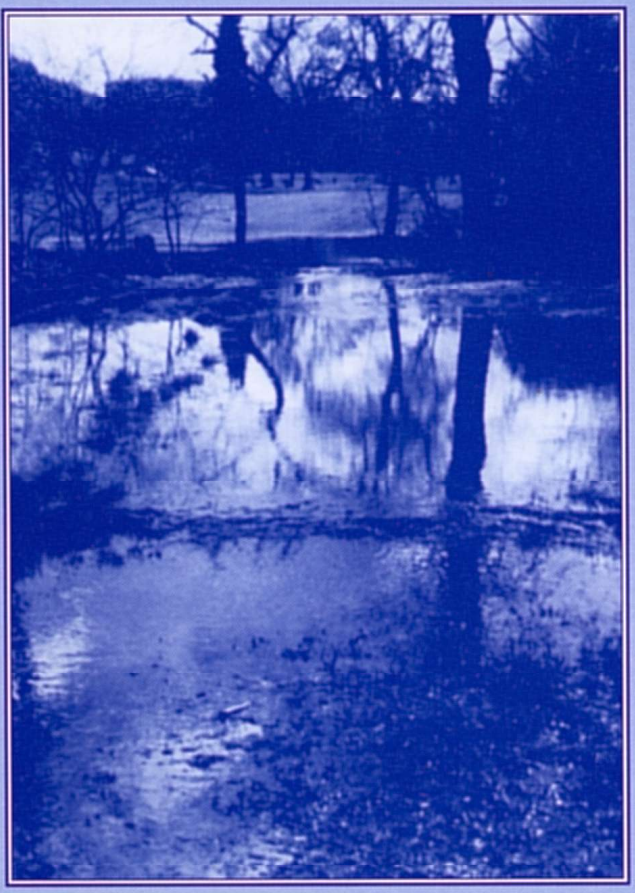
THE BOURNE SOCIETY



A Celebration of the Bourne

Produced by the Bourne Society
at the Millennium

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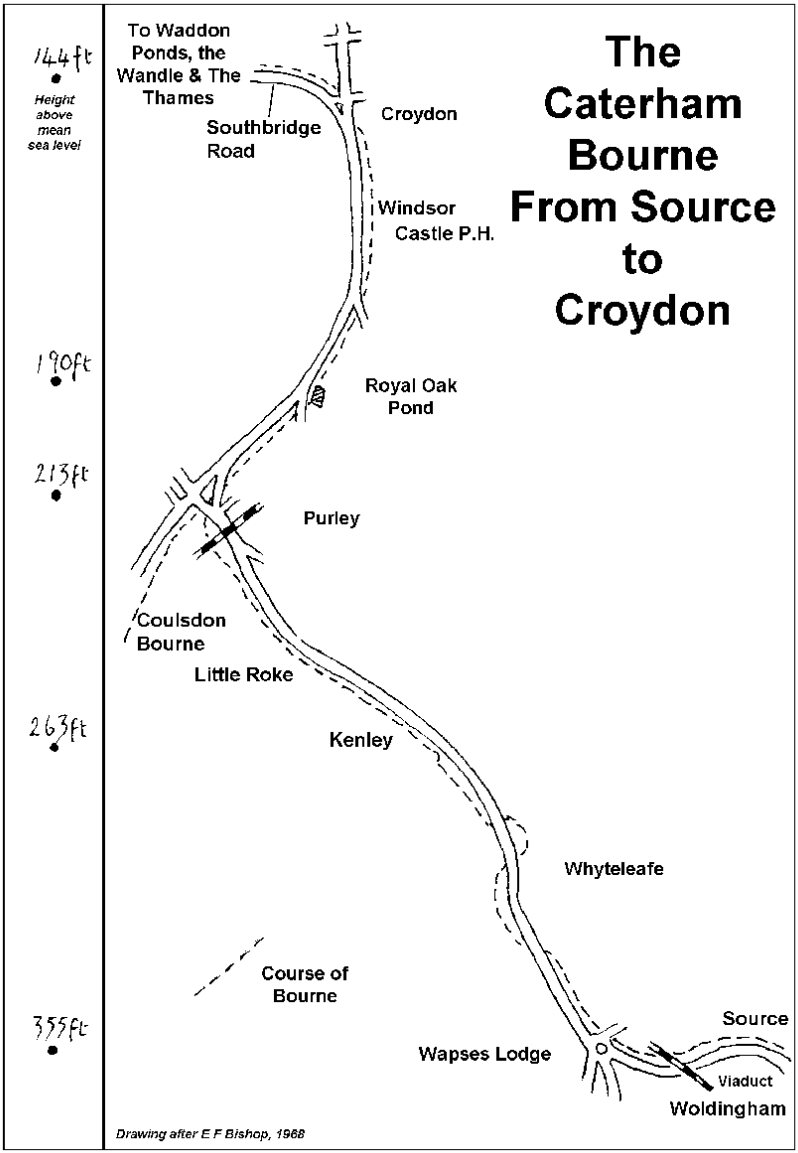
The Caterham Bourne From Source to Croydon
144ft
Height above mean sea level
To Waddon Ponds, the Wandle & The Thames
Southbridge Road
Croydon
Windsor Castle P.H.
190ft
Royal Oak Pond
213ft
Purley
Coulsdon Bourne
Little Roke
263ft
Kenley
Whyteleafe
Course of Bourne
355ft
Source
Wapses Lodge
Viaduct
Woldingham
Drawing after E F Bishop, 1968

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Cover Photographs – *Front* Bourne Park in 1995 *(Gwyneth Fookes)*

Back In 1995 the waters rose in the fields east of the Mumbles viaduct *(Gwyneth Fookes)*

Unless otherwise indicated the illustrations are from the extensive Roger Packham collection.

INTRODUCTION

The Caterham valley and the Smitham Bottom valley were in the past reputed to be deserted and unhealthy, only the haunt of gypsies and highwaymen. However, the Romans saw fit to build a road over Riddlesdown, through the valley which is now Whyteleafe and over Timber Hill, Caterham and on to the hills north of Brighton and other travellers found their way along what is now Brighton Road from Foxley Hatch (Purley) to *The Red Lion,* Smitham Bottom – on record as long ago as the 17th century – and probably long before that. A racetrack beside Brighton Road is also shown on early maps.

Waters rose unpredictably and the valleys were flooded every few years and the Bourne, or 'woe waters' as it was often called, gained a reputation far, far beyond its surrounding hills for portending national disasters. Almost certainly the gathering of the flood waters amongst low-lying communities in Croydon was a time of woe and disease for them.

In the 21st century, with development continuing to spread over the hills south of Croydon and drains and culverts controlling most of deluges that occur, the rising of the Bourne seems – and only seems – to be less frequent. The water that once soaked through the chalk and built up to emerge traditionally every seven years, now flows along much of its way north to the Wandle at Croydon and on to the Thames at Wandsworth less visibly through artificial channels.

The Bourne Society chose that name in 1956 as most members came from the parishes that abut onto the Caterham and Coulsdon Bourne valleys.

James Batley wrote about the Bourne in the first article of the first annual *Local History Records* in 1962 and other authors have since added to the story. In this Millennium year, we present a compilation of the facts in words and pictures.

Gwyneth Fookes

Roger Packham

31 July 2000

THE BOURNE THROUGH THE AGES

When **John Warkworth**, Master of Peterhouse, Cambridge, first mentioned our Bourne in 1473, he at once gave it that character of ill-omen and the name of Woe-water. Such superstitions would have plenty of support in national events when Warkworth wrote towards the end of the Wars of the Roses. Battle, famine and pestilence were all signs of the times—

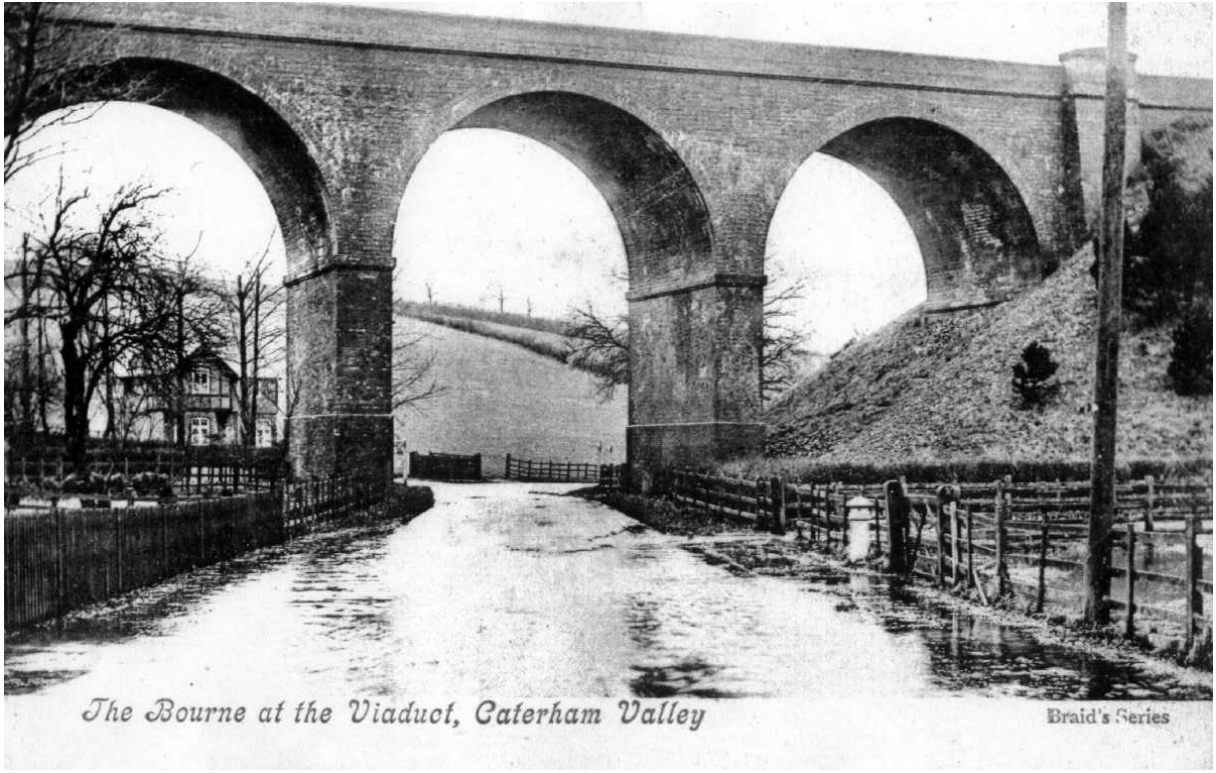
> 'In the same yere [1473 New Style] womere watere ranne hugely with suche abundaunce of water that nevyr manne sawe it renne so muche afore this tyme. Womere is callede the woo watere: for Englyschmen, when thei dyd fyrst inhabyd this lond, also sone as thei see this watere renne, thei knewe wele it was a tokene of derthe or of pestylence or of grete batayle; wherefore thei called it womere (for we as in Englysch tonge woo and mere is callede watere, which signyfieth woo watere;) and this womere is vij myle from Sent Albons at a place callede Markayat; ... ... and another at Croydone in Suthsex that when it betokeneth batayle it rennys foule and trouble watere; and whenne betokenethe derthe or pestylence, it rennyth clere as any watere, but this yere it ranne ryght trouble and foule watere.'
>
> *John Warkworth's Chronicle, 1473*

Camden in his *Britannia* shows a more sceptical attitude to the Bourne's prophetic qualities—

> 'For the torrent that the vulgar affirm to rise here sometimes and to presage dearth and pestilence; it seems hardly worth so much as the mentioning tho' perhaps it may have some truth in it.'
>
> *Camden's Britannia, 1586*

Childrey, a West Country clergyman with archaeological interests, again associates the Bourne with pestilence–

> 'The rising of a bourn or stream near Croydon (as the common people hold) presageth death, as the plague; and it has been observed to fall out so. The rising of Bourne in places where they run not always, we have before proved to be caused by great wet years which are generally most sickly; and if they prove hot as well as wet (because heat and moisture are great disposers to putrefaction) they prove also malignant and for the most part pestilential. And the reason why the rising of this bourne does not always presage the plague is because all wet years do not prove hot.'
>
> *Childrey's Britannia Baconica, 1661*



The Bourne flow often starts in the fields to the right of this view, taken in 1904.

