# *THE WAR OF THE WORLDS*: AN AFTER ACTION REPORT

Thomas Gangale and Marilyn Dudley-Rowley

## Introduction

> *No one would have believed in the last years of the nineteenth century that this world was being watched keenly and closely by intelligences greater than man's and yet as mortal as his own...*

The War of the Worlds may be thought of as Wells's artistic vision of the First World War, in that he presaged some of the experiences of that later war, including the use of chemical weapons, armoured vehicles and aircraft. Of course, Wells's tale also describes a type of war that has yet to be fought, an interplanetary war employing directed energy weapons.

Based on the scenario that Wells presented, how accurate was he? How consistent were his facts with the known science of his time? What if we were to analyse the War of the Worlds as though it were an actual historical event? What were the strategies and tactics employed by the Martians and the British, and were they sound? What factors might have altered the outcome of the war? To set the stage for asking these questions, we present a detailed chronology of the military movements and engagements in the war.

## The Eve of Destruction

> *And looking across space with instruments, and intelligences such as we have scarcely dreamed of, they see, at its nearest distance only 35,000,000 of miles sunward of them, a morning star of hope, our own warmer planet, green with vegetation and grey with water, with a cloudy atmosphere eloquent of fertility...*

Wells's narrator imagines that the light that astronomers saw on Mars in 1894 'may have been the casting of the huge gun, in the vast pit sunk into their planet, from which their shots were fired at us'. Wells's vision of Martian spaceflight technology is terribly crude compared to what Kurd Lasswitz portrayed in his 1897 novel, *Two Planets.* The idea of using a huge, sunken gun to propel cylindrical spacecraft had been described by Jules Verne in his 1865 novel, *From the Earth to the Moon.* In reality, the shock of acceleration from this method of propulsion would have instantly killed Verne's space travellers. It would have killed Wells's Martians just as effectively, especially since Wells describes the Martians as being physically much weaker than humans due to the

lesser gravity of their home world. Moreover, the Martian cylinders, rather than descending gently to soft landings, made hard impacts on the Earth, burying themselves in craters. Again, no human could have survived the shock of such an impact, nor could have Wells's Martians.

That Wells did not come up with a better idea of space travel thirty years after Verne's novel is something of an embarrassment. Percy Greg's 1880 novel, *Across the Zodiac,* describes a spacecraft that lifted off gently from the Earth and although it made a bit of a bumpy landing on Mars it was hardly the crushing impact of Wells's Martian cylinders. Lasswitz's Martian tale described true interplanetary ships rather than mere capsules shot from guns. These ships docked at space stations above Earth and Mars, then shuttle vehicles transported passengers between the stations and the surfaces of the planets. One might counter that Greg's and Lasswitz's visions of interplanetary travel depended on imaginary propulsive forces such as 'apergy' and 'Repulsit', whereas Wells was interested in depicting spaceflight that was based on known physical principles... except that Wells resorted to exactly the same sort of technological dodge by inventing 'Cavorite' for his 1901 novel, *The First Men in the Moon*.

It can be pointed out that military rocketry had gained in importance throughout the 19th century. The designs of Sir William Congreve were used by the British Army in a number of battles during the Napoleonic Wars as well as during the assault on Fort McHenry immortalised by Francis Scott Key's 'The Star Spangled Banner'. Winfield Scott used rockets in the Mexican War and Federal forces often used them against Confederate positions during the American Civil War. By the 1860s rockets were in civilian use as well, for at this time a company in San Francisco was doing a brisk business supplying rocket-propelled harpoons to the whaling industry. Wells's Martians used rockets to deliver their Black Smoke canisters to their targets but apparently Wells did not conceive of far larger rockets being developed, ones that could carry passengers across the interplanetary gulf, not just propel small warheads a short distance. Ironically, as Wells wrote *The War of the Worlds,* a schoolteacher in St. Petersburg named Konstantin Tsiolkovskiy began thinking about rockets as a means of space travel. What a pity that Wells, who had an unquestionable gift for visualising future technological advances, failed to anticipate the technology that would take humankind to the planets.

The launch of ten spacecraft, or 'cylinders', occurred over a period of nine days. We know this because one cylinder was launched each night, so the tenth cylinder must have been launched nine nights after the first one. This first phase of the war began 'towards midnight of the twelfth', i.e., shortly before the

midnight that began the morning of Monday, 13 May 1907, and ended around midnight on Wednesday, 22 May 1907.[1]

As with the launches, one might think that the landings should also have occurred over a period of nine days, since one cylinder should have landed each night around midnight, and thus the tenth cylinder should have landed nine nights after the first one. However, according to Wells's narrative, the fifth and sixth cylinders landed on the same night. We know that the first five cylinders landed on Friday through Tuesday mornings from the citations listed in Table 1.

