wood, a strip of new tree planting is growing, possibly a substitute for the woodland area destroyed by the building of the by-pass. Although a valuable habitat for wildlife, it may be hundreds of years before its species diversity remotely resembles that of its ancient neighbour.

KI.BI 7 Tolworth Court Farm and Medieval Moated Manor

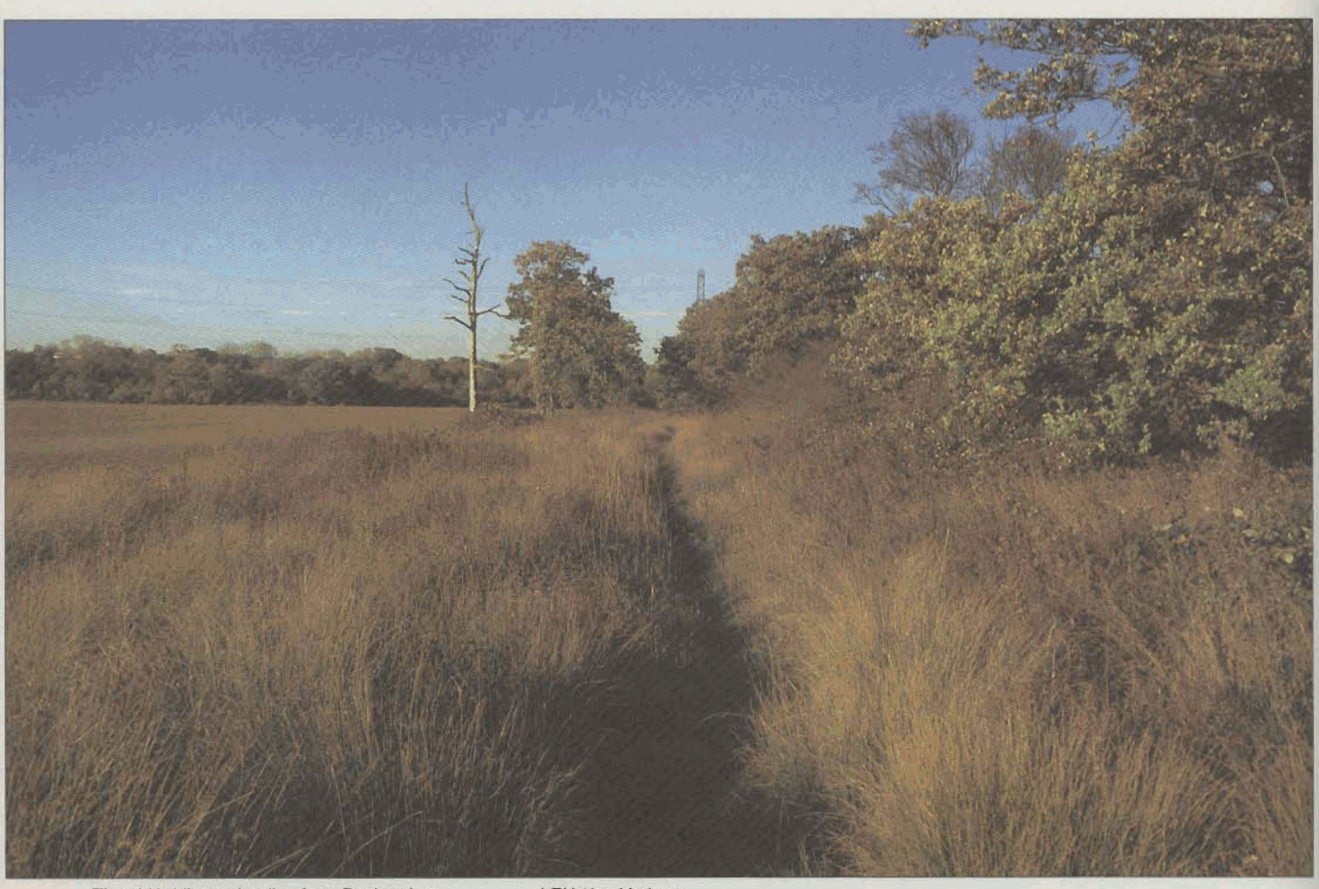
Grid ref TQ 196 645
Area 103 ha (98 ha in Kingston)

Archaeological and ecological interest are inextricably mixed on this site, which consists of a field system bearing neutral grassland criss-crossed by old hedges, small blocks of woodland, a stream and the remains of a medieval moated manor house. This attractive piece of countryside resembles more the rural landscape of the past, than today's re-seeded, fertilized and mechanically trimmed one.

Near the north-eastern tip of the site is what appears to be a large, overgrown pond, but which is in fact all that remains of the medieval moated homestead. There was a widespread development of such sites between about 1200 and 1400, nearly always on clay soils. A wide ditch was dug, typically U-shaped, and usually enclosing a rectangular area. The resulting earth was often piled up into the centre, providing a platform on which to build the homestead or manor.

We have some clues as to what might be found there should it be excavated in future. A survey of the Tolworth manor was undertaken in 1327, after Hugh Despencer, then its owner, had been hanged for supporting Edward II. The survey describes the moated manor house with its gateway and drawbridge, two halls, six chambers, kitchen, bakehouse, brewhouse and a chapel. Outside the moat (and now presumably beneath the surrounding trees and pastures to the north) were two barns, two ox-houses, a stable, pigsty, carthouse, garden, sheepfold and a water-mill known as Brayest Milne. The documentary evidence concerning the Tolworth estate is surprisingly good for such a site and a summary of it can be found in Kingston Archaeological Society's *Newsletter No. 38*, November 1990 (article by Julie Wileman).

The remains of the moat, the only feature still visible, are now overgrown by willows and other trees. Maps produced early this century show a three-sided moat, the missing side being to the south-west, where Kingston Road is (now the A240). A bridge across the north-western arm of the moat led up to a building. Wetland plants still surviving in the moat include reed sweet-grass, great reedmace, water mint, trifid bur-marigold, reed-grass, gipsy-wort, star-wort and sedges. Moorhens breed in this area, which is badly in need of management to prevent the vegetation from totally taking over the open water. Similarly the encroaching willow and hawthorn scrub could be cut back in places. The wildlife value of this area could be greatly enhanced, particularly by digging back some of the wetland vegetation to create more open water, but taking care not to damage the archaeological interest. Perhaps excavation of the moat and remains of the associated buildings could go hand-in-hand with wildlife management here.

