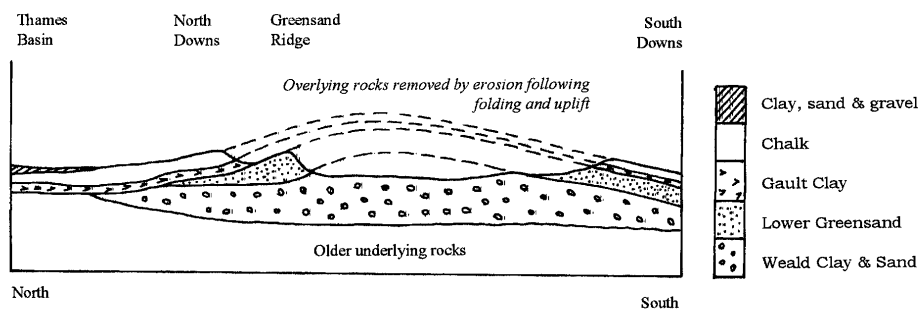


## 6 LANDSCAPE OF BUCKLAND

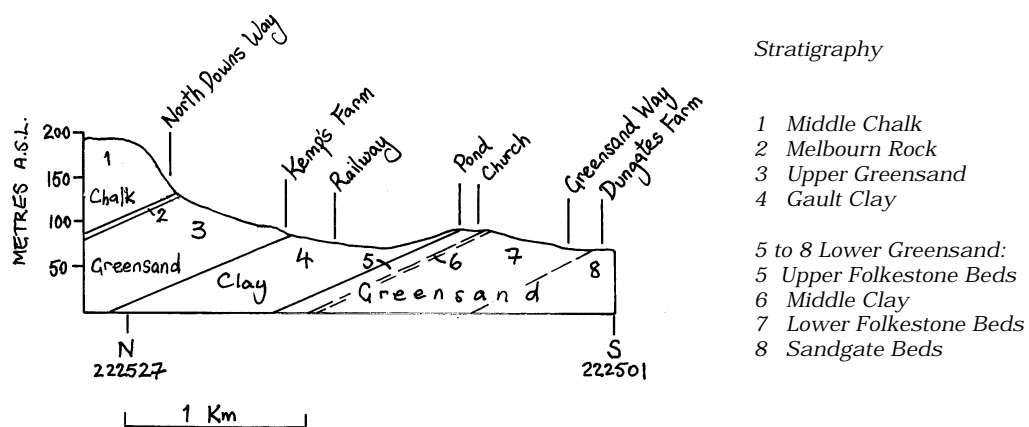
### 6.1 Landforms

The geology of Buckland lies within the Wealden anticline (an upward thrust of sedimentary rocks). The rocks are of 'Lower Cretaceous' age, about 120 million years old. At the time of the formation of the Alps around 100 million years ago, the rocks of south-east England were compressed into an anticline (upward thrust) which has since been eroded away. The rocks most resistant to erosion form the higher ground, namely the chalk and the Greensand, while the Gault and Wealden clays in between have been eroded and generally form the lower lying land. The geological section demonstrates that the North Downs and South Downs are the opposite eroded escarpments of the same geological structure.



*Simplified geological section through the Wealden Anticline*

Although Buckland is less than 3 kilometres from north to south, the parish boundary encompasses an interesting 'section' from the top of the North Downs chalk escarpment, down through the gault clay, and rising up again to the smaller 'Greensand Ridge'. The North Downs and the other geological boundaries in the parish run roughly east-west. The section is taken north-south through the line of the church.



*Transect north-south across Buckland*

The chalk at the top of the escarpment is 'Middle Chalk', the Upper Chalk beds outcropping further north. As the Middle Chalk is massively bedded it is ideal for quarrying and indeed has been quarried for several

generations (Gregory, 1970). The 'Old Chalk Pit' managed by Buckland Lime Works was by the old road over the downs to Walton (now the footpath extending from the end of Lawrence Lane, north-west of Underhill farm). The larger chalkpits in neighbouring Betchworth were worked until recently for lime manufacture and are now being reclaimed as a landfill site.