The viaduct is sometimes called The Mumbles.

Another distinguished author can be added to the list, **Daniel Defoe—**

> 'This put me in mind that the very same thing is said to happen at Smitham Bottom in Surrey, beyond Croydon, and that the Water gushing out of the chalky Hills about eight Miles from Croydon on the Road to Ryegate, fills the whole Bottom, and makes a large River running just to the Towns End of Croydon; and then turning to the Left runs into the River which rises in the Town, and runs to Cashalton; and I name it, because the Country People here have exactly the same Notion, that this Water never breaks out but against a Famine; and as I am sure it has not now broken out for more than fifty Years, it may, for ought I know, be true.'

Daniel Defoe in *A Tour thro' the whole Island of Great Britain divided into Circuits or Journies, 1724-26.*

An 18th century feeling for landscape gives style to **John Aubrey's** observations—

> 'A little below, in a grove of Ew trees, within the Manor of Westhall in the Parish of Warlingham as I have frequently heard, rises a spring upon the approach of some remarkable alteration in Church or State which runs in direct course between Little Hills to a place called Foxley Hatch and there disappears and there is no more visible till it rises again at the end of Croydon Town near Haling Pound where with great rapidity it rushes into the river near that Church. I must not here forget to observe that Rusticks are obliged to drive their cattle a great Way for water. It began to run a little before Christmas and ceased about the end of May at that glorious Aera of English Liberty the year 1660. In 1665 it preceded the Plague in London and the Revolution of 1688'.
>
> *Aubrey's Surrey 1723*

Contrast this with **Braithwaite's** account. This down-to-earth approach is best understood against the background of the battle for a clean water supply after the cholera epidemics during the first half of the Victorian era—

> 'When the springs at Marden Park have flowed about 30 days in the direction of Croydon, they commenced flowing in the direction of West Wickham in Kent. There is evidence that the Bourne ran during two entire years, in 1841 and 1842, a period of great rain.'
>
> *F. Braithwaite,*
> *Institution of Civil Engineers, 1861*

The Bourne flowing along Woldingham Road in 1995.

Photograph courtesy of Gareth Jex.

A Rambling guide from 1881 explains—

> 'Ordinarily the Bourne is a tiny stream, flowing over a shallow pebbly bed (often dry in the summer) by the side of the road, from Smitham Bottom to Croydon, where its little rill serves to augment the water of the infant Wandle. But every 7th year it swells in an extraordinary manner, rushing along its narrow bed like a torrent, overflowing the whole of the roadway, and invading the dwellings of the inhabitants of the low-lying quarter of Croydon known as Old Town. This singular phenomenon has been observed for centuries, and yet its cause is still an unfathomed mystery which nature guards most jealously.
>
> The origin of this stream seems to be as much a secret as the cause of its septennial overflowing. The topographers of Surrey have been content to inform us that the Bourne has its rise near Godstone and though old residents in the neighbourhood agree in informing curious strangers that it rises in Marden Park, situated between Godstone and Caterham, I have never met with a person who has seen the spring. According to a statement in one of the latest guide-books, the source of the stream is in Stoneham Lane, between Caterham and Coulsdon; but so tiny a rill, the bed of which is often dry in the summer and in some places overgrown with aquatic vegetation, so as easily to be mistaken for a dry ditch, may easily elude observation .... It is strange that no one has ever traced its course during its septennial flood, and thus set to rest at least the question of its origin. May it be the rambler's good fortune to see the Bourne in flood-time!'

From: *Croydon to the North Downs; a Handy guide to rambles in the district 1881*

SOURCES

BATLEY, James (1962) *Local History Records* **I**

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The 1995 flood in the fields alongside Woldingham Road and approaching the stables.

Photograph by Gwyneth Fookes

THE EAST SURREY BOURNES: A 19TH CENTURY SCIENTIFIC DETECTIVE STORY

Sagas of East Surrey's Groundwater

by Paul W Sowan

> 'In a wet summer, without any alteration in Church or State, a bourne rises in Birch Wood in Marden Park.'
>
> *Manning & Bray*

Other chapters in this book deal with earlier myths and legends and beliefs concerning these bournes or 'woe-waters.' This contribution is solely concerned with our modern understanding of the chalk and the water held and moving within it below our district.

What are bourne flows?

Bournes, or intermittent springs and streams, are common features of chalk districts throughout southern England. In Surrey alone there are good examples at Farnham and Epsom as well as those in our own locality. There are several in Kent, including the Alkham, Cray, Little Stour, Pelham valley, North Stream and West Wickham bournes.

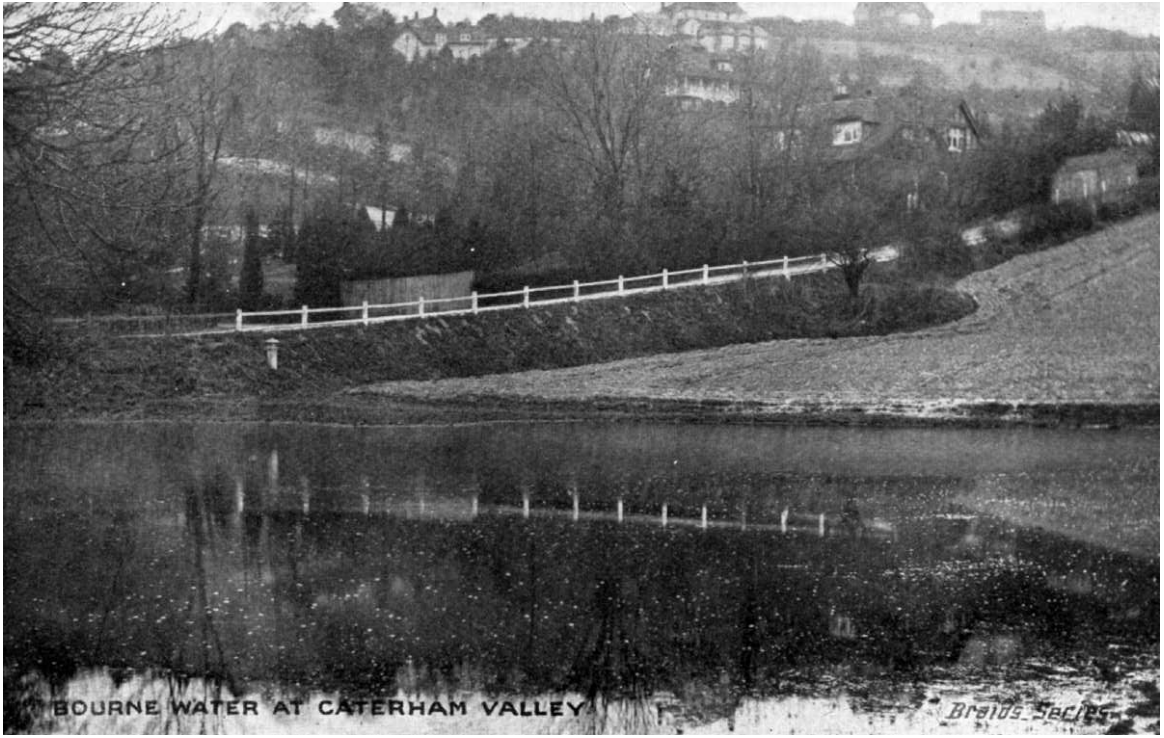
Despite fanciful treatment as 'woe-waters', the true nature and mechanism of bournes had been satisfactorily worked out almost two centuries ago. So well-understood is the Caterham–Croydon bourne, in fact, that Baldwin Latham was able to predict quite precisely all 15 flows from 1877 to 1912, from a careful study of rainfall records and well gaugings. No bournes flowed that he had not predicted. Much of the essential primary research into such matters was conducted in the chalklands of east Surrey, making an interesting local scientific detective story.

Bournes are an occasional surface manifestation of underground water movement and levels, and the purpose of this contribution is to explain something about the nature of the chalk, and the water contained within it.

H H French, amongst others, summarised the causes of bournes thus—

> The chalk contains a great deal of water
>
> The water in the chalk derives from rainfall
>
> After excessive rainfall the volume of water in the chalk increases, its level rises, and some of it overflows
>
> Bournes are a part of this overflow

The fluctuations in the water table, or level to which the chalk is saturated with water, can be quite considerable. The well at Bug Hill Farm, for example, is 125 feet deep. At times it is dry, but when the bourne is flowing the well overflows, demonstrating a vertical fluctuation of water table of at least 125 feet.



The floods of 1904 are shown at the bottom of Succombs Hill where the Wapses Lodge roundabout is now.

Note the coal post, now lost.

20th century hydrogeological research has moved on to more urgent matters, such as contamination of groundwater and public supplies by excessive use of agricultural fertilizers, sex hormone traces from contraceptive pills, industrial leakage of toxic chemicals such as chloro-hydrocarbons, replenishing depleted water stocks by artificial recharge and (under our major cities) coping with groundwater levels rising to such an extent that the infrastructure such as underground railways is threatened.

Are there natural cave systems in the chalk?

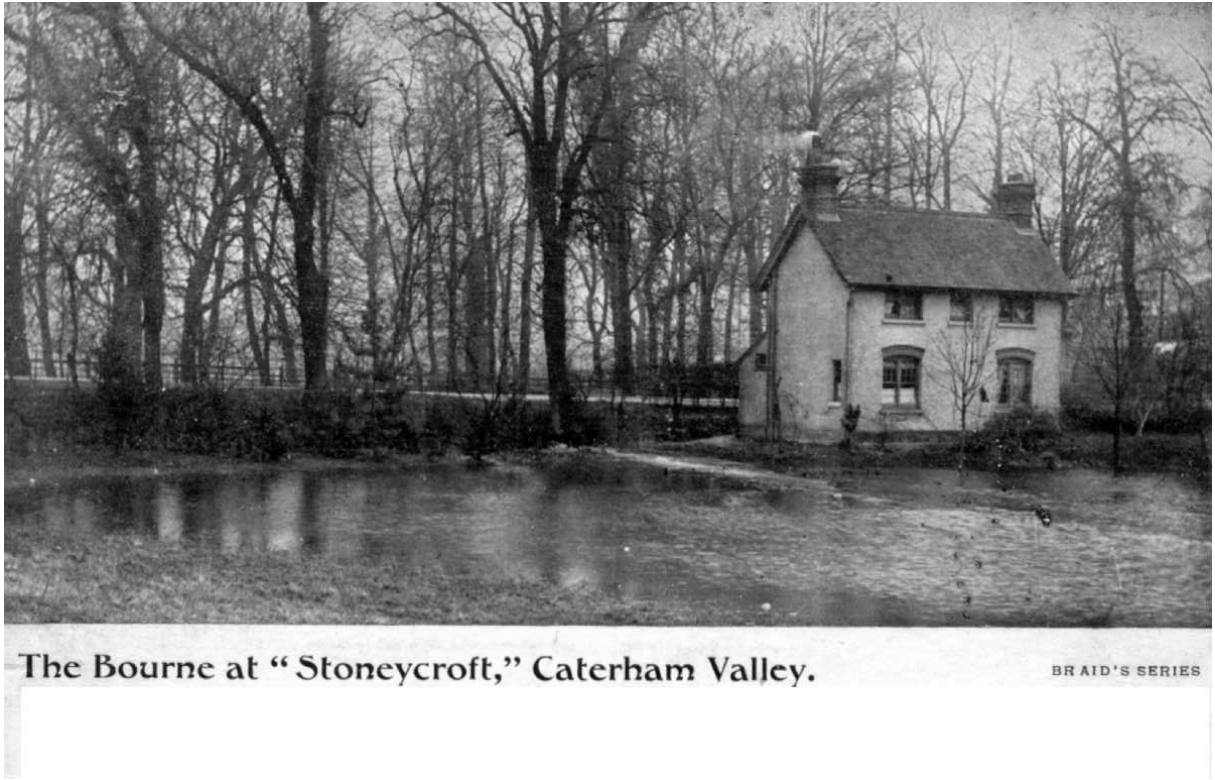
Early explanations of bourne flows envisaged vast natural underground chambers connected to the outlets (springs) by passageways in the form of a siphon. Supposedly, the chamber would gradually fill up like the tank of an automatic flushing lavatory cistern, and periodically (and much more rapidly) empty via the siphon. How often this happened would depend on the rate at which the chamber was refilled from rainfall.