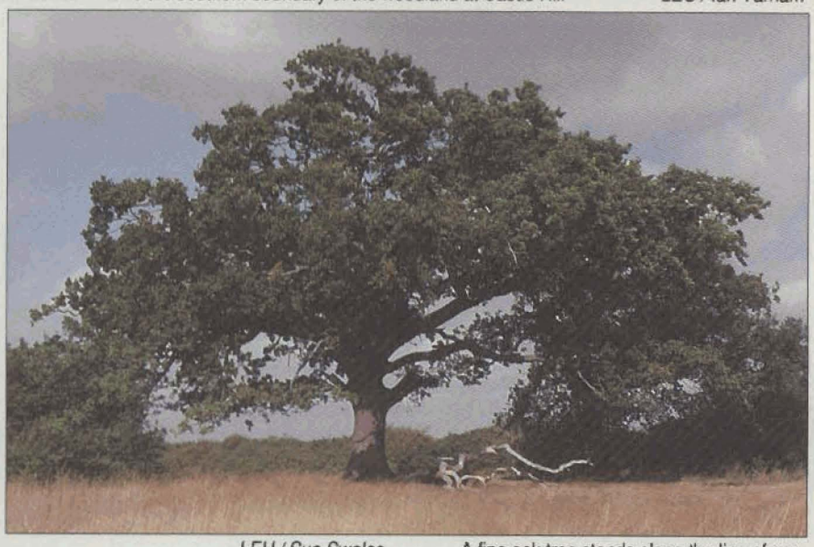


The old bridleway leading from Rushett Lane towards Chessington Wood *LEU / Ian Yarham*

Fleabane and great hairy willow-herb are found on the banks of Barwell Estate Lake *LEU / Ian Yarham*

An ancient ditch marks the southern boundary of the woodland at Castle Hill *LEU / Ian Yarham*

Wood anemone beneath hazel at Castle Hill *Peter Johnstone, Lower Mole Countryside Management Project*



LEU / Sue Swales A fine oak tree stands along the line of one of the ancient hedges of Tolworth Court Farm

Wild flowers, more usually found on the chalk downs, clothe the western bank of Seething Wells Reservoir alongside the River Thames *LEU / Sue Swales*

The hedges and trees of Tolworth Court Farm give a feeling of traditional countryside *LEU / Sue Swales*

To the north of the moated site are two damp paddocks, grazed by cattle and horses. These paddocks support closely-cropped, common grasses with taller unpalatable plants such as docks, ragwort and buttercups. A row of tall white willows, twisted and split with age, runs beside the Hogsmill River and curves round the northern side of the moat. In the northernmost, horse-grazed field, a small muddy stream runs down to join the Hogsmill. Yellow flag, star-wort, toad rush and celery-leaved crowfoot are amongst the water-loving plants which have established here. The adjoining field contains a shallow pond which drys out in summer, and which is choked with star-wort and fool's watercress. Rabbits are plentiful in these fields, and green woodpeckers can sometimes be heard calling. The latter almost certainly nest in the willows. The wet, trampled paddocks are likely to support wintering snipe.

The remaining, and much larger, section of the site, consisting of a system of fields and hedgerows, extends south-west on the opposite side of Kingston Road. At the time of the First Edition Ordnance Survey Map of 1865 this area was part of Tolworth Court Farm, the buildings of which lie beyond Tolworth Court Bridge (beside the moated manor).

Of the twelve fields included within the site boundary, two are of particular value as they appear not to have been "improved". The first is a large, horse-grazed pasture and the other has been managed as a hay meadow. Both are rich in wild flowers, but the different forms of management have produced different communities. In 1865, the present-day horse pasture consisted of two fields, but otherwise little has changed, in terms of field shape and trackways, over the last one and a quarter centuries.

Across the southern third of the site runs Cox Lane, the ancient trackway or drove road leading from Hook to Ruxley Lane. This track has now disappeared beneath tarmac and concrete except for the section crossing the Tolworth fields. Entering Cox Lane from the west is like taking a step back in time. Tarmac gives way to grass and a muddy path between two overgrown hedgerows, wide enough for a horse-drawn cart. Old hedgerow elms have generated a forest of suckers, now the size of small trees, which seem to have swamped most of the other hedge species. Between the closely-packed trunks and through the tangle of brambles and nettles, the fields and hedges beyond can be glimpsed. Further down the lane the proportion of elm lessens and the thick hedgerows, given the feel of a woodland strip by the presence of mature trees, are composed of a mixture of hawthorn, oak, blackthorn, rowan, dog rose, hazel and elm. At the eastern end the original track has been buried beneath infill, which now gives the path a hummocky and, in places, steep surface. Here wild flowers of hedge bottoms and disturbed soils combine to provide a blaze of colour, buzzing with insect life in the summer months.

A footpath branches north-east at right angles to Cox Lane and traverses the length of the Tolworth fields, ending at Kingston Road. On Bacon's map of 1904, the path heads directly towards the bridge across the moat of the old manor house. As this track leaves Cox Lane, it too is bounded by a hedge either side, but after one field's length the hedge on the right hand side gives out and views can be had across fields, swirling with tall grasses, to the dark line of trees lining the Hogsmill River and its tributary the Bonesgate Stream. The remaining hedgerow is broad with banks of prickly blackthorn, covered in white blossom in spring, and at intervals it is punctuated by magnificent, mature oak trees.