The Upper Greensand below the chalk was also quarried for inclusions of a greenish-grey sandstone called 'hearthstone', used for whitening hearths and stone floors. Beneath this, is a harder sandstone, sometimes called firestone or Reigate Stone, which is used in some local buildings, including Petty's Farm, Yew Tree Cottage and Oak Cottage (section 5.3 and 5.6). This was quarried commercially just beyond the eastern boundary of the parish (Gregory, 1970).

The Gault Clay lies in the 'Vale of Holmesdale' which passes through the parish. The soils are heavy and often waterlogged, and useful only as permanent pasture.

The Lower Greensand 'Folkestone Beds' are those which are quarried and which occur south of the church and along Old Road. However, near the top of the Greensand are local clay beds which give a perched (raised) local water table, and explains why some gardens have patches of heavy clay soil, not just sandy free-draining soil.

In the south of the Parish, Gregory (1970) identifies a small embankment west of Dungates Farm which the parish boundary follows. This is considered to be the junction of the relatively soft Sandgate beds and the more resistant Hythe beds, which form the hill crest to the north of Wonham Lane. Both the Sandgate and Hythe beds are within the Lower Greensand.

## **6.2 Agriculture**

Agriculture is still the main land-use within the parish, but obviously there are considerably less local people employed in agriculture than there were in the past. Gregory (1970) analysed the 1841 census of Buckland, and of 131 persons employed, 55% were working in agriculture, mostly as labourers.

### ***The price of muck in 1774***

A 1774 Deed survives (SHC) for an 18-year lease of Colley House Farm and 172 acres in the parishes of both Buckland and Reigate. Indeed, Colley House farm building itself had the Buckland parish boundary shown going right through the middle of the building (this was still the case in 1923).

The owner, William Scawen of Woodruff Grange, Surrey, was to lease Colley House Farm to John Hewitt of Buckland who was the tenant farmer. This deed contained the details of how the land should be farmed. For example, 'the 16 acres below the hill shall be harrowed, ridged and prepared fit to be sown with turnip seed or wheat, and shall be regularly dressed with lime and dung'.

Proving that reading old records sometimes can raise a smile, William Scawen agreed to pay John Hewitt on the first week of May each year for

compost, muck and dung which had to be left in a yard for that purpose. The deed states that the sum of money had to be agreed upon, and if they could not agree, a third 'honourable' person was to be found to arbitrate a value for the muck and dung. All this arrangement is preserved in copper-plate writing on the vellum deed.

### ***Agriculture in 1813***

There is a fascinating record at SHC of the evidence given by Buckland villagers about the tithe payments in 1813. Tithes were payable by the landowner to the Rector for the support of the Church and Parish. The case was brought by the Rector, Reverend Willoughby Bertie, against Francis Henry Beaumont to contribute the tithes as laid down by the law. It was clear that the Reverend's 'only income' was from the tithe payments, and these became insufficient for him to sustain his comfortable life. Fourteen 'old boys' of the village who had knowledge of the tithe payments each gave evidence; for example:

- Thomas Clarke, aged 78, lived in Buckland from 1755-1798, and helped collect tithe payments for Reverend Dr Eyre.
- John Budd, aged 73, born and lived in Buckland all his life, working for several farmers as a farm labourer.
- Michael Stacey (the elder), had lived in Buckland for 66 years, and his father before him until his death 38 years ago. Both had paid tithes all their living memory.

The values of the tithes were valued in 1813 as shown below, where 1d is one old penny (0.004 of £1) and 1sh is one old shilling (0.05 of £1) :

6d / acre for ancient meadowland  
4d / acre for sown grassland (clover, rye, St Foin and other artificial grasses)  
1d / garden  
1d / cock  
4d /calf  
3d /lamb  
1sh/acre for orchards  
1d /acre for gardens  
5 sh/ acre for flax  
5 sh/acre for Green Peas  
10 sh/ acre for hops

However, despite the above valuations, the evidence from the villagers demonstrated that for generations the tithes had only ever been partially collected, by giving the church grain and corn 'in kind'. The monetary value of tithes had rarely been collected in living memory, even though the law allowed for it. It seems that the Reverend Bertie was aiming to start this new and not very popular practice of collecting additional tithe money.