Our area of east Surrey is underlain by a great thickness (up to 900 feet) of chalk. The North Downs constitute a well-known dry valley landscape – plenty of valleys, but usually no surface streams, although there seem to have been streams in them in the past as many of the valley floors contain undoubtedly water-transported gravels. It was probably possible for more permanent surface streams to flow in the past for one or both of two reasons. In times of much higher rainfall, the chalk may have been completely saturated with water up to the surface of the ground, and thus unable to absorb any more, so that rainfall escaped as runoff. During the Ice Age in east Surrey, we enjoyed periglacial 'permafrost' conditions (the ice-sheets themselves ended to the north of London), rendering the frozen ground impermeable.

Only occasionally do temporary streams break out and flow, most famously in the Caterham valley, although a lesser-known Coulsdon bourne has also been noted, and another at Merstham.

Chalk is amongst the softest and most porous of the English limestones. It is interesting to compare it with the harder and denser Jurassic limestones of the Cotswolds, and to the even less porous Carboniferous limestone of the Pennines. Only the Carboniferous limestone, both in England and in Wales, is known to contain significant and extensive explorable cave and pothole systems, in which it is possible to go underground with the water and see exactly where it goes and what it does. The water is guided downwards through joints and cracks in the rock and, containing dissolved atmospheric carbon dioxide, gradually widens them by chemical solution. Sizeable caves develop presumably as a result of the superior mechanical strength of the rock, which prevents ceiling collapse.

Natural solution-caves in the chalk, in contrast, are rare. Some small ones, which can be explored by those happy to wriggle through small holes underground, are



The Bourne flow in 1904, near the present Wapses Lodge roundabout.

known in the cliffs at Beachy Head, some way above the beach, where marine erosion has exposed them. These are genuine groundwater solution caves, now accessible as a result of the cliff receding as the sea has undercut its base; they are quite distinct from the much more common wave-eroded caves at beach level. The largest recorded natural chalk cave in Britain was discovered, at a depth of 120 feet underground, during the construction of the waterworks at Strood (Kent). This chamber is 'over 17 feet high, of considerable width and length, and from this … [there is] … a natural adit through which a person can walk for about 60 feet.' William Coles-Finch (1908), the resident engineer, published plans, sections, and several photographs taken inside this remarkable cavity.

The nearest we have to known natural cave systems in the chalk under Surrey are in the Mole valley, where in very dry years the river disappears down potholes in its bed near Mickleham, re-emerging as springs near Leatherhead further downstream. Up in the hills to the east, in the Nower Wood Nature Reserve at Headley, you can (in very wet weather) see a small surface stream swallowed-up as it plunges down a tiny chalk 'pothole', a vertical-sided fissure in the chalk too narrow for even the most determined caver to descend!

Porosity and permeability of the chalk

The evidence is, therefore, that our bourne flows are not conducted underground through natural caves, in which all the water on the move would be concentrated in a small number of distinct tunnels. The chalk is not strong enough to allow their formation. Unlike the Jurassic and Carboniferous limestones, the chalk is an extremely porous rock. It contains up to 40% empty space, containing either air or water depending on circumstances. A lump of dry chalk will absorb a surprising amount of water, like a sponge. A favourite demonstration used to be done in which the contents of a two-and-a-half-gallon watering-can were poured into a foot cube of chalk … all of the water disappearing into the solid rock. There is, therefore, a very large quantity of water stored in the chalk under Caterham and area, but this pore water is far from easy to extract. If you stand the now-saturated cube of chalk under cover, you will not see any water draining out of it, although on a warm dry day it will very slowly lose water by evaporation from the surface. The force of capillary attraction hinders the movement of pore water through the mass. This water is effectively static, and has little direct bearing on bourne flows or water supply. Even the application of considerable hydrostatic pressure to one face of the cube would only squeeze a little water out rather slowly.

What really holds the 'movable' and recoverable water in the chalk is the extensive network of mostly tiny cracks and joints throughout the mass. To visualise the scale, stand on the beach at Newhaven or in a chalk pit and study the chalk cliff with care. Downing, Price and Jones (1993) estimate the 'fracture porosity' of the chalk at about 1% of its volume (as against 30 - 40% for the 'matrix porosity.')

No. 103. THE BOURNE WATER AT WHYTELEAFE (Copyright).

Above – The Bourne flowing past the tithe barn near *The Rose and Crown* in 1904. Note the Riddlesdown slopes.

Below – a similar view in 1928.

Photographs courtesy of Purley Library

Only one or two per cent of the water in the chalk is readily able to flow underground to wells, or emerge from springs as bourne flows.

Below the water table, both the pores and the cracks and joints are filled with water, above it only the pores in the chalk are so filled.

Chalk is not all the same throughout

A further important consideration is that the mass of the chalk is not a homogeneous network of evenly distributed open joints and micro-cracks. It was discovered in the 19th century that selecting a site for a successful deep well requires a considerable degree of geological understanding (and, indeed, luck!) A well sunk at one spot would have a disappointing yield, whilst another one nearby could be far more generous. Indeed, the knowledge and understanding required for successful well location is largely derived from experience with previous ventures.

More or less continuous layers of flint, and marl seams, can restrict or prevent water flow in certain directions. Fault-planes may allow flow through otherwise impermeable beds including especially the marly lowest beds of the chalk (this may explain certain chalk springs found along the base of the chalk escarpment). Anticlinal structures, where the chalk beds, arched upwards, are under tension and all the cracks are opened up fractionally, are favourable places for wells. Synclinal structures – however – are not, as the chalk is compressed and all the joints closed-up. As so many of our deep public supply wells were sunk before all of this was fully understood, it was very common for the well-sinkers to drive adits sideways from them to intersect more fissures and increase the yield. Whitaker indicates that the St Lawrence's Hospital and Reedham Asylum wells both had adit systems to tap additional water, and that the Caterham Waterworks' three wells are all interconnected by adits at depth.

Joseph Lucas, in 1874, proposed an ingenious scheme of 'horizontal wells' up to 14 miles long, running east-west under the North Downs, to extract water for London. Although this was never put into practice, his text remains an important and fascinating source of local information about wells.

Rainfall distribution

Rainfall is of course greater in the winter months. It is also significantly greater on the higher parts of the North Downs than it is further down the dip slope towards Croydon. During the years 1878-87 (for example) there was an average annual rainfall of 34 inches high up on the Downs, but only 24 inches nearer to Croydon. Water levels in wells higher up in the hills rise more quickly than those further north. These factors probably explain why a bourne stream may break out in the Caterham valley, but disappear underground again before it reaches the culvert at Purley. On a much greater scale, in very hot summers the river Mole does the same sort of thing, and in very wet winters it floods.

The view of the flooded barn in 1904 shows *The Rose and Crown,* Kenley, in the background.

The fate of rainwater

The average annual rainfall for Surrey is about 24 inches, or 2400 tons per acre per year. Up to 10 inches of this actually soaks into the ground. What becomes of rain once it has fallen depends on circumstances. A certain proportion soaks into the ground, gradually trickling down the cracks and joints until it reaches and augments the saturated zone below the local water table. That fraction is of interest in connection with bournes and water supplies. In steeply-sloping ground, or ground composed of more or less impermeable rock, the water escapes by 'runoff' via temporary or permanent streams. In an area such as Caterham, house roofs, road services and street gutters and drains have the same effect. In warm weather, some of the rainwater escapes back into the atmosphere by simple evaporation, whilst quite a lot more, in vegetated areas, is absorbed by the roots of plants and trees and is returned to the air by transpiration.

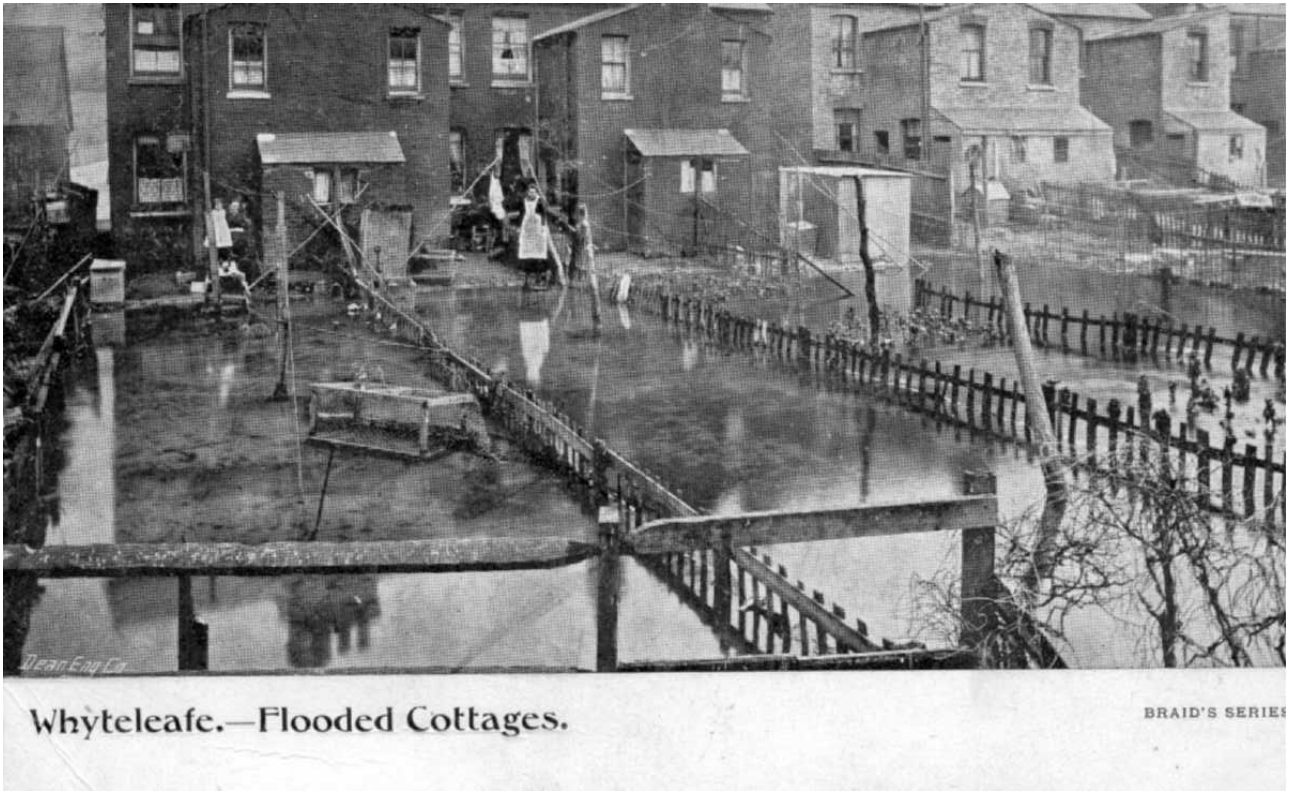
Bourne water and the Godstone quarries

The stratum of rock lying below the chalk, and outcropping at the foot of the escarpment from Godstone through Blechingley to Merstham and beyond, is the Upper Greensand, a bed which has been extensively exploited by underground quarrying (for building) and mining (for domestic hearthstone for whitening natural stone surfaces). Like the chalk above it, the Upper Greensand (a very porous largely siliceous rock) contains a considerable quantity of water, the levels of which have been accessible to observation as a result of the tunnelling. Authorities have differed on whether or not this Upper Greensand water can be regarded as in communication with, and an extension of, that in the chalk. Whilst the lowest, marly, beds in the chalk are of low porosity and in bulk impermeable, as we have seen, it is the presence of vertical joints rather than the nature of the rock itself that makes useful water storage and flow possible.