The Tolworth Court Farm site is particularly valuable for its fine network of hedges. Like those along Cox Lane, the majority show a good range of species, the most common being blackthorn, hawthorn, oak, ash, elm, dog rose, hazel, gean and field maple. Many of the hedges show signs of a ditch and bank beside them, some are sinuous in outline, bear old timber trees and, in a few places, coppice stools of great age are present. These factors, taken together, suggest that the hedges may be of considerable age, and almost certainly predate the enclosure Acts of the late eighteenth to early nineteenth century. The hedge to the north-west of the footpath stretching from Cox Lane to Chantry Road is particularly noteworthy because of its huge ash pollards and old hazel coppice stools.

The large field filling the southern corner of the site and bordered to the north-east by Cox Lane is heavily, but not excessively, grazed and provides a colourful spectacle in summer when the wealth of wild flowers is in bloom. Hawthorn bushes are liberally scattered throughout the pasture, pruned into mushroom shapes by horses. In early summer these bushes are covered in creamy-white, sweet-smelling May blossom: a fine sight against the bright green, fresh growth of the meadow. This short, fine turf is dominated by common bent-grass but also contains a good proportion of the less competitive grasses such as sweet vernal-grass and timothy. In places, coarse grasses including rye-grass, Yorkshire fog and cock's-foot can also be found. The sward is abundantly studded with wild flowers which are presumably less palatable to horses. The yellow blooms of buttercups, birdsfoot-trefoil and ragwort (which is poisonous to horses who, despite this, sometimes still eat it), interspersed with white-flowered ox-eye daisies and spikes of red bartsia, first catch the eye. A closer look reveals the less conspicuous or less frequent flowers of black medick, agrimony, pepper saxifrage, yarrow, clovers, self-heal, cat's ear, creeping cinquefoil, hairy tare and yellow rattle.

Towards the foot of the hill, beside the Bonesgate Stream, the land is wetter and somewhat trampled by horses, with toad rush, plantain and fiorin growing amongst patches of bare ground. The stream's banks are fenced off from grazing and have taller vegetation. Many bushes have been felled here but some white willows and field maples remain. Other plants present include hedge woundwort, meadow-sweet, brambles, hops and great hairy willow-herb.

The hay meadow, separated from the pasture by Cox Lane, shares many of the same plant species, but in the summer the two fields look very different. Bushes are absent since the hay meadow is cut every year, and the flowering heads of grasses form the highest layer of the vegetation. Crested dog's-tail, timothy, yellow oat grass, meadow barley and sweet vernal-grass are evident here, but the most obvious features of this spot are the sheets of wild flowers. Hardheads, with their globular reddish-purple flowers, form the background colour which is studded with white flowers of yarrow, together with the yellows of the less abundant agrimony, meadow vetchling and pepper saxifrage. The latter is uncommon in both Kingston and London as a whole, and is indicative of old meadows. Localised patches of rye-grass may indicate that the meadow has been partially improved in the past, but the abundance of wild flowers suggests a long history of sympathetic management.

The remaining hay fields within the site's boundaries have all been improved and are a species-poor mixture of rye-grass, couch grass and Yorkshire fog, although the eastern field beside Kingston Road has a slightly wider range of species, including meadow barley. The latter field also contains wetter areas with hard and soft rushes, reed-grass and hammer sedge.

The abundance of wild flowers in parts of this site supports a wide range of butterflies, including large and small skippers, speckled wood, small white, common blue, meadow brown and small copper. Whitethroats breed in the hedges and skylarks in the fields. Hand-weeding of ragwort is carried out in the horse pasture, and no herbicides are used. The use of herbicides in both the pasture and hay meadow should be resisted, as should ploughing or re-seeding.

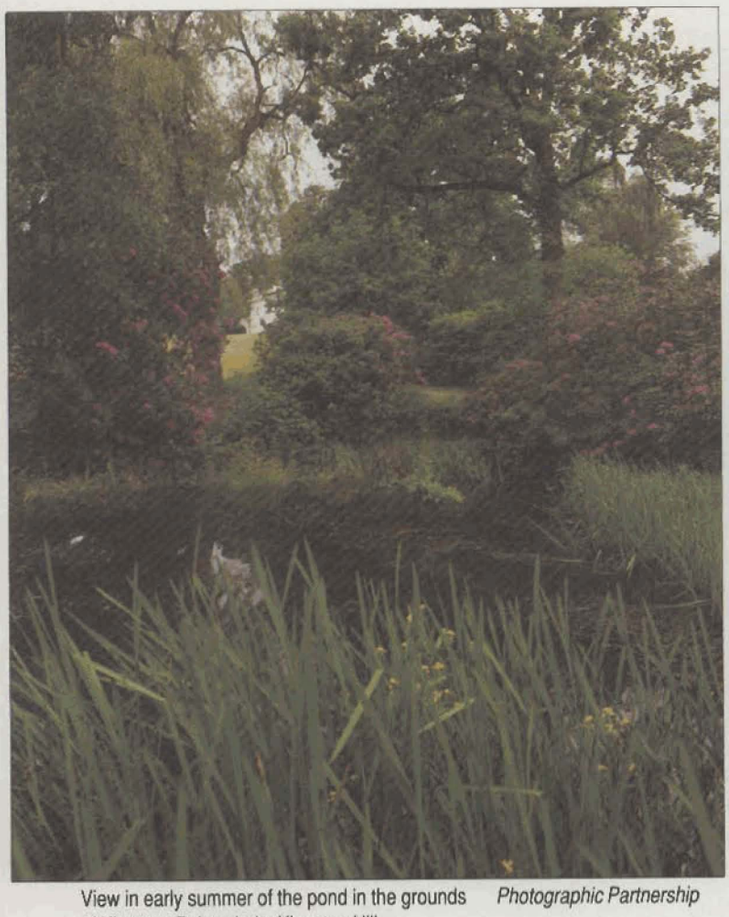
Three small wedges of woodland can be found on the peripheries of the site. Two of these lie beside Jubilee Way on the western border. These were both parts of fields sliced in two by the building of the road; the fragments were then left to their own devices and species from the hedgerows colonised the grassland. Pedunculate oak is now dominant, because of its superior colonising ability, but ash and elm have also sprung up, together with an understorey of hawthorn, blackthorn and elder. The third patch of woodland consists of a mixture of native and non-native trees surrounding a derelict building beside Kingston Road.