### ***Agriculture in 1846 (Tithe Survey and apportionment)***

The 1846 Tithe survey is accompanied by detailed notes and summary statistics on the land use.

In 1846, Buckland comprised 1,744 acres, 1 rood and 8 perches, of which 55 acres and one rood is Glebe land (owned by the Church) which was absolutely free of tithes. In addition, a Mr John Clutton was the owner of 350 acres and 8 perches in Hartswood (Buckland Detached), which was exempt from tithes as he owned the freehold of the land. The remaining land use measured for tithe payments was as follows:

Arable	809 acres
Meadow and pasture	408 acres
Wood and furze	75 acres
Gardens, cottages and roads	47 acres

The tithe fees payable were unchanged from those listed above in 1813.

The parish was assessed with an annual rent charge (sum of the tithes) of £290 levied on the different landowners, but falling mostly to Mr Beaumont, who owned most of Buckland and whose farms were occupied by tenant farmers as follows:

*Table of farms in 1846 interpreted from the Tithe Map Survey (SHC)*

FARM	OWNER <sup>^</sup>	OCCUPIER/TENANT	No. of PLOTS*
Kemp's Farm	FHB	William Kirkham	45
Petty's Farm	FHB	William & James Hewitt	28
Lawrence & Dowdes Farms	FHB	James Field	51
Hill Farm	FHB	James Hewitt	32
Dungate's Farm	FHB	John Hewitt	25
Colley House Farm	FHB	Thomas Bowring	30

<sup>^</sup> FHB = Francis Henry Beaumont, Lord of the Buckland Manor

\* number of tithe plots in Buckland in the farmstead (mostly fields, orchards or cottage plots)

Bridlecombe Barn, north-west of Kemps Farm, was at the time of the tithe survey occupied as a house, garden and orchard by John Annis Cooke (also of Wildecroft), but the surrounding land was farmed from Kemps Farm.

### ***Current Agriculture***

The current land of Buckland is under wheat, barley, rye and kale, and permanent pasture for fattening sheep and cattle. Several fields support permanent pasture for grazing horses. The continuity of the Estate managing the largest part of the parish has helped the continuity of the agricultural landscape.

In 1989, Adrian Sanders talked to the Parish Council and stated that stock were being released due to the falling price of dairy produce and constraints of EEC rules. 2300 trees and 1800 yards of hedging had been planted in 1989 alone, providing habitat for pheasants and partridges for

the development of the estate shoot. The popularity of horses, for both leisure riding and for competition, has put demands on pasture which had previously been occupied by dairy herds.

Currently, the fields beneath the Downs on the Upper Greensand are planted with cereals, and the fields on the Gault Clay and Lower Greensand are typically permanent pasture for the transient fattening of sheep and cattle, and grazing of horses.

### **6.3 Footpaths and Bridleways**

#### ***North Downs Way***

The North Downs Way links Farnham in Surrey to the White Cliffs of Dover in the east, a distance of over 153 miles. It was officially opened as a long Distance path in 1978. The path largely follows the North Downs escarpment, either on the top or along the foot of the scarp. In Buckland the North Downs Way enters the parish from Pebblecombe Hill, Betchworth in the west, joining the path which is the northward extension of Rectory Lane. It then traverses roughly east-west near the bottom of the chalk escarpment and exits the parish toward the north-east boundary as the path joins Cliftons Lane. The path then traverses steeply to the top of the Downs escarpment immediately east of the parish boundary in neighbouring Reigate.

#### ***Pilgrim's Way***

In 1170, Thomas Beckett, Archbishop of Canterbury was executed by followers of King Henry II. Political and religious rivalry led to the shrine of Saint Thomas (Beckett) in Canterbury becoming a centre of medieval pilgrimage from all parts of Britain and Europe. Winchester, the major city of Wessex at the time was a popular starting point for this pilgrimage, and hence our Pilgrim's Way. Chaucer's Canterbury Tales follows a different route of pilgrims from London to Canterbury in 1386, and although this route may have been more popular.