Local folklore has long associated the floodwater (often called the bourne water) in the underground building-stone quarries and hearthstone mines in the Upper Greensand at Godstone with bourne flows. Indeed, the underground quarries have been thought of by some as the great chamber which, when full, supposedly emptied itself through a siphon. It had not occurred to those who took this view that (unlike a siphon emptying a tank) the Godstone quarries fill and empty equally slowly.

A pamphlet reprinted from *The Croydon Chronicle* in 1861 tells us that at Sir William Clayton's quarries, 'worked by Messrs. Stedhall' … —

> 'Access to the quarry is obtained, and lights can be procured at the principal entrance, which is through an arch seven feet high, and 10 or 12 feet wide, having a single line of tramway rails. The road



The 1904 floods – the back gardens of houses along Godstone Road, Whyteleafe, looking west.

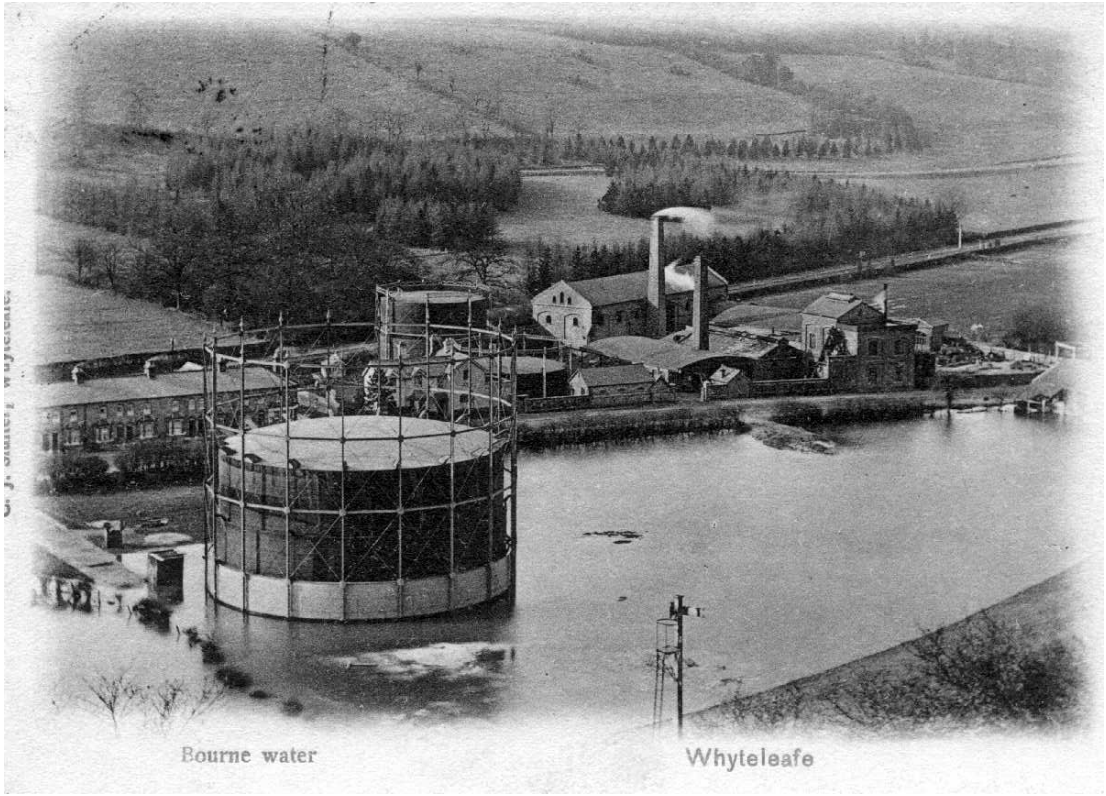
> descends inwards very gradually. From this roadway or gallery many branches diverge, ending in 'rooms', where the stone is dug.
>
> The principal gallery wherein the Bourne water is now rising, extends about 350 yards inwards from the entrance, but now the water has risen to within 150 yards of the entrance, filling and rendering at present useless, the lower 200 yards of gallery with its diverging branches and rooms. The perpendicular depth of this water is guessed by the quarrymen at about 60 feet.
>
> One day in December last, the Surrey Stag Hounds ran a deer into the neighbourhood of the quarry, when he entered the cavern, disappeared, and was no doubt drowned among the arches. Two hounds were sent in after him, but they returned without any sign of having reached the object of their search.'

This quarry entrance location is now buried below the western carriageway of the A22 on Godstone Hill. The remains of the lost beast appear to have been removed long since, or possibly are hidden beneath or behind a roof-fall.

The principal origin of the water can still be seen in the form of one or two underground springs near the iron tramways in the main passages. These springs are usually flowing at least slightly throughout the year, which raises the question of where the water goes. It cannot and does not escape southward, as it is held up by the Gault clay underlying the quarry floor. The water almost certainly escapes to the north, through joints communicating from the Upper Greensand to the lower beds of the chalk under Caterham. Indeed, several chalk wells (Caterham Model Dairy, Caterham Waterworks, Purley Waterworks) penetrate the Upper Greensand (and some of them even the Lower Greensand as well) and so now allow an escape route.

For many years (1843-76) a quarryman named Hills was in the habit of marking the highest flood water level each year on the walls in the quarries under Godstone Hill. Baldwin Latham collected all these measurements and related them to mean sea level and to bourne flows. His conclusion was that there is no direct and simple correlation of water-levels in Godstone quarries with bourne flows. For example, in two years when the water was particularly high (460.09 feet in 1849, and 462.75 feet in 1854) there was no bourne flow, but in 1876 when the water in the quarries stood at only 443.12 feet, a bourne flowed. As Latham observed, the fact that quarrying (which is thought to have started underground here as recently as the 17th century) was progressively enlarging the volume of the worked-out chambers and tunnels (right through to the early years of the 20th century), a simple relationship was not to be expected. Bournes flowed before quarrying started, and have continued since it ceased.

Hills' water-level marks cannot now be found on the underground quarry walls, so presumably they are in an area now inaccessible beneath or behind roof-falls.



The gasholder at Whyteleafe, isolated by the flood in 1904, shown on a postcard by C J Sluiter.

The underground quarries at Merstham

There is another extensive series of underground tunnels and chambers in the Upper Greensand some miles further west along the outcrop from Godstone. About 10 miles of these, still accessible, have been accurately surveyed by members of the Wealden Cave and Mine Society. These underground voids are certainly much older than the Godstone quarries, and probably include the two Limpsfield manor quarries mentioned in Domesday Book (1086). Limpsfield manor at that time held land in what was to become the southern part of Chaldon parish, along Spring Bottom Lane. Chaldon lost this land to Blechingley as a result of local government reorganisation in 1933.

The quarry gallery networks run right through into the next parish, Merstham, where the most recent quarrying and mining was all but finished by the 1820s. It is only in the Quarry Dean area that groundwater has been troublesome to the underground workers. In Chaldon, they simply stopped quarrying northwards when they encountered waterlogged rock.

Messrs Jolliffe and Banks, an important early civil engineering contracting firm with (amongst other monuments) a number of London's bridges to its credit, leased and attempted to develop the underground building-stone quarries at Quarry Dean early in the 19th century. Its attempts to follow and exploit the 'Reigate stone' northwards, down the dip of the stratum, were at first frustrated by high groundwater levels. Amongst other capital-intensive developments (the horse-drawn Croydon, Merstham and Godstone Iron Railway, a stationary steam engine, and an inclined plane) it sought to make a drainage adit or sough from below the quarry, under the Rockshaw Road ridge, to convey the unwanted water to lower ground to the south. This sough, made between 1807 and 1809, was initially successful, and allowed quarrying to extend into formerly water-logged ground. In fact it was so successful that it diverted water that hitherto had supplied the western of Merstham's two watermills, which promptly stopped working. During the next few years the drainage tunnel fell in and blocked the water egress, was cleared (or cleared itself), and blocked itself up again. It has remained blocked since the 1820s, and parts of the quarries at Quarry Field and Quarry Dean are now only accessible with diving equipment. The location of the blocked outfall, still leaking water slowly, can be seen near the north end of the footbridge carrying the path from Malmstone Avenue over the M25 and on to Rockshaw Road.

The water in these two small quarry systems does not appear to be directly linked, as the levels fluctuate 'out of synch'. This being the case, the lack of a direct relationship between the Godstone quarry water levels and bourne flows is hardly surprising. It is a tortuous route through an enormous maze of tiny cracks, so water at a higher level in one location takes some considerable time to percolate through to another.

The Bourne floods near the tithe barn, with Riddlesdown to the right.

Courtesy of Croydon Local Studies Library.

The Betchworth and Brockham hearthstone mines

As recently as the 1960s I was told by a former hearthstone miner that they had trouble with 'the bourne water' in the mines at Betchworth. Some 20 years earlier 'bourne water' was reported at the bottom of the shaft at the abandoned hearthstone mine at Brockham. The fame of the Caterham bourne had certainly reached almost to Dorking!

The effect of the Oxted railway tunnel

The prospect of a railway tunnel through the Downs to Oxted was of concern to watermill owners on the river Wandle, and to owners of wells in the Caterham valley area, from as early as the proposed South Eastern Railway main line on that alignment, in 1836-38. Some tunnelling was done at Riddlesdown, although not on the line of the current Riddlesdown tunnel, between March 1837 and September 1838, when work was abandoned. As far as I am aware, no work was done for the SER in the Marden Park area. The company was required by Parliament to share the London and Brighton Railway Company's line as far as Redhill, before sending its trains eastwards toward Dover via South Nutfield and South Godstone.

The concern was that such a tunnel would drain very large quantities of water southwards out of the hills, whereas it had always previously flowed northwards to Croydon. Baldwin Latham commenced his career as engineer and surveyor for Croydon in 1866, just as the Surrey and Sussex Junction Railway was commencing work on what became the Oxted line, with new tunnels at Riddlesdown and Marden Park. The SSJR works were abandoned early in 1867, so our water remained safe, but 13 years later the line was revived, as the Croydon, Oxted and East Grinstead Railway, and both tunnels completed between 1880 and 1883. Latham was ready and waiting to assess the damage to the water reserves, and in fact arranged to gauge the flow southwards from the earliest possible moment – in 1881 – when the tunnel was sufficiently far ahead to be able to conduct water southwards. He estimated that making the tunnel had effectively transferred two square miles of the river Wandle's catchment area to that of the river Eden.

The Oxted line runs downhill all the way from the line summit near Woldingham Station, through the Oxted tunnel, thus acting as an approximately horizontal well. It continues to drain water out of the North Downs to this day.

The Merstham railway tunnels

The two railway tunnels at Merstham, on the main Brighton line, have much less effect on the water reserves in the chalk. In both cases, the line summit is within the tunnel. The western and earlier tunnel (made 1838-41) is at a lower elevation than the Quarry Line tunnel of 1897-1900, and is therefore more directly responsible for water loss from the Downs. The southern part of the tunnel has a culvert southwards to the Weald, whereas the northern end drains back to the chalk near Coulsdon South

BOATING ON THE BOURNE WATER
Doris Turner and Florrie Coppard.

Station. Thus these long tunnels (both over a mile) have far less effect than that at Oxted. The southern culvert is confused by the usually very reliable Latham with the Merstham quarries' drainage adit of 1807-09. What he says about this should be disregarded.

Predicting bourne flows

The most important factor in predicting flows is the winter rainfall record. Summer rainfall is generally lighter, and less water is absorbed into the ground because warmer weather leads to greater evaporation, and more foliage on plants and trees means more transpiration.

Bournes in the future

The Caterham–Croydon Bourne is, of course, a less obvious feature of modern life than it was, if only because its course is now largely hidden by confinement within concrete channels and underground culverts. A number of factors have a bearing on the frequency of bournes, including especially the much greater run-off and loss of water to the sewerage system resulting from covering the countryside in roads, asphalted parking areas, and buildings. Acting in the opposite sense, a reduced number of trees lessens the losses of rainfall returned to the atmosphere by transpiration. Increased abstraction of water for profligate car-washing, lawn-sprinkling, and use of dishwashers and washing-machines will have its effect. Long-term trends in rainfall and global warming will have their own influence. If in due course England finds itself a drier and hotter country with a climate such as southern France or Italy currently enjoy, bournes may become rarer or cease altogether.