The Bonesgate Stream flows northwards, skirting the fields on their eastern side, until it joins with the larger Hogsmill River, which continues past the remaining fields, under Kingston Road and then past the moated homestead and northern pastures. The Borough boundary lies along the centre of the stream and then the river. Both the Bonesgate Stream and the Hogsmill River have been dredged and straightened, and can sometimes be polluted. Despite this, kingfishers have been reported hovering over the water here. The water is overhung by trees, including impressive specimens of crack and white willows, with hawthorn and elder between. For most of its length there is little aquatic vegetation because of the heavy shading. This could partly be remedied by cutting back branches and scrub in places to allow light to reach the stream. This would best be carried out where the stream banks are most natural. An example of what could be achieved can be seen where the Bonesgate meets the Hogsmill River. Here, where the banks are open to the sunlight, is a luxuriant growth of bur-reed, yellow flag, water figwort and meadow-sweet. Upstream along the Bonesgate, occasional gaps in the canopy allow the growth of great hairy willow-herb and marsh woundwort, together with the attractive but invasive policeman's helmet, a tall, pink-flowered plant originally from the Himalayas.

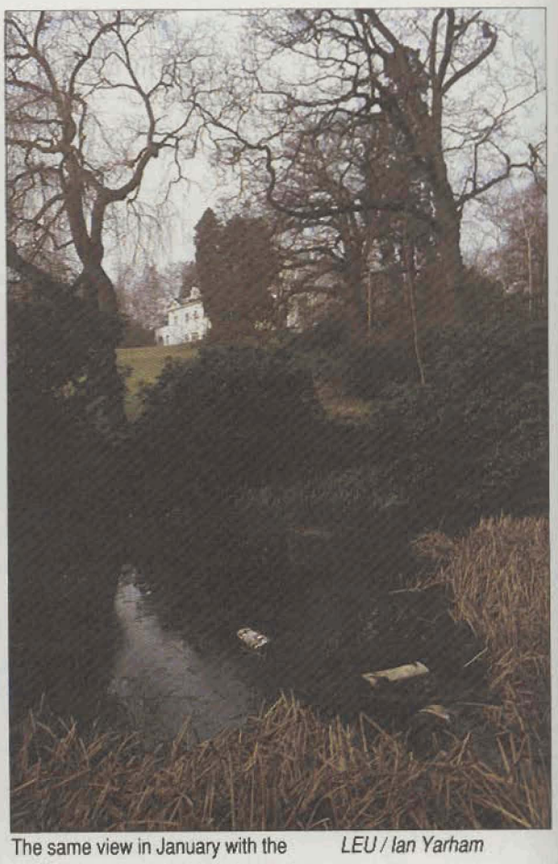
The large grazed field in the south is owned by the Borough and is part of the Bonesgate Open Space, although within this handbook it is included as part of the Tolworth Court Farm site, since it is more logically grouped with the latter in ecological and geographical terms. Clear views of this field can be gained from the public footpath which runs between Cox Lane and Chantry Road. All the fields to the north of Cox Lane, in the area bounded by the Hogsmill River, Kingston Road and Jubilee Way, form part of Tolworth Court Farm. These include the species-rich hay meadow as well as several re-seeded ones. Tolworth Court Farm was until recently owned by the London Borough of Lambeth, who originally purchased it with the intention of laying out a cemetery. The Royal Borough of Kingston has now bought the farm, and has formalised public access to its fields. There is, as yet, no official access into the horse pasture. Views of the moat and its wetland vegetation can be seen from Kingston Road.

The whole of this site is scheduled as Metropolitan Open Land and is identified in the Local Plan as a proposed site for open recreational activities including the provision of nature trails and nature reserves. Past and present management is responsible for its wildlife interest and this management should be continued. The existence of drove roads and the extensive hedge system gives this area its rural landscape feel and makes it an unusual survivor amongst the suburbs of London. This site is an asset to the Borough, and its landscape and wildlife value should be protected and if possible enhanced.

The pastures in the north of the site, as well as the moated site, are owned by Surrey County Council. The area immediately around and including the moated manor is identified in the Local Plan as having local value for nature conservation and also as an area of archaeological interest. As this land is low-lying and subject to flooding, factors which should help to retain its ecological interest, a nature reserve designation would appear appropriate.



View in early summer of the pond in the grounds of Kingston Polytechnic, Kingston Hill *Photographic Partnership*



The same view in January with the 19th century Coombe Hurst beyond *LEU / Ian Yarham*

Dead wood at Coombe Hurst, within the grounds of Kingston Polytechnic, provides a valuable habitat for fungi and invertebrates *LEU / Ian Yarham*

Ki.BI 8 Seething Wells Reservoirs (Surbiton Water Works)

Grid ref TQ 173 675
Area 7.0 ha

This series of seven small water storage reservoirs lies in a hollow between Portsmouth Road and the River Thames. They were built by the Chelsea Water Company and opened in 1856. Their value to wildlife conservation lies in the unusually species-rich grassland, together with visiting waterfowl. Several wild flowers normally associated with the dry, calcareous grasslands further south have gained a northern outpost on this unusual site.

The spring from which this site derives its name was described by John Aubrey, the historian, in the late seventeenth century as "a spring that is cold in summer and warm in winter; it bubbles up and is called Seething Well. The inhabitants thereabouts do use to wash their eyes with it, and drink of it." Indeed, this spring was once thought an infallible remedy in cases of opthalmia.

The tithe map of 1839 records the site as being an osier bed, meadow and allotments. Near this site, on what is now the Surrey side of the boundary, the Lambeth Water Company opened its works and a reservoir in 1852. Soon afterwards, the Chelsea Water Company built theirs on adjoining land. The original route of the water pipes from the Lambeth reservoirs to London passed across what is now Hogsmill Valley Sewage Works and from there ran along the north side of the railway line. The wayleave that has been left (and occasional glimpses of the pipes themselves) can clearly be seen alongside the main line between Berrylands and Wimbledon, and part is included in site Ki.BII 8.