The Winchester to Canterbury 'Pilgrim's Way' is now widely accepted as a Victorian myth, which has been perpetuated since the Pilgrims Way has appeared on early Ordnance Survey maps. As recently as 1971, Wright suggests that 'there was probably almost as much traffic on the North Downs Pilgrim's Way as the London to Canterbury route', which perpetuates the myth with no supporting evidence.

The 'alleged' Pilgrim's Way crosses Buckland en route from Winchester to Canterbury, a distance of 130 miles. Thomas (1932) says the Pilgrim's Way 'sums up all qualities of roads except those of the straight highway. It is a cart-way from farm to farm; or a footpath only, or a sheaf of half a dozen footpaths worn side by side; or no longer needed except by the curious, it is buried under nettle and burdock and barricaded by thorns and bryony brines. Sometimes it is hidden among untended hazels or among chalk banks topped with beech and yew, and the kestrel plucks the chaffinch there undisturbed'.

Hillaire Belloc, in his book on the Pilgrim's Way called *'The Old Road'* (1904), suggested that through Buckland, the Pilgrim's Way followed the 600 foot contour on the crest of the Downs, whereas the O.S. map shows

the Pilgrims Way, about half-way up the escarpment at 400 feet. He points out that the adjoining OS sheet plots Pilgrim's Way on the crest of the Downs, 'in its right place', so the two map sheets did not join up!

The lower track is supported by the presence of yew trees, which also mark a less-disputed course of the 'Pilgrim's Way' both to the east and west of Buckland. Through the Parish of Buckland, the 'Pilgrim's Way' is the same path as the North Downs Way, but immediately to both the east and to the west of the Parish boundary, the paths diverge, the North Downs Way taking a path on the crest. The Harvesters Arms (section 4.4) was considered to be "on" the 'Pilgrim's Way', though in fact it is half a mile or so to the south (Surrey County Council 1961).

In the 1930s the path was blocked by the Estate landowner. After Council enquiries in 1936-37, agreement was reached in 1943 (Surrey Mirror, 19 Mar 1943) to re-open the path of the (lower) Pilgrim's Way, with only a minor deviation from the presumed route (immediately east of Pebblecombe Hill to north of Kemps Farm). It is this lower route to which walkers are directed in more recent footpath guides, such as Wright (1971) and Charles (1990).

### ***Greensand Way***



The Greensand Way crosses Buckland in the south of the Parish, en route from Haslemere (Surrey) in the west, to Hamstreet (south of Ashford, Kent) in the east - a distance of 108 miles. This long-distance footpath is a compilation of local footpaths, first promoted as a single long-distance path in the late-1980s. The path is promoted by the Ramblers Association and the County Councils of Surrey and Kent.

*Buckland Path thro' Sandpits. Postcard c. 1900 by J Skinner of Betchworth*

The Greensand Way enters the south-west corner of Buckland near the corner of Old Road and Sandy Lane, where it goes up the steep steps between the cottages, shown in the postcard alongside.

The path crosses the field and continues through stiles to cross the next field offering a good view of Buckland Lodge (section 4.5). The Greensand Way then continues down Dungates Lane past Dungates Farm and exits the south-east parish boundary towards Reigate Heath (Surrey & Kent C.C., 1997).

### ***Beating the Bounds***

The annual 'Beating the Bounds' is a medieval tradition where villagers walked around the Parish Boundary, so that knowledge of the location of the parish boundary could be passed down to all the villagers. This was, of course, before the advent of detailed Ordnance Survey maps of the nineteenth century.

The walk was usually held in 'Rogation Week' - the week before Ascension Day - early May, and often organised by the Parson or Rector. This ancient tradition has been revived in various periods by the Parish Council. In 1945, Mr Tritton invited villagers to join the walk, spread over two evenings, the 7<sup>th</sup> and 8<sup>th</sup> of May. In 1948, the *Surrey Mirror* reported that 'the north-eastern part of the boundary was beaten by members of the Parish Council, accompanied by the Rector and about 20 residents, armed with the usual sticks. Assembling at Underhill Farm, the residence of Mr and Mrs Terence Sanders, the party walked up Buckland Lane by the chalkpit to the Banstead boundary. Proceeding north-easterly they passed a lovely wooded glade carpeted with bluebells, a delightful spring scene, and followed the track which led to Mount Hale and Juniper Hill, the residence of Lady Strakosch, who kindly provided refreshment and rest for the climbers.'