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Testing the Bourne or "Woe" River.

Croydon and the surrounding district might at any time be at the mercy of a stream, known as the Bourne water, the same as Paris has been in connection with the Seine. The Bourne water rises from the chalk hills. It was anciently known as the "Woe" River, partly because, owing to bad sanitation, it left a condition of things which produced pestilence, and partly because the superstitious associated it with some public calamity, such as the execution of Charles I. Its course was down the Caterham Valley and along the Brighton Road, where it crossed near the Swan and Sugar Loaf, and then found its way to the ponds by Croydon Palace, finally draining into the Wandle. It is usually seen about every seven years, especially after a wet season Last time the water rose it flooded Whyteleafe, Kenley, and the whole valley from Caterham to Purley. At present there is a question pending between the Corporation and Croydon District Council as to the advisability of blocking up the course. Our picture shows Mr. W. W. Swatland, the proprietor of the Rose and Crown, Riddlesdown, testing the water by means of a tape at a well situated at the back of his premises. There was 80-ft. of water in the well when he measured it.

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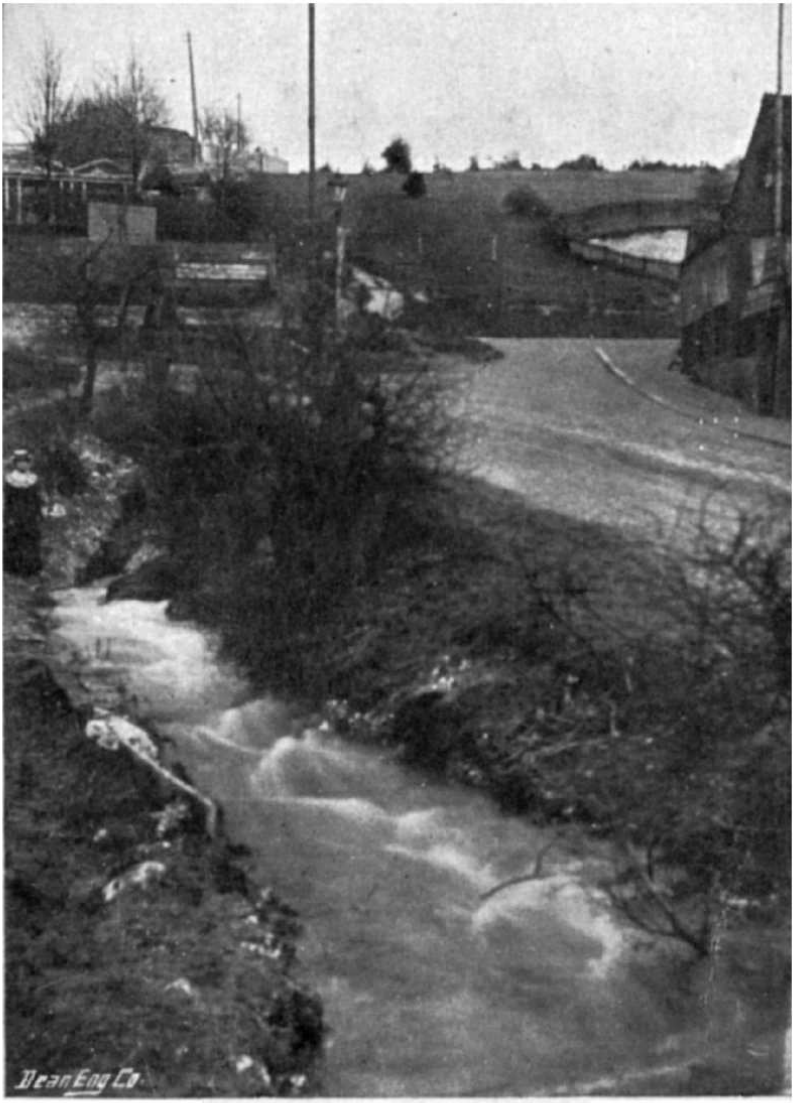


THE BOURNE, KENLEY.

The Bourne flood of 1904 is shown by Little Roke Road, looking towards Gardner's (left) and Godstone Road.

'THIS EXTRAORDINARY WATERY PHENOMENON'

The Spectacular Flood of 1904

by Roger Packham

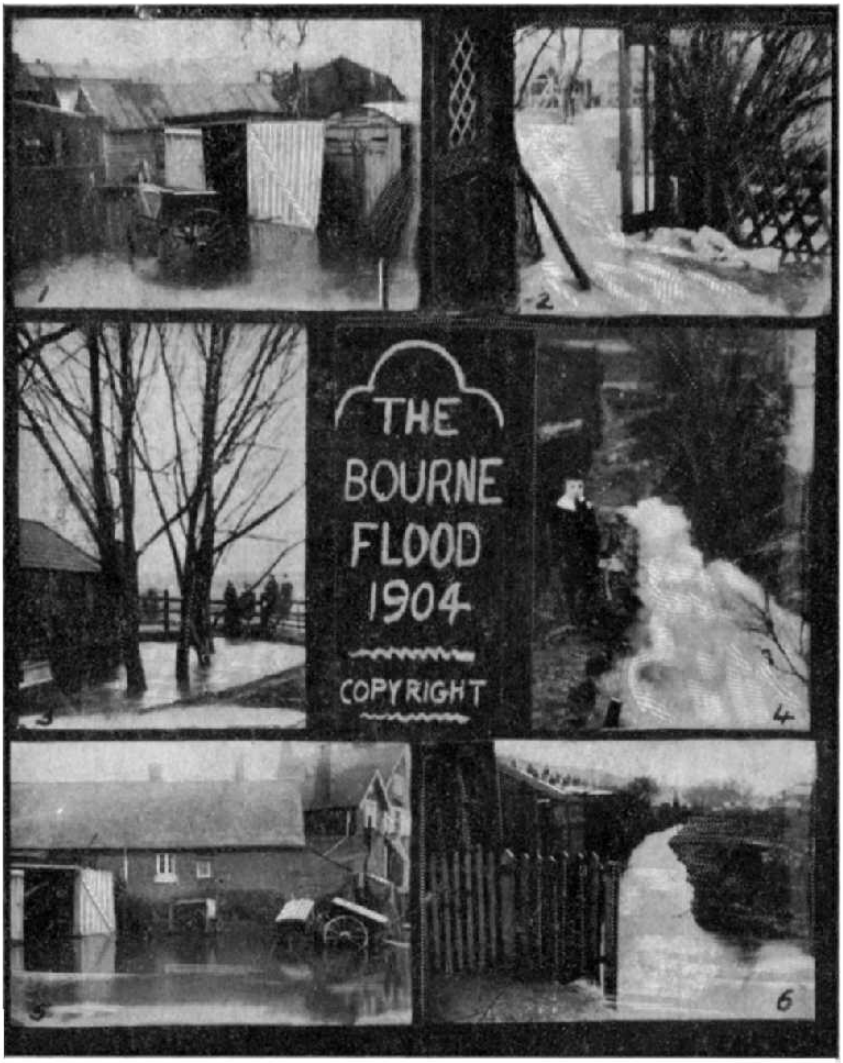
The most spectacular flooding of the Bourne in the 20th century occurred in 1904 and, happily for posterity, it was not only graphically recorded in local newspapers but coincided with the advent of the picture postcard. In March, A J Bennett of the Post Office, Purley, was offering for sale his own series of Bourne Water postcards 'forming a most interesting souvenir: those desiring views of this natural phenomenon would do well to obtain a set.' Mr Bennett was not alone in his enterprise: 'It's an ill wind that blows nobody any good, and one result of the rising of the Bourne, has been the enormous demand for pictorial postcards illustrative of the stream, the competition in the sale of these excellent productions being very keen amongst the local stationers. Mr Bennett, at the Post Office has some exceedingly fine views and so has Mr Pile and also Mr Morgan.'

March 1904 saw extensive flooding along Godstone Road and a local newspaper commented: 'Fishing in the Bourne is what we are told has happened. We certainly have seen the boys floating on rafts, but never expected to hear of fishing. The next proposition, we should not be surprised, will be to hold a regatta next summer. At Kenley there is a road which no one seems to own: we refer to the thoroughfare leading from the Godstone Road to Little Roke, which is becoming very defective owing to the inroads the water is making, and will form a serious detriment to traffic unless speedily repaired.'

Unfortunately the flooding claimed the life of a young schoolboy when Tommy Wells of Wyche-grove, Brighton Road, aged five, came out of school to play near the Bourne water in the gravel pit close to *The Windsor Castle*. It was supposed that the gravel gave way and he fell into the pit.

In late February on a Sunday afternoon, some hundreds of people, mainly cyclists and photographers, visited Purley and Kenley for the purpose of seeing the inundation caused by the Bourne flow. The local paper recorded the flooding at this time—

> **'PRESENT ASPECT OF THE BOURNE**
>
> At the commencement of the week the Bourne water showed decided signs of diminishing in volume. No doubt the few days of dry weather had an effect, coupled with the energy displayed by the authorities in keeping the water in a different course. But the late rains have caused the river to become again somewhat swollen and the road opposite the waterworks, which at the beginning of the week was passable to pedestrians, is again covered with water. The flood in the Coulsdon Parish Council's yard showed signs of abating but is again rising. If a



1.—At Purley.
2.—At Whyteleaf.
3.—At Garston Farm.
4. At Kenley.
5.—At Purley.
6. At Little Roke.

The Lansdowne Studio, Lower Road, Kenley—(Series 1).

Local views of the 1904 flood.

spell of dry weather should set in, no doubt the water would soon diminish. We trust that might be the case. The outlook is not so serious as it at one time appeared.

The huge dam under course of construction between Whyteleafe and the waterworks at Kenley is nearly completed. This will prevent the village of Little Roke from being flooded, the precaution having been taken in time, whilst the pipes laid by the waterworks authorities from their works to the dam are having a marked effect on the stream. At Whyteleafe, there is still a large quantity of water at the gasworks and in the gardens of the residents opposite but not so much as formerly. Even the small diminution at the commencement of the week is comforting, as showing that the phenomenon has not 'come to stay'.'

It would be enlightening to know the exact form of the huge dam between Whyteleafe and Kenley and whether its construction had any similarities with the Thames Barrier!

The winter floods were first noted on 5 December 1903 but the report underestimated the Bourne's capabilities: 'It is scarcely possible to see much of this year's flow, but it is to be seen in the neighbourhood of Purley flowing for short distances and then again disappearing into the earth.'

Early in 1904 at a Council meeting, the following reference to the Bourne by the Croydon Borough Engineer appeared in the Sanitary Committee's report: 'On December 29, the surface flow of the Bourne water reached the Borough boundary at Purley, and is carried by some pipes I have recently had put in by the small polytechnic building into the surface water drain in Brighton Road. The springs are still rising and a heavier flow may be expected in about two weeks' time'.

On 9 January the local newspaper confirmed the accuracy of the Borough Engineer's prediction—

'THE BOURNE WATER

This extraordinary natural phenomenon continues to occasion some inconvenience to residents between Whyteleafe and Purley. The stream in its erratic course seems to show no favours, as both butchers, bakers and hotel proprietors have their cellars flooded – some to the extent of 2ft of water. The owner of a large field of grassland, during the recent severe frost, endeavoured to make a miniature skating area by blocking the stream so as to divert the course of the water over his land, no doubt expecting to make a rich harvest in the form of an entrance fee for skating, but his considerate neighbour, thinking perhaps of his own and other people's basements, considerably raised the sluice during the night, thus allowing the water to resume the course provided for it.'

The Coulsdon Bourne where Marlpit Lane joins Brighton Road. 1930s.