The reservoirs have steep brick or concrete banks and are about three metres deep, with clear water which lacks submerged vegetation, except rafts of filamentous algae in summer. Water wells up into each basin via an underwater inflow, causing an area of turbulence that remains unfrozen long after still-water ponds freeze.

The water is pumped from the Thames into the Queen Elizabeth II Reservoir at Walton and from there is gravity-fed to the filter tanks at Seething Wells. Once filtered and treated, the water, around 40 million gallons per day, is pumped to service reservoirs at Putney, Chessington and Brixton, and from there meets consumer and commercial demand in the surrounding areas. The filter tanks are sunk into a huge rectangular pit, the sides of which are lined by steep grassy banks, with two or three narrow shelves cut into them. On the eastern side these banks rise up to the imposing base of the Victorian wall, topped by turquoise-painted iron railings. This wall partly shields the noise of the busy Portsmouth Road, while the railings provide the only vantage point for the general public to view this interesting site.

On the western side the tall banks give way to a sheer river wall down to the Thames. At intervals, the grassy are punctuated by steep flights of brick steps, again in Victorian style, and now draped in ivy-leaved toadflax, ivy and stonecrop, and encrusted with mosses and lichens.

The secret of the species-richness of the grasslands lies in the fact that for nearly 150 years, from the construction of the reservoirs in the 1850s to the present day, no pesticides or fertilizers have been used for fear of contaminating the drinking water. Instead, the grassy banks have simply been mown to keep the vegetation low, a management regime which has promoted a nutrient-poor, fine sward which does not smother wild flowers.

The grassy slopes appear to be composed largely of a dry, calcareous substrate. In places the bank is retained by a sloping surface layer of old brick or stonework, the cracks of which have been colonised by vegetation. Around much of the site the banks are dominated by upright brome and red fescue. Liberally scattered throughout are wild flowers such as burnet saxifrage, common St John's wort, hoary plantain, restharrow, salad burnet, small scabious and dropwort, which are generally associated with calcareous grassland. The latter four species are rarely found in London. Dropwort, with its creamy-white flowers, is a close relative of the commoner meadow-sweet.

In addition to the above species, these steep flowery meadows are also graced by plants of other grassland types. Devil's-bit scabious, field scabious and, as mentioned above, the rarer small scabious, are all found here and together they form mauve drifts, alive with bees and butterflies, attracted by their abundant pollen and nectar. It is extremely unusual in London to find all three of these related plants growing on the same site.

Bulbous buttercup, birdsfoot-trefoil, black medick, cat's ear, hop trefoil and lady's bedstraw provide splashes of yellow, while common vetch and hardheads lend a touch of purple at various times of the year. The variety is still further boosted by crow garlic, ox-eye daisy, yarrow and hairy tare.

The dominance of grasses varies from place to place and additional species include yellow oat grass, barren fescue, Yorkshire fog, wall barley, smooth-stalked and rough-stalked meadow-grasses, oat grass, couch grass and barren brome.

On the northern half of the eastern side, the substrate appears to be more acidic in places, as indicated by the presence of a patch of bracken, together with sheep's sorrel, wall speedwell, cat's ear and mouse-ear hawkweed.

The old Victorian walls support the odd tuft of wall-rue, a delicate fern of dry stony places, and the purple and white, snapdragon-like flowers of ivy-leaved toadflax, as well as upright brome and common mosses and lichens.

Two introduced species of note can be found in small numbers here – these being reflexed stonecrop, whose bright

yellow flowers are very attractive to bees, and salsify with its beautiful purple, dandelion-shaped flowers. Many other common and colourful wild flowers associated with disturbed soils can also be found around the reservoirs and roadsides.

Although the majority of the site consists of grassland, there are some bushes, particularly of dog rose, elder and birch, present here and there. Broom is, however, the most abundant, several bushes occupying the western slopes while mature specimens top the river wall, screening the site still further from the Thames. Though a nuisance in terms of management, they form a fine sight when flowering in their full yellow glory. Beneath the broom on the river wall, Canada geese make their large, down-lined nests. Canada geese also nest in the dry reservoir to the north and on narrow walkways between the reservoirs, providing an intimidating hazard to staff on site.

Other birds present in the breeding season include grey wagtails, great crested grebes, mallards, coots and tufted ducks, a few pairs of the latter breeding in the surrounding grassland. In the winter the reservoirs are used by small numbers of a variety of waterfowl and gulls, but the small size of the water bodies and the scarcity of feeding resources limits their population.

The abundant wild flowers attract a good display of butterflies (e.g. small heath and common blue), bees, grasshoppers and other invertebrates. Carnivorous insects such as dragonflies and the brilliantly coloured turquoise and black damselflies can be seen hunting over the grassy slopes or resting on arching grass stalks.

There is no public access to the reservoirs but a panoramic view can be seen from the railings on Portsmouth Road. The diversity of the grassland on the eastern bank can be seen from this vantage point, but the beauties of the opposite bank need a closer viewpoint to be appreciated.

KI BI 9 Kingston Polytechnic, Kingston Hill

Grid ref TQ 209 715
Area 9.2 ha

This site consists of excellent mixed deciduous woodland which completely surrounds Kingston Polytechnic's Kingston Hill campus, together with a small but well cared-for pond and a section of acidic grassland set within the trees. The site lies on London Clay and overlying deposits of the acidic Claygate Beds.

The period and modern buildings of Kingston Polytechnic occupy an impressive site on top of a ridge with extensive views northwards across Richmond Park, eastwards to Wimbledon Common and southwards to the steep slopes of Coombe Hill Golf Course.

The area was once part of the ancient Coombe Wood, other vestiges of which survive on the nearby Coombe Hill Golf Course and at Hopping Wood. The grounds of the polytechnic were formerly those of Kenry House, a minor Gothic villa which still survives, although it is now swamped by buildings and huts from the 1960s onwards. The polytechnic site also includes the impressive house and grounds of Coombe Hurst to the south-west.