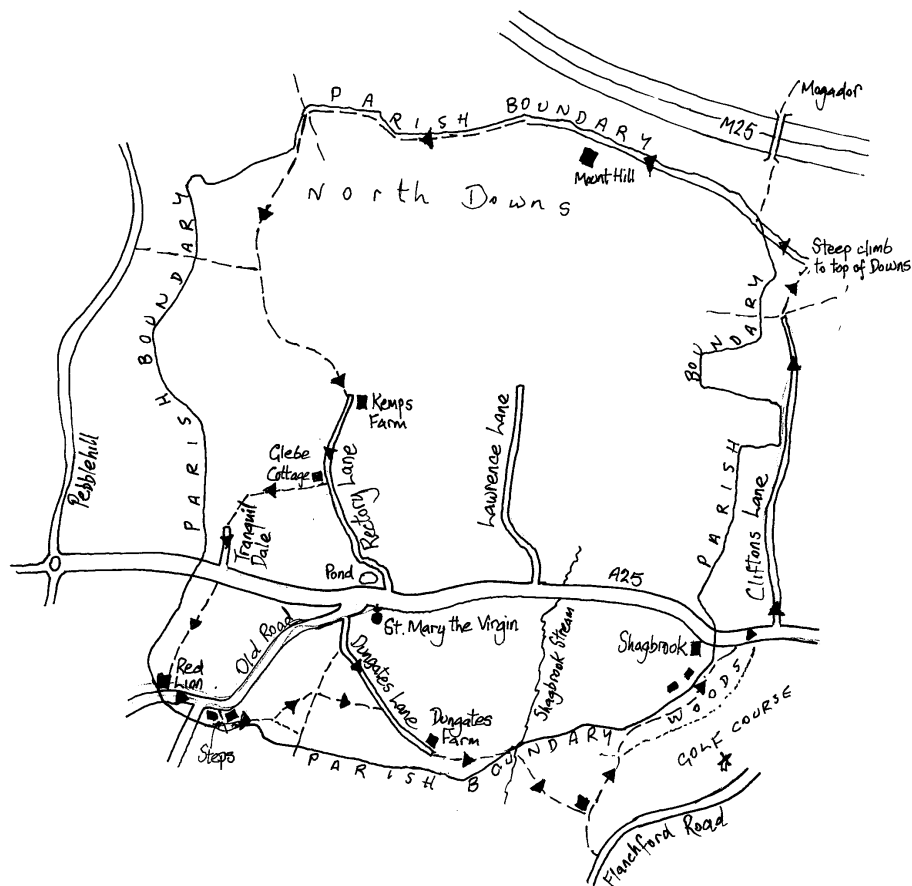
*Photo of Beating the Bounds 1948 courtesy of Mollie Fordy  
(who took part in the 1948 walk)*

In 1954, the Reverend Westrup said in his address to Buckland residents (BPM May 1954): 'Rogation days are traditionally kept for special prayer for God's blessing on the fruits of the earth and the labours of men in supplying our bodily needs. I hope you will come to church on Rogation Sunday Evening and join in the procession and service afterwards. At the various stopping places the lessons will be read by members of the congregation and prayers will be offered for the farms and gardens and the whole life of our parish'.

The walk was done again in 1958, and revived again by the BPC in 1970. This was marred by some donkeys being let out onto the road through an open gate. Apparently, the assembled masses got a 'blasting' from the niece of the landowner for letting the donkeys out. The Clerk to the Parish Council later received an apology from the landowner for his niece, saying that 'I gather from her comments that she was somewhat put out.... the young are always hasty, and she is very much an animal lover and thought that the donkeys might come to some harm in getting out onto the highway.' (Letter to BPC, 1970).

At the time of writing, the Parish Council is again planning to revive the walk to celebrate the Millennium.

A walk has been reconstructed on public footpaths very close to the Buckland Parish boundary, detailed below and on the map.