More heavy rain followed, and on 9 February the road between Purley crossroads and the railway station became impassable to pedestrians. In Mr Bridgeland's yard there were 12 inches of water and the flooding would have been worse had it not been for the extended Croydon sewer. At Kenley it was necessary to reinforce embankments, and at Purley the schoolmaster's garden was inundated. Larger pipes were installed underneath the Purley Polytechnic and at Christchurch Road the Bourne ran into the surface-water drain which emptied itself into the river Wandle; nearly all the cellars of the residents contained several inches of water, the damage done in some cases being serious.

A week later, the local paper described the extensive flooding by the Bourne—

> 'The Bourne water has this week caused serious damage. On Friday the water rose to an abnormal height, filling the large basin reserved for the excess water of the Surrey Water Company, and rushing across the road, flooded Mr Bridgeland's yard, and also that of the Urban District Council, the water coming up to the axles of the wheels of the various carts standing in the yard. On Sunday quite exciting scenes were witnessed, as the water, coming across the road, flooded many gardens. Attempts were made to direct the course of the stream into a channel by boards and other means. In the grounds of the school the water is very deep and a trench has been dug, running in front of the schoolroom, to allow the water to flow into the drain. But the condition of the schoolroom and the Polytechnic is causing uneasiness to those in charge, especially in the case of the former, and there is some talk of closing the school, owing to the damp.
>
> The Bourne has made its appearance as far along the road to Croydon as the tramway shed. It is appearing in volume on the Smitham side of the Surrey Water Company's premises, flooding the cellars of many of the houses. We fear the development of this popular district will be temporarily retarded through these singular floods. Building operations are – or rather were – in rapid progress and we understand that all the land on both sides of the Brighton Road from Purley to Smitham Bottom has been acquired for building. Fortunately, on the right-hand side the land is high, but on the left-hand side the damage by flooding will be serious unless something can be done. In Mr Walker's timber yard more than four feet of water has accumulated, making a veritable lake. An old resident remarked, as he gazed at the volume of water rushing across his premises: 'Not within 25 years have I seen such floods'. At *The Railway Hotel*, the large cellars are flooded to such an extent that the barrels of beer have had to be hoisted out to prevent their becoming 'watered' and to allow the cellars to be pumped out.

The Coulsdon Bourne alongside Brighton Road, Purley, 1930.

Between Stoats Nest Road and Old Lodge Lane.

Photograph courtesy of Purley Library.

> Hundreds of visitors have come to Purley to witness this extraordinary watery phenomenon. To the residents, however, as may be gathered, the Bourne is becoming a really serious matter, and its disappearance into the bowels of the earth, from whence it comes, is earnestly desired. But this is not likely to take place for weeks to come.'

The floods were at their most extensive during February 1904 and at the end of the month it was reported—

> 'Crowds of people continue to visit this coming fashionable suburb to witness the extraordinary phenomenon of the rising of the Bourne water, so lucidly described in our recent issues. Great anxiety is felt in the neighbourhood of Little Roke by the cottagers, who fear the banks adjoining the cricket ground may give way. On Sunday some mischievous boy sent a tub floating down the stream, which blocked the culvert by Mr Goody's residence, causing a serious overflow of water, and flooding some of the cottages close by. The water increases rather than diminishes in volume, and the daily flow is carefully estimated to be 12 million gallons, every 24 hours. Already it has reached nearly up to *The Swan & Sugar Loaf* hotel.'

Great efforts were made to keep the school buildings open in Purley High Street, which were situated opposite the present Sainsbury's, but even as late as 11 March it was found necessary to close them—

> 'The National Schools had to be closed after March 11 on the recommendation of H M Inspector. The managers regretted the necessity of closing, especially as the flooding was subsiding. The schoolroom has never had any water under the floor, and the infants' school only a few inches, except for two days when it came in by the back door. The Medical Officer of Health has approved of all the measures taken by the managers to mitigate the inconvenience of the Bourne flooding. The water has now subsided from the playgrounds which will be cleared of the mud deposit and disinfected by the sanitary authorities, and the schools will be reopened on Monday April 11.'

One of the scholars from Purley Schools was Dorothy M Driver from Little Roke. Aged 10, she became a heroine when on 1 March she had to cross two planks laid over the Bourne current at Little Roke with Hilda Ashby, aged eight. Hilda became giddy and fell into the stream sitting in it almost up to her shoulders. The fright, together with the force of the current and the coldness of the water, rendered her helpless and Dorothy commenced to run home for her mother. She quickly realised that there would not be enough time and so hurriedly returned to the plank bridge and succeeded in getting her friend out. There was no one else near the spot and as

The Coulsdon Bourne where the waterworks is now, with *The Red Lion* (with its Mansard roof) in the middle distance.

the stream was running swiftly it is more than likely that the younger girl might have been drowned but for Dorothy's presence of mind.

Nearly five months after the flow was first reported the floods at last subsided and the following appeared in the local newspaper for 23 April 1904—

> **'DISAPPEARANCE OF THE BOURNE WATER**
>
> Our readers will be gratified to hear that the Bourne water has ceased to flow leaving the bed at the source perfectly dry. Some time must elapse before the districts affected by the floods resume their normal appearance, but no doubt the recent fine weather will have the desired effect. A little water still remains in the gardens of the cottages at Whyteleafe, but it is gradually subsiding, and at the gas works a trench has been cut to drain the water from the meadow in which the new gasometer *(sic)* stands.'

The watery episode was nearly at an end and shortly afterwards there was a proposal to spend £14,000 to minimise the effects of future Bourne flows.

A dispute arose concerning the liability of some property owners in Kenley and legal notices were served on householders in February. Property and landowners in the valley by Kenley cricket ground held that owners of the property under which the water flowed through culverts were liable for the water overflowing. They contended that as the culverts were not large enough to take the water, the owners of the culverts must be liable. Conversely, it was contended that the course of the water had been diverted on purpose to prevent the Bourne flowing through the cricket ground and adjoining properties. The defence of the culvert owners was that the culverts were never intended to take all the Bourne water, but were made as a precaution to prevent the water entering the houses. They maintained, therefore, that if the course of the stream had not been diverted so as to force it through the culverts, it would have flowed along its normal course through the cricket ground. An old resident was reported as saying that in years gone by the Bourne had always flowed right through the valley and the controversy continued without a recorded result.

SOURCE:
Coulsdon & Purley Weekly Record, Dec 1903–April 1904

THE BOURNE, PURLEY, 1904.

The 1904 Bourne at Purley, near the railway bridge.

Purley station is at far right.

20TH CENTURY COMMENT

D.W. Blackmore gives the geographical facts and links them with the geology of the district (and with meteorology) in the *Transactions of the Croydon Natural History & Scientific Society* for 1951—

> 'The Croydon Bourne appears in the Caterham Valley following periods of excessive rainfall, particularly winter rainfall, and is due to the water table in the chalk rising above the floor of the Valley. It makes its first appearance in the channel at the rear of *The Rose and Crown Inn*, Kenley, near a forked ash tree and, when risen to its full extent, presents a continuous stream seven miles in length from Bughill Farm, Chelsham to the outfall in Wandle Park, Croydon.'
>
> *D.W. Blackmore, CNHSS 1951*

The Bourne from Source to Mouth – based on a tape-recorded interview with the late Mr William Sandiford made on 30 September 1957. From **The Bourne Society Bulletin** May 1980—

> 'We used to get heavy snows in our young days and the Bourne rose approximately every seven years. We used to think it foretold some disaster. It commenced just under the viaduct on the left of the Woldingham Road as you go from Caterham. It then flowed along by the road to Wapses Lodge. It also rose there to a certain extent, but not much. It bubbled up underneath the crossing. Where the roundabout stands now, there was a very big pool which reached up to the cottage. Of course, we boys used to have rare fun. From there it ran through a field in an open stream to Well Farm, under the road by the old Caterham boundary just beyond Whyteleafe South Station, across a field down to the railway, underneath it and out to where there is a recreation ground now.
>
> On to Whyteleafe Station, and through the back gardens till it crossed the road where the gasometers are now. Here it formed a large pool of water (later known as Gasometer Lake). It again crossed the road by *The Rose and Crown* and flowed down where the dust destructor, the recreation ground and allotments are now. It went close to the waterworks and in fact I have known when I had to work day and night to deepen the ditch to keep it out of the reservoir. It flowed along to Kenley before falling steeply down into Little Roke, it passed in an open stream before going under the railway and into what is now Waterworks Yard.

The centre of Purley – the waterworks site (now Tesco) is behind the fence to the left. Brighton Road traffic in the distance was as busy as always. 1960s.

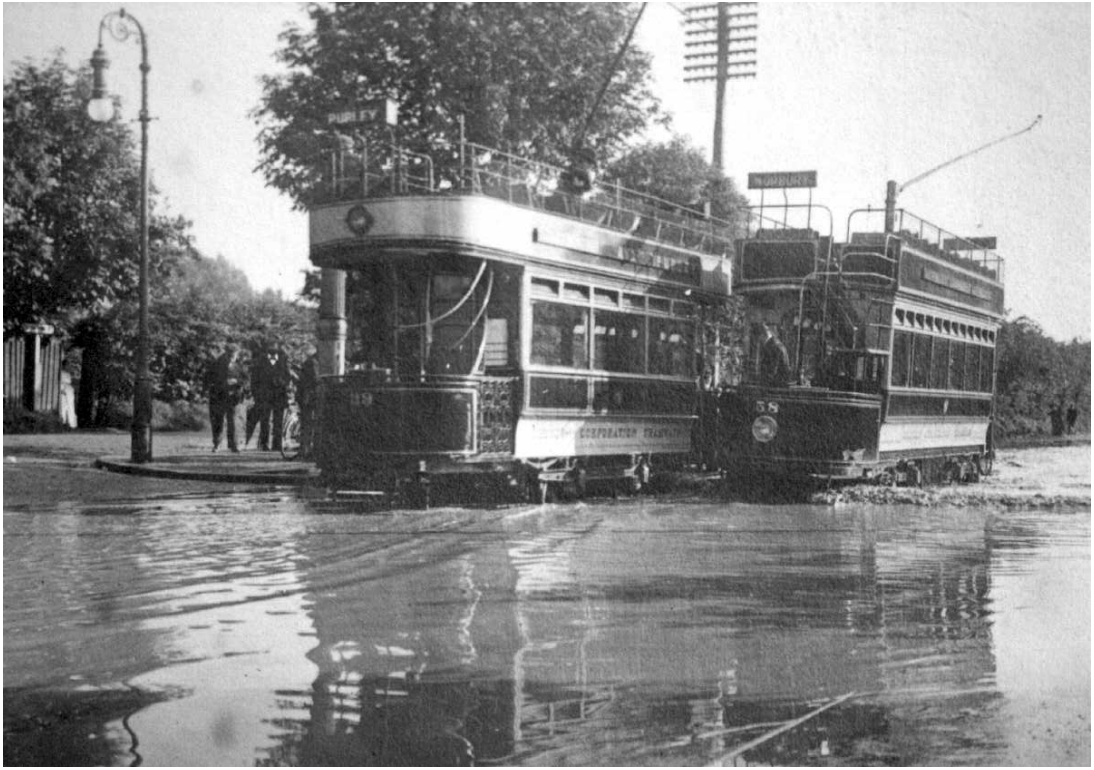
It crossed the main road by the public house and followed more or less the line of Purley High Street in an open ditch and it finally went underneath the road by a church. There was a bridge there which they used when the Bourne rose. At *The Royal Oak* there was a lot of water because gravel had been taken out there. It was right open again as far as *The Windsor Castle*. Then you did not see it again till you got to Haling Park. In front of a house there is a big dip like a big bowl and that was always full of Bourne water and the shops opposite would get 2-3ft of water when the Bourne rose. Then you didn't see it again. It was taken in pipes through Old Town, Croydon and right away to the Wandle in Wandle Park. This was once Wandle Marsh. Here they would dam up the stream and wash the sheep. Old folk knew it as the Sheepwash. That is where the Bourne ends.'