The land on which both houses were built originally belonged to Earl Spencer. In 1832 he granted a 99 year lease on part of this site to William Ogle Hunt who started to build a house straight away, called rather unoriginally "Coombe Wood". In 1835 Earl Spencer granted a 999 year lease on another section to Samuel Smith, who also immediately started to build his house, Coombe Hurst. Smith was a barrister, examiner of petitions of private bills in the House of Commons, and also Florence Nightingale's uncle. A map of the Coombe Estate dated 1837 shows the area of parkland surrounding both houses, carved out of the ancient Coombe Wood which still stretched away to the south and west.

In 1874 ownership of the Coombe Wood house passed to the 4th Earl of Dunraven, whose father had been created Baron Kenry. After that the name of the house was changed to "Kenry House". It was empty from 1933 until 1950 when Gipsy Hill College took over the house and grounds.

Samuel Smith lived at Coombe Hurst until 1881 and the house was subsequently occupied between 1885 and 1914 by Captain R.C. de Grey Vyner. He owned 26,700 acres of land in the rest of the country and had four other residences. From 1914 until 1923, Coombe Hurst stayed empty and then between 1923 and 1933 was the home of Baron de Forest, a baron of the old Austrian Empire and a former Liberal MP After 1933 Coombe Hurst was going to be demolished but instead it was bought by Mr Parkes, the chairman of Wandsworth Greyhound Stadium. He had the whole interior rebuilt and modernised, and lived there until 1940. Between then and 1948 it remained empty, when Gipsy Hill College took it over. Two years later the college expanded to Kenry House. Gipsy Hill College merged with Kingston Polytechnic in 1975.

Being on a ridge, the grounds of the polytechnic slope down quite sharply from the main complex of buildings, particularly to the north and east where the majority of the woodland lies.

Scattered throughout the woodland are majestic oak trees, like sentinels from a former age. These are doubtless survivors of the period before 1832 when this was part of Coombe Wood. Their growth form shows that the standard trees then were well spaced. The oaks have broad crowns of gnarled and twisted limbs, some torn away during storms, each weatherbeaten tree individual in shape and character. Such

stag-headed trees provide many different micro-habitats, such as flaking bark, damp crevices, dead and dying timber and shady crannies, which suit a multitude of living organisms, especially insects and other invertebrates. These in turn provide food for insect-eating birds, and treecreepers, nuthatches and great spotted and green woodpeckers are likely to be among the woodland fauna.

Although these ancient oak trees originated in Coombe Wood, the majority of the other trees in the wood are younger. The many fine and straight beech trees with slender crowns were doubtless planted, perhaps last century, along with some sweet chestnut, larch, Scots pine and whitebeam. Birch and sycamore are abundant in places, and these will have established themselves here more recently. A patch of dead elm is to be found on the north side. The presence of a few hornbeam trees is more puzzling; hornbeams are generally indicators of ancient woodland, since they rarely spread to new woods without human intervention, and are not often planted, yet these specimens show no evidence of coppicing and are not of very great age, so are unlikely to be remnants of Coombe Wood.

The storms of the last few years have had a noticeable effect on the trees, particularly towards the south-east, where the canopy is quite thin. Along the eastern side of the ridge and to the north, the woods have obviously been rather more shielded from the full force of the winds.

There is a reasonably well developed, though variable, shrub layer. Throughout much of the wood this is formed, in varying proportions, by holly, hawthorn, yew, elder, cherry-laurel, hazel, elm, tree seedlings and rhododendron. North of the main entrance drive the rhododendron has invaded so successfully that it is totally dominant, an impenetrable thicket, most attractive when in flower but which is excluding almost all other vegetation. A group of old hazels and a small grove of aspen to the south of the entrance drive may well date from the original woodland.

The ground flora is mostly dominated by dense bramble, and also in places ivy, which climbs over and hides the dead timber on the forest floor. Doubtless further survey in the spring would reveal many species surviving in small numbers from the ancient wood. Dead wood is quite a feature of the site: some of the many trees and boughs which have fallen in storms have been allowed to rest where they lay, or the larger material cut into sections and left as log piles. Dead wood is often lacking from many woodlands, especially those in urban areas. It provides additional good wildlife habitat, especially for woodpeckers, invertebrates and fungi. Great spotted woodpeckers actually feed a good deal on dead wood on the ground.

The stately white house of Coombe Hurst lies near the western edge of the site, and an impressive sweep of lawn culminating in a small pond stretches down from the building. This is a secluded and peaceful spot, enclosed on most sides by trees, particularly to the south and east. The sward is composed of fine-leaved species such as bent-grasses and fescues together with a high proportion of mosses, amongst which grows an assortment of plants characteristic of acidic grassland. These include heath bedstraw, sheep's sorrel and mouse-ear hawkweed, which is easily distinguishable from other yellow-flowered plants of the daisy family by its paler, lemon-yellow blooms. The attractive and obviously cared-for pond contains a selection of water-loving species, such as water plantain, bur-reed, sedges and water mint. Four species of amphibian have been seen here and this is the largest number for any pond in Kingston. Nearby damp patches support remote sedge, a species which is not common in London. A small stream passes beneath a rustic stone bridge and then trickles eastwards into a grove of rhododendrons, whence it goes underground.

The site provides good habitat for a range of birds and other animals. Muntjac or fallow deer may be present. The former are shy and diminutive Chinese deer and are most inconspicuous. Their droppings are all the evidence most visitors are likely to see of their presence. The latter may escape from neary Richmond Park.

Management of the woodland appears to be minimal and it is very much left to its own devices. The rhododendron should be prevented from encroaching further into the woodland. The extensive bramble, whilst not necessarily promoting a good ground flora, is appreciated by the animal inhabitants of the wood. The pond and the lawn of Coombe Hurst are far more intensively looked after and yet, particularly in the case of the pond, this is still conducive to the interests of nature conservation. There are some well-used paths, including one or two through the woodland, but the majority of the woodland to the east and north is rarely disturbed.

The site is owned by Kingston Polytechnic and access is limited to those with business at the polytechnic or by prior arrangement (telephone 081 547 2000).