*Footpaths recreating 'Beating the Bounds' of Buckland*

From the Church, proceed down Dungates Lane, past Dungates Farm on the southern parish boundary, and on to Reigate Heath. Turn left by the path through woods keeping the golf course on your right. This brings you out at 'Little Buckland Corner' on the A25 near Shagbrook (SE parish corner). Turn right on the A25 for around 100 yards and then left to walk north up Cliftons Lane to the Downs, roughly following the eastern side of the Parish. At the end of Cliftons Lane, the footpath rises steeply to Colley Hill. The whole of the grass area on top of the downs to the west is still in Buckland. Here the boundary directly follows the bridleway/house access road passing Mount Hill house on the left, which despite being on top of the downs, is in Buckland, not Mogador or Walton as you might expect. Descending from the Downs near the western parish boundary needs you to follow the path that leads down to Kemps Farm on Rectory Lane. A little further down Rectory Lane, take the footpath on the right in front of Glebe Cottage, then the footpath on the left which comes into the end of Tranquil Dale on the western parish boundary. Cross the A25 and take the footpath opposite the Shell station to the Red Lion, then turn left up Old Road to Sandhills cottages. Take the steps behind Sandhills cottages, and from the top of the steps take the path diagonally across the field, and cross the next bridleway on the easterly path which passes Buckland Lodge on your left, with the southern boundary of the parish just a field away to the south. Turning left back up Dungates Lane completes the walk - about 6 miles.

#### **6.4 Birdlife**

In the area around Reigate, Brewer recorded 113 species in his book of 1856, including merlin, sparrowhawks, kites, buzzards, tawny owls, short-eared owls and bitterns. Sheldon (1982) wrote of the birdlife of Reigate Heath, immediately to the east of Buckland, referring to the decline of snipe, wood warblers and nightjar from the 1930s to the 1950s.

However, despite an inevitable decline of species since these times, Buckland still retains an interesting bird-life. There are a few specific large populations of unusual birds, notably the flocks of green Rose-ringed parakeets and Sand Martins.

In 1995 the BPM carried a series on the unusual birds of the Parish written by Will Simpson, who reported having seen over 70 species in the Parish in the period from 1985-95, including cormorants, osprey and sandpipers, including the species detailed below:

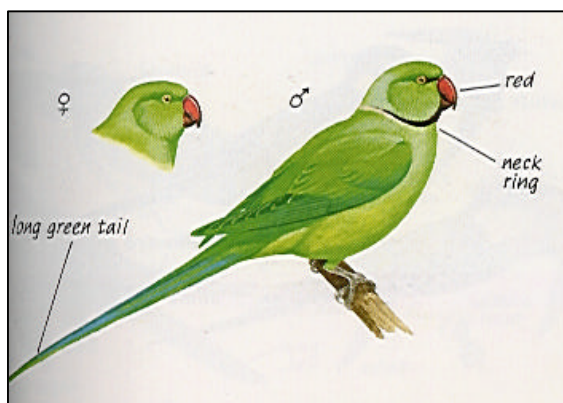
*Little Owl* - a permanent resident, several pairs breed regularly in Buckland often in large oaks. Can be best heard on calm spring evenings when they let out their 'keooo' mating call.

*Sand Martin* - attracted by the adjacent sand cliffs and water in the Buckland sand quarries, the sand martins build nests in the sandy cliff faces. They typically arrive in Buckland in early-April.

*Mandarin Duck* - a native of China, but a summer visitor to Buckland, these exotic ducks can be distinguished from others as they often land in trees.

*Grey Heron* - the largest bird resident in the parish, and not popular with pond owners, nor the village pond warden who has fish to protect.

*Lesser Black-Backed Gull* - this large seagull often visits inland Surrey and Buckland, attracted not least by the chalk quarry cliffs and landfill site in neighbouring Betchworth, usually arriving in August and seen in large flocks throughout the winter.



*Rose-Ringed parakeet* - originally from the Indian continent, some were released from captivity in the 1940s. These green parakeets with the bright red bills have bred widely in small areas within south-east England, and Buckland and Betchworth are homes to such flocks.

They usually fly in groups, the cacophony of noise makes them unmistakable.