From **Ralph Smith** (1992) – In about the 1920s Charlie Moore won a life-saving medal – He was a jobbing gardener and a member of St John Ambulance. One day near Lower Warlingham Station (now Whyteleafe South), the chain of his bicycle came off and he had to stop to put it on again. He saw some people gathered around a manhole where the Bourne water was flowing. The water went along an open ditch towards the station and then went underground. Apparently a baby had gone missing out of one of the gardens and the men were sure that the baby must have fallen into the ditch and been washed down into the underground culvert. So Charlie went down the manhole, but he was nearly overcome, and had to come out to get some fresh air before going down again. He found the baby, but it was dead. He was awarded a life-saving medal for his attempt.

From **John Bailey-Smith** (2000) – Before the building of the Caterham by-pass, when the Bourne flooded, the whole of the area formed by the present sunken roundabout at Wapses Lodge would flood. This area of water became a wonderful play area for local children – sailing boats or floating tin cans to provide targets, but best of all for rafting. The 'rafts' were actually the large gates from premises in Croydon Road – I believe it was the Caterham Transport Company. These gates were on pin hinges that enabled the older boys to lift them off and float them. They were not particularly stable and unless you made sure you balanced the load it would tip its contents into the water, which did not make the sport very popular with parents. The culverting of the Bourne put an end to that fun.

In 1968 James Batley in a local newspaper article described the onset of the unusually prolonged Bourne flow that year—

In 1968 on October 19, the uppermost evidence of the Bourne's uprising was in the basement of the unfortunate Mr Gurr of Marden Lodge – the water level was 3 ft below ground level and 2 ft above the basement floor. The Bourne first broke



The Bourne in 1904, opposite Purley Hospital in Brighton Road.

Courtesy of Purley Library.

surface by the gate into the school sports field just below the railway viaduct. 100 yards down the water could be seen bubbling up through the grass.

Under the Givaudan and Rank Organisation buildings the Bourne caused trouble. Mr Pope, Rank's engineer, had to employ six pumps to prevent the water rising in the boiler room, where the Bourne water appeared to have a level some 3 ft above the boiler room floor.'

He added the following musings—

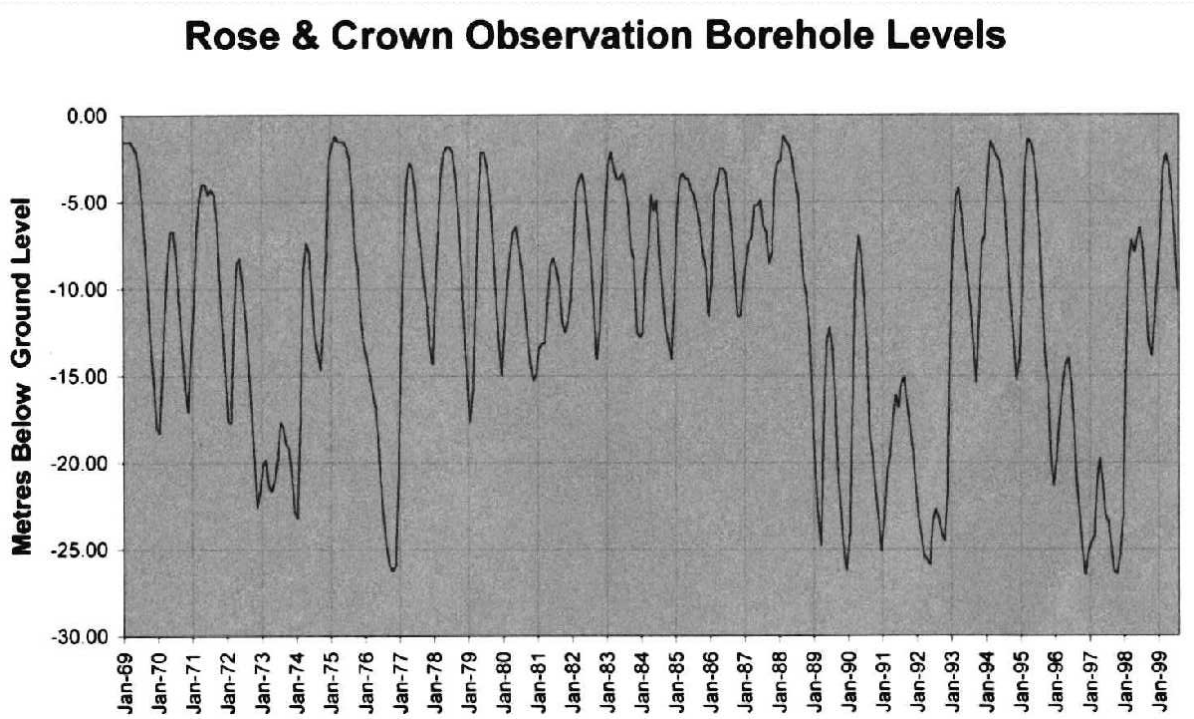
? 'Far from rising once in seven years the Bourne has never observed the traditional interval since C W Johnson began regular observations in 1840.

? There have been some notably long sequences; it appeared for six consecutive years from 1877 to 1883 and for eight from 1912 to 1919.

? The latter series might well qualify as a period of 'batayle and pestylence' but in a fairly disastrous century and a half, the Bourne seems to have missed the Crimean War (1854-56), the Boer War (1899), the Crisis of 1931, Munich (1938) and the beginning of World War II (1939). This looks like carelessness.'

DOOM RIVER FLOOD by Roger Packham— **Bourne Society Bulletin** 132 (May 1988)

> 'In the early weeks of 1988, the Bourne has brought itself to prominence causing flooding and consternation along its course. It is the best flow since 1968 and has necessitated warnings – and sandbags – from Croydon and Tandridge Councils. Whyteleafe County First and Middle School was closed for 3 days in February because of flooding and Woldingham Road had to be closed with dramatic stretches of water around the viaduct and the riding school stables. In Kenley fire fighters were called to Bourne View and the allotments were also flooded. The Coulsdon branch was also flowing freely by Coulsdon South Station. Ron Dabbs and Roger Packham were busy answering questions from local newspapers.
>
> The main headlines in *The Caterham Mirror* (18.2.88) were 'Doom river flood' and *The Coulsdon & Purley Advertiser* on the following day printed a photograph of the 1904 flood and historical notes by Mrs. Faulkner. *The Croydon Comet* (26.2.88) had a photo of firemen mopping up in Kenley under a heading 'Flood alarm' and *The Croydon Post* (9.3.88) included a photo of 'the mighty Bourne'. The well-known tales of disaster were given a good airing and the flow was expected to continue for some weeks. Despite a dry Easter, a close watch will be kept on the lively veteran when the Spring rains arrive.'


Rose & Crown Observation Borehole Levels
Metres Below Ground Level
0.00
-5.00
-10.00
-15.00
-20.00
-25.00
-30.00
Jan-69
Jan-70
Jan-71
Jan-72
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INTO THE 21ST CENTURY

by Gwyneth Fookes

After two years of more than average rainfall, members of the Bourne Society in the know are looking keenly for signs of a flow near the Woldingham viaduct. There is water to be seen in the only place in Kenley where the Bourne is not restrained by a culvert, but as yet – in July 2000 – the ploughed field near Cotters Hill Farm is dry. The flow from Coulsdon has been seen far less often than the Caterham flow.

In recent years when the waters rise, the road beneath Woldingham viaduct floods, the dip alongside the Woldingham Road fills, the stables there flood completely, parts of the Wapses Lodge roundabout are inaccessible and water floods its way relentlessly through office blocks and school grounds on its way northwards to Croydon and to the Thames. It can spread wide without causing disruption in Bourne Park, before it floods the allotments off Bourne View and is last seen by the cricket ground at Kenley. One member reports that it used to be a challenge for both girls and boys to walk through the tunnel that connects the sports field at Kenley with the old waterworks at Purley, socks in pockets and shoes carried tied together. The tunnel has several slight bends, so that it was in frightening darkness most of the time.

On the last occasion – in 1995 – there was flood water higher up the Halliloo Valley in the bunkers and hollows of the new Dukes Dene Golf Course, which was pushing up behind the water-retaining features the club had laid to hold back some of the rainfall and reduce its need for irrigation.

Despite a careful study there is no sign ecologically of a waterside habitat. In times long gone there would almost certainly have been wetland plants along the Bourne's course, but presumably nowadays the ground does not remain damp for long enough to sustain such plants. From its source to Bourne Park there was no sign of plants growing more luxuriantly because they have access to more water. In the park, the channel was marked by vigorous plants of Jack by the Hedge or Garlic Mustard (*Alliaria petiolata*), which is not known as a wetland species but is a native of rough ground and hedgerows.

The Sutton & East Surrey Water Company has kept a log of the Bourne flows starting in 1903, with flow measurements taken at its Treatment Works at Godstone Road Kenley, the Purley Works and Smitham borehole site, Coulsdon. The rates of flow were recorded either daily or even twice daily to begin with.

The company has kindly provided the schedule of periods of flow since 6 December 1903 and also a chart showing the variation in the borehole levels at *The Rose and Crown* since 1969.

Sutton and East Surrey Water plc
Bourne - Periods of Flow

Kenley Weir Flows			Purley Weir Flows			Smitham Weir Flows		
Start Date	End Date	No. of days	Start Date	End Date	No. of days	Start Date	End Date	No. of days
06-Dec-03	03-Jun-04	181						
01-Mar-10	03-Jun-10	95						
27-Feb-12	15-Jun-12	110						
08-Feb-13	12-Jun-13	125	01-Mar-12	03-Jun-12	95			
09-Feb-15	07-Jun-15	119	09-Feb-13	19-May-13	100			
08-Feb-16	30-Jul-16	174	09-Feb-15	27-May-15	108	19-Feb-15	19-May-15	90
25-Dec-16	08-Apr-17	105	09-Feb-16	24-Jul-16	166	25-Jan-16	17-Jul-16	175
27-Feb-18	12-Apr-18	45	26-Dec-16	01-Apr-17	97	29-Dec-16	17-Mar-17	79
06-Mar-19	22-Jul-19	139	27-Feb-18	27-Mar-18	29	30-Jan-18	05-Apr-18	66
04-Jan-25	06-Jun-25	154	07-Mar-19	18-Jul-19	134	02-May-19	07-Jul-19	67
03-Mar-26	24-May-26	83	14-Jan-25	04-Jun-25	142			
23-Mar-27	10-Jul-27	110	08-Mar-26	14-May-26	68	19-Feb-26	05-May-26	76
25-Dec-27	30-Jun-28	189	24-Mar-27	09-Jul-27	108	14-Apr-27	27-Jun-27	75
23-Jan-30	07-May-30	105	26-Dec-27	24-Jun-28	182			
20-Jan-36	23-May-36	125	28-Jan-30	30-Apr-30	93			
10-Feb-37	22-Jul-37	163	23-Jan-36	16-May-36	115			
06-Jan-40	14-Jun-40	161	10-Feb-37	09-Jul-37	150			
04-Apr-41	25-Jun-41	83						
12-Mar-47	06-Jul-47	117						
24-Feb-51	14-Jul-51	141	27-Feb-51	11-Jul-51	135			
30-Apr-52	14-May-52	15						
29-Jan-55	15-Apr-55	77	02-Feb-55	05-Apr-55	63			
27-Jan-59	01-Apr-59	65	30-Jan-59	20-Mar-59	50			
25-Dec-60	28-May-61	155	28-Dec-60	27-May-61	151	09-May-61	20-May-61	12
12-Mar-66	21-Jun-66	102						
13-Mar-67	05-Jul-67	115						
09-Oct-68	09-Jun-69	244				05-Nov-68	03-Jun-69	211
03-Dec-74	05-Jul-75	215						
09-May-78	18-Jul-78	71						
08-Jun-79	25-Jun-79	18						
16-Feb-88	18-May-88	93						
04-Jan-94	19-Mar-94	75						
27-Feb-95	24-Apr-95	57						

THE BOURNE

by R.E. Latham

From **The Bourne Society Bulletin** 84, (May 1976)

(This poem has been read by groups of members meeting at the Mumbles viaduct, whenever the Bourne has been in flood)

Year after year, deep down below,
Its buried waters travel;
Perhaps through goblin mines they flow
Where emeralds and rubies glow,
For stranger sights, I'm sure, they know
Than chalk and gravel.