10 Sites of Borough Importance Grade II

Ki.BII 1 Raeburn Open Space

Grid ref TQ 198 674
Area 4.8 ha

This pleasant and peaceful site consists of a network of elongated fields separated by overgrown hedgerows and strips of woodland. Through this complex runs the Tolworth Brook, a tributary of the Hogsmill River. The various paths provide enjoyable walks through the site, which has a distinct countryside feel.

The tithe map of 1839 shows the central part of this site as meadow with mostly arable fields on either side, a land use that carried on well into this century. During the last war the southern fields were used for allotments and the site is now completely surrounded by housing, although this is by no means obvious when you walk through it.

The brook flows northwards through partly-culverted banks which become more natural towards its confluence with the Hogsmill River. The stream bed consists mostly of gravel, the water is clear and fast-flowing, and abundant shoals of small fish, mostly three-spined sticklebacks and minnows, slip by, past the long strands of waterweed. Celery-leaved crowfoot and fool's watercress are the only two species of emergent plants present in any numbers. The vegetation of the brook varies markedly in quantity from time to time depending on the rainfall. In periods of heavy rain almost all vegetation can be swept away, particularly from those sections with a concrete base.

Since the banks of the stream are steep throughout, there is little shoreline on which marginal vegetation can gain a hold. The tops of the banks are covered by a dense tangle of cow parsley, nettle, hogweed, creeping cinquefoil, hedge garlic and creeping thistle. Common figwort is another plant growing here; it possesses tubers with an unpleasant taste and smell, but which provided sustenance in times of famine. In France, during the thirteen months' siege of Rochelle by the army of Richelieu in 1628, the garrison survived for a considerable period on these tubers. The French still call common figwort *Herbe du Siege*. About halfway downstream a bridge provides access for Leisure Department vehicles. At this point the culverted walls of the stream slope, and ivy-leaved toadflax maintains its precarious hold above the water. Immediately after the bridge, the stream disappears under dense elm scrub and moves in and out of shade for the rest of its journey to Elmbridge Avenue and the end of this site, shortly before it flows into the Hogsmill.

On the west side of the brook, the fields are relatively small, giving an impression of an enclosed, secluded corner of countryside. In early summer the creamy-white blossoms of the hawthorn and elder bushes in surrounding hedges overhang the even whiter cow parsley beneath, like a scattering of snow, while their combined, rather sickly scents pervade the air. Most of the fields are closely-mown, but it has been the policy of the Leisure Department to leave wide, uncut margins at the edges. The result of this management has been to produce a colourful display of common wild flowers, including cut-leaved cranesbill, wood avens, forget-me-not, rose-bay willow-herb, ground ivy and ivy-leaved speedwell.

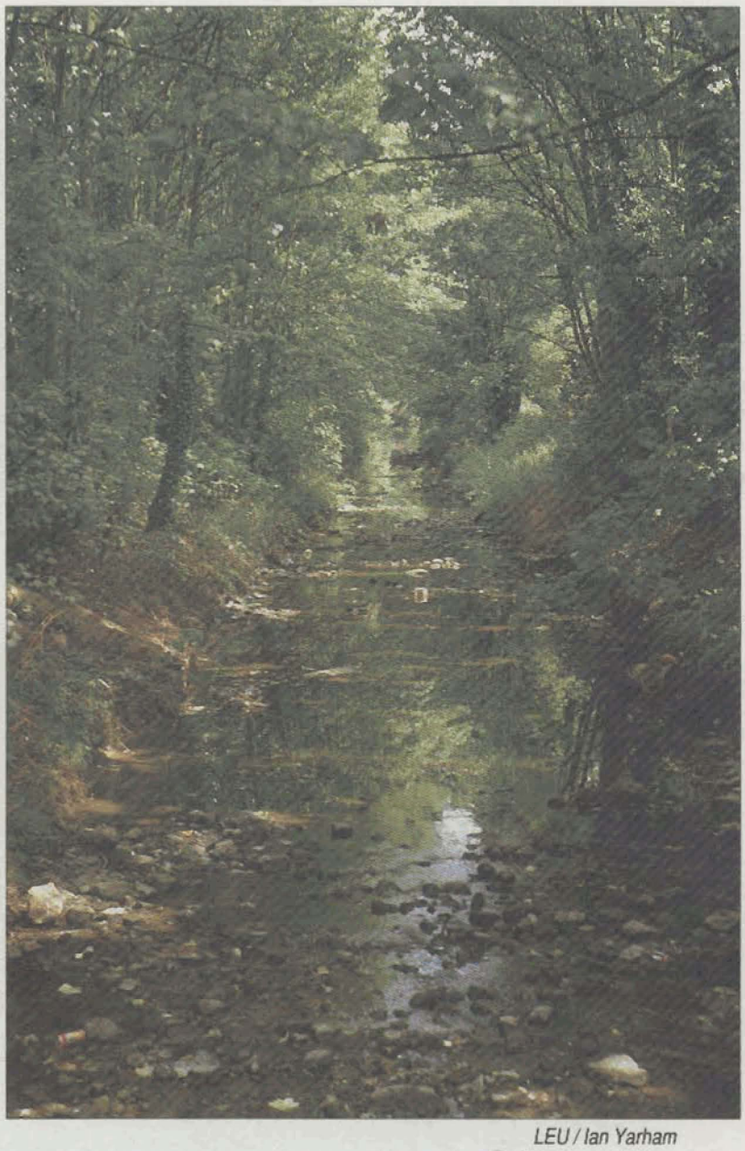
Running down the centre of the site like a backbone is a strip of scrub and mature trees which is rapidly developing into woodland. Elm scrub is dominant in parts, while elsewhere oaks take over with hawthorn and blackthorn below. Cherry, willow and sycamore are occasional additions. Beneath these trees and shrubs, lesser celandines are the first flowers to appear in spring, followed later by cow parsley, hedge garlic, hedge woundwort and hogweed, fighting their way through brambles and bindweed. The woodland strip is well-used by common garden birds. Long-tailed tits breed here and flocks of fieldfares sometimes visit in cold weather.