*Green Woodpecker* - thrives in the woodlands of Buckland, and often feeds on grubs and ants on grassland and lawns.

*Fieldfare and Redwing* - regular Buckland visitors in flocks of half-a-dozen to an hundred or more in our mild winters. The Redwing can be seen feeding on yew berries.

*Blackcap* - although a summer visitor, it is believed that warmer winters and garden peanuts and grain feeders encourage the blackcaps to stay through the winter in Buckland, and they've been spotted in Buckland from 1992-1995 (BPM Dec 1995).

Since moving to Buckland in 1994 and casually watching birds in the garden, the author has seen the following 37 species of birds in the garden, attracted by yew berries, cob-nut, walnuts and figs, and a pond:

Blackbird, Blackcap, Blue tit, Bullfinch, Coal tit, Chaffinch, Collar-dove, Crow, Dunnock, Greenfinch, *Goldcrest*, Goldfinch, Greater Spotted Woodpecker, Rose-Ringed (Green) Parakeet, *Green Woodpecker*, Great tit, Grey Wagtail, Heron, Jay, *Kingfisher*, Long tailed tit, Magpie, Mallard duck, Mistle Thrush, Moorhen, Nuthatch, Partridge, Pheasant, Redwing, Robin, Rook, Sand Martins, Song Thrush, Sparrow, Starling, *Willow Warbler*, Wood Pigeon. *Those in italics have only been seen once or twice!*

The nuts attract regular visits from grey squirrels, and the pond is home to frogs, crested and common newts, toads, diving beetles and numerous other pond-life. Grass snakes and their eggs have been seen in the garden and in the pond. At least one private pond is home to the protected great-crested newts. Also worth a mention are the 'Roman snails' on the chalk grassland, which commonly reach a size of 2-3 cm.

## 6.5 The flora

In 1856 James Brewer published a book on the flora of the neighbourhood around Reigate which contains many references to Buckland, and Buckland Hill (the Chalk Downs) in particular. Many species were found there, and some bizarre anecdotal stories include:

“On two or three occasions I have met with what I considered to be an accidental variety of *Ophrys apifera* on Buckland Hill, with the point of the lobe not reflexed but pointing forward, and with the calyx leaves white; the last time I saw this, the late Professor Forbes was with me and on calling his attention to it, he at once pronounced it to be *Ophrys arachnites*; I gave the specimen to him and have not therefore one to refer to.”

Catmint (*Nepetia Cataria*) was found on “Reigate Heath and by the roadside between the Heath and Buckland”. *Polygonum dumetorum* (wing-fruited buck-wheat) was also found on this road, and was considered to be a very rare plant, appearing at the foot of the hedges after being disturbed by digging, and then disappears after the second or third year until the ground is disturbed again.

*Chenopodium Bonus Henricus* (Mercury Goosefoot) was found only in Buckland and Betchworth churchyards.

*Fragaria vesca*, the wood strawberry, was met with in great quantities on the Buckland Hills, and the *Helianthemum vulgare* (rock rose) was also abundant on Buckland Hills, also the wild rose (*Rosa rubiginosa*). *Daucus Carota* (wild carrot) was ‘abundant on the chalk hills’. Of these specimens, the wild strawberries and wild rose are still abundant on the escarpment, but the author hasn’t looked carefully for wild carrots or rock roses!

Brewer also states that *Reseda Luteola* (Dyers Rocket) was abundant on Buckland Hills. “The plant is extensively used for dyeing cotton, woollen, silk and linen goods, a beautiful yellow colour. The process is very simple. In July the plant should be collected, tied up in bundles, and hung up in a dry place. When wanted for use it is merely boiled with alum, and the goods dipped into the liquor, whereupon blue cloths become green’.

Of the current chalk flowers, perhaps the bee orchids and wild gentians remain the most pleasant ‘finds’ on the chalk downland of Buckland. These were both spotted in 1998 so have a good chance of being seen in our millennium year.