All of a sudden wearying
Of realms for ever darkened,
Its prisoned waters want their fling;
So onward through the dark they wing
And into daylight gaily spring
At Marden Park end.

And gallant ships are ours that strain
To find by high endeavour
A course through chartless channels plain
To Isles of Spice or Spanish Main,
They may not sail these seas again
Perhaps for ever.

SONNET TO THE BOURNE

by David South 1995

It was upon a most momentous morn,
Whilst visiting such a pleasant quarter,
That I chanced upon Surrey's River Bourne,
And wondered why it's dubbed a 'woe-water'?
Perhaps it, like a loved but flighty daughter,
Has such beauty, but still can chill the blood.
However much the landscape we alter,
Such a temptress can still be known to flood.
But 'though she covers ev'rywhere with mud,
Such indiscretion's easy to forgive.

***The Blue Anchor,* South End, Croydon *c.*1900**

The Bourne left the line of Brighton Road at Southbridge Road by *The Blue Anchor* at South End, Just beyond *The Swan & Sugar Loaf.* Traditionally, Southbridge Road was named because of the bridge over the Bourne.

Although rebuilt, *The Blue Anchor* remains at the junction of Southbridge Road today.

Courtesy of Croydon Public Libraries.

Long on her surface may the wild geese scud,
And by her banks the toad and frog long live.
May her lovely waters man never quell,
But beyond her banks, please God, never swell!

THE BOURNE

by Gwyneth Fookes 1995

Let us celebrate the Bourne.
No longer does it flow and
Gather waters in Croydon
Which lay, unchallenged.
The Bourne, the scurrilous Bourne
Could spread, it created panic
Amongst the poor, their homes
Inundated by the noxious flow.

Now the Bourne barely has
Time to show its face.
It smiles at the Mumbles,
Babbles at Bourne Park
Gurgles round the leeks and sprouts
Is firmly channelled
Then – gulp – it is
Swallowed down a giant pipe.

It is dark, it is restrictive, but
When the waters emerge
In Waddon ponds
They have done no harm
The national concern
That the risen waters
Foretell a national disaster
Is long forgotten.

But do they?
Does the Bourne know?
When havoc is about to be
wrought? Who can tell!
But it need no longer be feared.
Let us celebrate the Bourne.

BOURNE AGAIN!

The rising of the Bourne in 2000 – 2001

A strangely silent and traffic-free Godstone Road, Whyteleafe, inundated by the Bourne in the latter days of 2000. This scene is available as a colour postcard in the Bourne Society's postcard series. ***Photo: Peter Skuse***

In December 2000 the Caterham and Coulsdon Bournes flowed spectacularly, causing havoc, especially in Godstone Road, Whyteleafe, where the A22 was flooded for several weeks. We reproduce an article from the Bourne Society's *Local History Records* **41** (2001). Further articles and photographs appeared in Bourne Society **Bulletin** 183 (February 2001)

THE BOURNE FLOW 2000 – 2001

by Gwyneth Fookes

WITHIN DAYS of copies of the first edition of *A Celebration of the Bourne* being distributed, the Bourne was creating trouble for the residents of Whyteleafe. There had been abundant rainfall during 1999 and 2000, so those in the know were looking for signs of the waters rising near the Woldingham Viaduct. Elsewhere in the country television news and newspapers had been reporting for many months that communities were being inundated with waters from overflowing rivers. Low-lying areas in the south of Tandridge district – Lingfield, Smallfield and Dormansland – had been badly affected by localised flooding. Yet here in the Bourne valleys, there was little sign of constant run-off except a discreet flow at the side of the cricket pitch in Kenley. However, by the last week of November it became clearly visible – a fast- flowing clear stream running alongside Woldingham Road.

The Bourne at Woldingham Viaduct – November 2000 – *Photo: Gwyneth Fookes*

The situation changed dramatically on 12 December 2000. The Society's chairman, Roger Packham, was returning home on that evening on his environmentally friendly bicycle when he and many other people travelling on the A22 at Whyteleafe found themselves swamped by rushing water, which was being swirled into neighbouring

properties by speeding vehicles that did not realise how deep it was. Heavy rainstorms – almost an inch of rain had fallen in the district in the previous 24 hours – had combined with the flow of the Boume to create havoc. Sewage rising through the manholes added to the problems. A number of vehicles became water-logged and had to be pushed out of the water. Water levels rose to 2 ft and were there to stay for the best part of a month.

Local newspaper reports on 15 December described the misery inflicted on nearby firms and residents. Businesses had to close and properties were without electricity in the run-up to Christmas. *The Surrey Mirror* had a photograph of a canoeist in the garage forecourt and reported that by coincidence the floods struck as a printer in Godstone road was producing copies of local weatherman Ian Currie's new edition of his *Surrey Weather Book*. Over 6000 sandbags provided by Tandridge District Council were stacked to keep the water at bay from low-lying properties. Nearby gardens were completely flooded for many weeks. Affected schools closed early for their Christmas holidays, causing problems for people far beyond the short stretch of road that was immediately affected.

After the first hours of the drama, for many days Godstone Road was strangely quiet. It was closed off from Purley to the Whyteleafe traffic island, leaving some travellers with long walks to jobs and homes. Others waited frustratedly at bus stops without realising that no buses would be forthcoming. Only a few intrepid heavy vehicles attempted to drive through the water, which showed no sign of diminishing. The major road had turned into a lake, with children playing in boats or contentedly paddling through the waters. Those without wellington boots surveyed the scene disconsolately.

The watery problem made headlines in the local press until the end of March. Local Members of Parliament Peter Ainsworth and Richard Ottaway called for action, and the Chief Executive of Tandridge District Council met with representatives of Thames Water, Sutton & East Surrey Water, the Environment Agency, Surrey County Council Highways, Croydon Council and the Police in efforts to find a speedy solution. Eventually pumps were set up and six inch wide hoses pumped water from the vulnerable areas near Maple Road to a little further down Godstone Road near *The Rose & Crown,* where it was allowed to run alongside the road and down the drains again. While the pumps were running there was little water to be seen, but damage to the surface of the road prevented it from being reopened for a further few days. A large bund was created to the north of the allotments to contain the water before it reached Bourne View, in a determined effort to prevent polluted water from reaching the Kenley Water Treatment works. Had it done so it was reported that water supplies to 100,000 people in South Croydon and North Tandridge would have had to have been cut off. Throughout the crisis Thames Water was criticised for not having enlarged sewers over the years.

Godstone Road, Whyteleafe - December 2000

Photograph: Peter Skuse

A cyclist negotiates the Bourne flood in Godstone Road, Whyteleafe

Photograph: Peter Skuse)

After the water levels had subsided to a manageable level a large machine was brought in to clear the culverts of debris. This ferocious machine blasted its way through the pipes crushing into fragments anything in its path. Such items as a mattress, a plastic chair, a water heater, and four and a half tons of silt were removed from the pipes. Thames Water set about decontaminating and cleaning the gardens of homes that had been under water for weeks.

When Keith Hill, the Minister for London, was questioned in the House of Commons about the flooding, he replied that the Bourne had only flowed three times in the previous 20 years and the water was prevented from draining away on this occasion by blockages. He added that the pumping arrangements to bypass the blockages had not been straightforward as they also had to protect Kenley Waterworks.

Who was responsible for the Bourne? That was a problem that beset local residents in 1904, and our records do not show how the problems were solved then. In 2001 residents were told by the Environment Agency that the Bourne was not its responsibility because it was not a main river. In a repeat of the situation of 100 years ago, residents were told that each property owner under whose land the bourne flowed is responsible for its maintenance. Tandridge Council and other agencies have authorised a survey of the Bourne that will cost £50,000.

On 14 February 2001 heavy rain again combined with the Bourne created havoc for a second time, but was more quickly dealt with. Early in March, however, Whyteleafe School was still contending with potentially polluted water and gardens were still flooded.

Away a few miles further north another Bourne rose. Our local paper had dramatic pictures of the West Wickham bourne. Where the water bubbled out of the ground there was plenty of room for it to flow over rugby and football pitches alongside Addington Road, although nearby gardens did suffer as well. It made an impressive lake over two feet deep. The West Wickham bourne rises much more rarely than the Croydon/Caterham bourne and traditionally two months later, which it did on this occasion.

Because of the understandable commotion in Whyteleafe, the flow of the Bourne at Coulsdon received no mention in the local press and the floods in Woldingham Road received scant attention. The cricket pitch at Kenley where the Bourne runs alongside the A22 had also been flooded at times. There it had room to spread without causing more severe trouble. Before the inundation in Whyteleafe *The Advertiser* had reported that the Bourne had flooded cellars nearer to Croydon.

Reports of the 1968 flooding in *The Advertiser* on 6 December 1968 written by the Bourne Society's James Batley comment that 'From Woldingham ....the open stream flows between allotments and the railway, then under Whyteleafe Grammar

(Above) **The West Wickham bourne**

February 2001

(Photo: Gwyneth Fookes)

(Left) The Coulsdon Bourne flowing freely behind Coulsdon South Station

January 2001

(Photo: Robert Warner)

School playing field, the school itself and Whyteleafe Road. The open stream continues by the coalyard, snakes across the main road to the gas works – where recent improvements seem to have put paid to the gasometer *(sic)* lake(!) – before emerging behind *The Rose & Crown.*' The gas holder lake is prominent in 1904 photographs. It appears that in 1968 the biggest problems were closer to the source of the Bourne beneath the works and offices along Godstone Road towards Wapses Lodge.

The Bourne has a very old tradition of predicting national disaster – locally, in the distant past it must have *caused* disaster for the people living in low-lying areas of Croydon. Sewage-polluted water in marshy areas must have been disease-ridden in the extreme. Now the waters have become culverted further and further upstream, the problems appear to be moving further upstream.

The Sutton & East Surrey Company tell us that the Bourne for 2000-2001 was recorded at Kenley Weir for 203 days. For the 100 years that the company has recorded Bourne flows, there were only two others that exceeded 200 days, the 1968-1969 flow and the 1974-1975 flow. The most notorious flood in 1903-04 only(!) ran for 181 days.

The last few lines in *A Celebration of the Bourne* poetically suggest that the Bourne need no longer be feared. How wrong can one be!

As the countryside in 2001 is suffering from a major outbreak of foot and mouth disease – that happened too in 1968 – perhaps the Bourne *did* foretell national disaster?

Our local newspapers are to be congratulated on their coverage.

Sources:

Bourne Society publications
Sutton & East Surrey Water Co. plc
The Caterham Advertiser
The Caterham Mirror
The County Border News
Tandridge Magazine

The Bourne Society was founded in 1956 and takes its name from the underground streams which follow the lines of the A22 and A23 roads, meeting in Purley to flow northwards and join the River Wandle, which flows into the Thames at Wandsworth.

The objects of the Society – England's largest local history society – are to extend the knowledge of local history in Caterham, Chaldon, Chelsham, Chipstead, Coulsdon, Farleigh, Godstone, Kenley, Purley, Sanderstead, Whyteleafe, Warlingham and Woldingham, and to ensure the preservation of records and objects of historical interest. The Society's Membership Secretary, Mrs J Hurrion, 7 The Towers, Hayes Lane, Kenley, Surrey CR8 5YL, will be happy to provide details of membership and subscription rates. The Society's website may be visited at: www.bourne-society.org.uk.

The Bourne Society is a registered charity, and as well as general work it has active special-interest groups in archaeology, industrial archaeology, landscape history, photography and pub history. Regular meetings, events and outings are arranged. A wide range of publications is produced, including an annual *Local History Records* which is sent free to members, and the acclaimed *Village Histories* series. For prices and current availability contact Paul Redington, Publications Co-ordinator, 13 Crewes Avenue, Warlingham, Surrey, CR6 9NZ.

THE
BOURNE SOCIETY

The Local History Society covering: Caterham, Chaldon
Chelsham, Chipstead, Coulsdon, Farleigh, Godstone, Kenley, Purley
Sanderstead, Whyteleafe, Warlingham and Woldingham