At the southernmost end of the open space is a large, roughly triangular field which has been left unmown. On the western side of the brook with no through paths, this is a wilder, less visited place and is home to foxes. The grassland itself is composed mainly of coarse species which prefer neutral soils such as oat grass, Yorkshire fog and barren brome, together with lesser amounts of meadow foxtail, lop-grass and meadow-grasses. Scattered throughout, and providing a food source for bees and butterflies, are common wild flowers such as meadow vetchling, black medick, common vetch, goat's rue, crow garlic, coltsfoot and autumnal hawkbit. Lack of mowing has allowed oak seedlings to survive, and these will soon take over much of this field if not cut down. The speckled wood butterfly is a characteristic species of this site, as it requires long grass in shade for laying its eggs.

One of the boundaries of this field is formed by a drainage channel whose banks are obscured by a hedgerow, unusual in that it contains a large colony of aspen, together with specimens of dogwood, hazel and guelder rose. The aspen's rounded leaves flicker in the slightest breeze because of its long, flexible leaf stalks. The ground below is heavily shaded but Lords-and-Ladies, common mallow, bluebell and herb Robert can be seen there.

LEU / Ian Yarham The view from the footbridge across the Esher By-pass cutting

John Archer The five-spot burnet, a distinctive day-flying moth, can be seen on the grasslands of the Esher By-pass cutting



LEU / Ian Yarham
The Hogsmill River flows through a sylvan setting at Riverhill

The grassland on the Malden Golf Course is mostly highly manicured, but there are some fine trees
LEU/Ian Yarham

In one or two places are small damp depressions dominated by the coarse tussocks of tufted hair-grass, together with flote-grass, conglomerate and soft rushes and hammer sedge.

Raeburn Open Space is managed as an informal park by the Borough, and is scheduled as Metropolitan Open Land. A footpath runs the entire length of the site and links up with the Hogsmill Valley River Walk in one direction, and through the old Surbiton Lagoon site to Raeburn Avenue in the other. There are ongoing developments at the lagoon including landscaping with nature conservation in mind.

KI.BII 2 "The Woods" and Richard Jefferies Bird Sanctuary

Grid ref TQ 182 671
Area 1.4 ha

This small town park, close to Surbiton station, includes a fenced off section forming a bird sanctuary. Both the park and the reserve are of nature conservation value for their woodland and small areas of grassland.

The park is situated on a west-facing slope, marking the boundary of the Thames floodplain, and is underlain by London Clay. In the nineteenth century, clay was extracted for brick-making. The Kingston Tithe Map of 1840-42 shows the plot consisting of a cottage, garden and brickyard. At the time of the First Edition Ordnance Survey Map of 1865 the picture was rather different, with an elongated lake shown along the foot of the slope and a large house surrounded by lawns just to the west of this. A network of paths skirted both the house and the lake and there was mixed woodland of deciduous and coniferous trees to the east and north of the latter. It is possible that the lake was what was left after the brick earth had been removed. It was still present in 1880 but by the turn of the century had gone. The house, which was called The Wood, was demolished some time after 1933. The Victorian layout of the house, woods, lake, paths and lawns can clearly be followed today. The activities of the brick-makers have created a steep, in places almost vertical, face between the lower, fairly flat, public part of the park and the upper sanctuary area. A wet ditch and small pools at the base of this slope are all that remains of the old lake.

The site was purchased by Surbiton Borough Council under a compulsory purchase order in 1947 and in 1948 suggestions were put forward to turn it into a bird sanctuary. It was also suggested that it should be named "Jefferies Wood" to commemorate the centenary of the birth of Richard Jefferies (1848-1887), one of the most distinguished residents Surbiton has ever had. However, it was not until 1980 that the title "Richard Jefferies Bird Sanctuary" was officially bestowed on the eastern part of the site by the Royal Borough of Kingston. Jefferies was a naturalist and novelist who lived in Surbiton for several years, at what is now 296, Ewell Road. In his *Nature near London* (1883) he describes in vivid detail the wildlife and countryside in rural Kingston then. Tragically, he died at the young age of 38 after prolonged illness. A memorial plaque to him can be seen in Surbiton Library.

The public part of the park, known as "The Woods", consists of two small patches of mown grass and areas of planted trees and shrubs. Many planted specimens are non-native species, as would be expected on a site previously used as a garden.

Within the trees are several grassy clearings. The first of these lies at the lowest part of the park, beside its western boundary, and is reached via the gate from Oak Hill Grove. Though the grass here is dominated by perennial rye-grass which is regularly mown, around the margins common wild flowers can be seen, such as germander speedwell, mixed with escapes from the neighbouring gardens, including alkanet, an attractive but bristly plant with deep blue flowers. The surrounding woodland, which gives this open area the feel of a woodland glade, is composed of oak, ash, hazel and hawthorn, together with exotic species such as larch, horse chestnut, sycamore, copper beech, false acacia and snowberry. Bluebells and other woodland flowers were introduced at the time the site was opened to the public in the early 1950s. In spring, ramsons, a shade-loving member of the onion group, sends up its flower stalk, surmounted by white, starry flowers, filling the woodland floor with its garlic scent. Further up the slope is a second clearing, again mainly consisting of rye-grass. Surrounded by trees and a dark, humid undergrowth, a more secluded atmosphere prevails here. The woodland continues up the slope to a fence which divides off the bird sanctuary.

The bird sanctuary begins at the ditch on the site of the old lake. Choked with leaves and excessively shaded, few if any plants will be able to live here unless the basin is dug out to provide wetter areas and some of the overhanging trees and branches removed to allow sunlight to reach the woodland floor.

Almost immediately after the ditch, as one continues to head east, the steep, in places precipitous, artificial escarpment ascends into the dense undergrowth of the sanctuary. Here the trees and shrubs are largely of native species, suggesting that the vegetation may at least be partly self-established. Mature oak trees form much of the woodland, but hornbeam, lime (almost certainly planted here) and the non-native sycamore are also abundant, while the odd Turkey oak and young horse chestnut can be seen, also probably planted. Elm was formerly a major part of the community on the level land above the slope, but dead trees, ravaged by Dutch elm disease, were felled and much of the dead wood