## 6.6 Buckland Sandpits

The Buckland Sandpits were established in 1925 by Robert Sanders, Lord of the Manor of Buckland. Initially the pit employed 5 men and a secretary, the labour being provided almost entirely of ex-farm workers who became available when Mr Sanders had amalgamated several farms on the estate to improve efficiencies. The first sandpit was dug with shovels and loaded onto horse and carts, but automation soon followed. The labour force increased to 20 men after a few years. The original six cottages at Tranquil Dale were built to accommodate the newcomers. In the 1930s 500-600 tons of sand per week were being sold, mostly to the building trades and construction industry. Among early contracts to

which Buckland Sand & Silica Co Ltd contributed were the stations on the Morden Underground line, the Sutton by-pass and Grosvenor House in London (Sanders 1981).

The geological name of the extracted sand is the Folkestone beds of the Lower Greensand of the Weald.

The industrial uses of the pure sand came later, when foundries became interested in the sand. Buckland sand was supplied for casting the propellers of the Queen Mary and Queen Elizabeth liners. Before the First World War the glass makers used pure silica sand from the continent, but after the war, Buckland started to process sand to the exacting standards required by the UK glass making industry.

Throughout the Second World War, Buckland sand was a scheduled industry, delivering the weekly production to the Ministry of Supply. After the war, the Sanders were instrumental in founding a trade association, SAMSA, to support the industrial uses of silica sand, and Buckland is one of only around 10 quarries in England which continues to provide silica sand of the required purity.

Although a separate enterprise from Park and Tapwood Pits, between the wars, Buckland Tileworks was operating, north of the railway line on Cliftons Lane. This was served by a siding from the railway which was also connected to the sandpits. The sidings and works were extended during WW2 when they were used as a munition store. Later the remaining buildings have been successively used for storing theatrical scenery, aircraft parts for agricultural purposes (Tarpsee 1995).

In 1970, the sandpit was the largest local employer with 37 manual workers and a total staff including management of 50 (Gregory, 1970). More recent automation has reduced the workforce to about 8 staff, but production has increased.

Buckland Sand & Silica Co Ltd was still trading until 1978, when the operation was leased to ARC Southern, a national mineral extraction company, who now operate more than 100 quarries in the UK. The company is now part of the international building materials business, Hanson plc.

ARC held their first public open day of Buckland Sand Pits on 19 September 1998. Current operations are at Tapwood - one of the finest deposits of silica sand in the country - and Park Pit, south of the A25, which produces building sand and houses the sand processing plant. In 1999, ARC was renamed under its parent company, Hanson Quarry Products Group, which is an international company with over 15,000 staff.

The current uses of Buckland silica sand include the manufacture of clear glass containers - bottles and jars, foundries for casting everyday items from car parts to outdoor furniture and central heating boilers. It is also used for water filtration, horticultural products, golf course bunkers, volleyball courts and horse-training rings. Many building projects require high quality silica sand for the production of floor screed, adhesives and groutings. These special sands are also used to give bricks their surface texture and colour and for making concrete and mortar.

Tapwood Pit opened in 1989. In 1994 ARC was given planning permission to extend the quarry to both the east and west, despite some local opposition. The extensions total about six hectares of mainly agricultural land and will be dug in phases. This means the minimum amount of sand is left exposed and the top soils and clay from each new section can be used to make good the completed one.

The sand is dug with a mechanical excavator and placed in a hopper where water is added. This sand and water slurry is then pumped through a one kilometre-long pipeline to a processing plant at Park Pit. Here it passes through an acid bath to remove iron and other impurities, before being washed ready for delivery to the customer (ARC 1998).

### **6.7 The Planned Park and Arboretum**

Legislation has dictated that Hanson must invest in the restoration of its exhausted pits. The aim is to leave behind something as good as, or better than, that which existed before quarrying began.

At Park Pit, where reserves of sand are nearing an end, around 75 acres will shortly be returned to the Buckland Estate (Dungates Estates Ltd) to be managed as a lake and arboretum. The silica sand processing plant will be protected from the lake by an earth bank.

Tapwood Pit will eventually be restored to form a lake in an attractive wooded setting and provide diverse habitats for wildlife and plants. Around 7,500 trees will be planted, though it will obviously take many decades for the young trees to become an impressive arboretum. Like Park Pit, Tapwood is also part of the Buckland Estate and will remain in the Estate's ownership both during and after the sand digging operation.