**Table 1: The Martian Spaceflight Schedule**

| Cylinder | Launch: Earth Time and Date | Landing: Earth Time and Date | Location | Source Text |
|---|---|---|---|---|
| 1 | 00:00 Monday, 13 May 1907 | 00:00 Friday, 14 June 1907 | Horsell Common, Woking | p. 36[2] |
| 2 | 00:00 Tuesday, 14 May 1907 | 00:00 Saturday, 15 June 1907 | Addlestone Golf Links | p. 76 |
| 3 | 00:00 Wednesday, 15 May 1907 | 00:00 Sunday, 6 June 1907 | Pyrford | p. 83 |
| 4 | 00:00 Thursday, 16 May 1907 | 00:00 Monday, 17 June 1907 | Bushey Park, Hampton | p. 119 |
| 5 | 00:00 Friday, 17 May 1907 | 00:00 Tuesday, 18 June 1907 | Sheen, Kew | p. 144 |
| 6 | 00:00 Saturday, 18 May 1907 | 00:00 Tuesday, 18 June 1907 | Wimbledon | p. 132 |
| 7 | 00:00 Sunday, 19 May 1907 | 00:00 Wednesday, 19 June 1907 | Primrose Hill, London | p. 133 |
| 8 | 00:00 Monday, 20 May 1907 | 00:00 Wednesday, 20 June 1907? | Hounslow? | p. 260 |
| 9 | 00:00 Tuesday, 21 May 1907 | 00:00 Wednesday, 21 June 1907? | Merrow? | p. 260 |
| 10 | 00:00 Wednesday, 22 May 1907 | 00:00 Wednesday, 22 June 1907? | Bagshot? | p. 260 |

On page 132 the narrator states:

[1] See Thomas Gangale and Marilyn Dudley-Rowley, 'When was the War of the Worlds?', *Wellsian*, 29 (2006), 2-20, for a discussion on determining the times and dates of events in the war.

[2] All page references are to H. G. Wells, *A Critical Edition of the War of the Worlds*, ed. David Y. Hughes and Harry M. Geduld (Bloomington: Indiana University Press, 1993).

> The sixth star fell at Wimbledon. My brother, keeping watch beside the women in the chaise in a meadow, saw the green flash of it far beyond the hills. On Tuesday the little party, still set upon getting across the sea, made its way through the swarming country towards Colchester.

This suggests that the sixth cylinder landed just after midnight early Tuesday morning, as did the fifth cylinder. Later in the chapter, after describing Tuesday's events, 'That night fell the seventh star, falling upon Primrose Hill'. The following paragraph begins with the events of Wednesday morning. The clear implication is that the seventh cylinder landed after midnight early Wednesday morning. Wells does not mention the landings of the eighth, ninth and tenth cylinders, but we may infer that they landed on Thursday through Saturday mornings. This implies that the landing phase lasted only eight days, beginning early on the morning of Friday, 14 June and ending on the morning of Saturday, 22 June 1907. It also means that the last five cylinders crossed interplanetary space in only 31 days, whereas the first five spacecraft had a transit time of 32 days.

In a manuscript dating from a year before Wells's account of the war began serialisation in *Pearson's*, he stated:

> In all ten cylinders had fallen upon the earth, all of them falling into the county of Surrey except the ones at Hounslow and Hampton Court. The furthest south was the one at Merrow, the most easterly that at Wimbeldon, the westward one fell at Bagshot (260).

We know of the Wimbledon cylinder from the later versions of the story. If we take the Hampton Court cylinder to be the same one that according to the later versions landed in nearby Bushey Park, then we are left with three landing locations not mentioned in the later accounts: Hounslow, Merrow, and Bagshot. Might these be considered the eighth, ninth, and tenth cylinders? There are some problems with trying to fit this early manuscript with the versions that were printed a year later. The most obvious is that the Wimbledon cylinder was not the easternmost landing site, Primrose Hill being a good mile further east. The second problem is that whilst the first seven cylinders had very focussed objectives, these last three, forming an isosceles triangle 15 miles along its long sides, cannot be understood as precisely. In any event, since Wells expunged this information from his published account of the war, it may be that he doubted its accuracy.

Why were all of the landings on Earth at midnight? Since Earth and Mars were near opposition at the time of the Martian invasion, Earth's midnight

meridian was pointed almost directly at Mars. It seems likely that Wells thought that the Martians could only land near the midnight meridian. This may seem an oversimplification on Wells' part, for in reality the Martians could have landed anywhere within thousands of kilometres of the centre of Earth's night side. However, it was high summer in the northern hemisphere of Earth, which meant that the northern hemisphere was tilted toward the sun in the daytime, and thus tilted away from Mars (which was opposite the sun) at night. So, from the Martian point of view, England was positioned on the northern limb of the night side of the planet (see Figure 1). Thus the Martian cylinders had to descend through the atmosphere at a very shallow angle to reach England, which was on the edge of their target, and a miscalculation might have caused them to miss Earth entirely. Timing the landings when the meridian of Greenwich was centred on the terrestrial disk as seen from the cylinder's direction of travel would ensure that England was as far as possible from the limb of the planet, giving the Martians their best chance for landing successfully. This would not correspond to midnight Greenwich time, however.

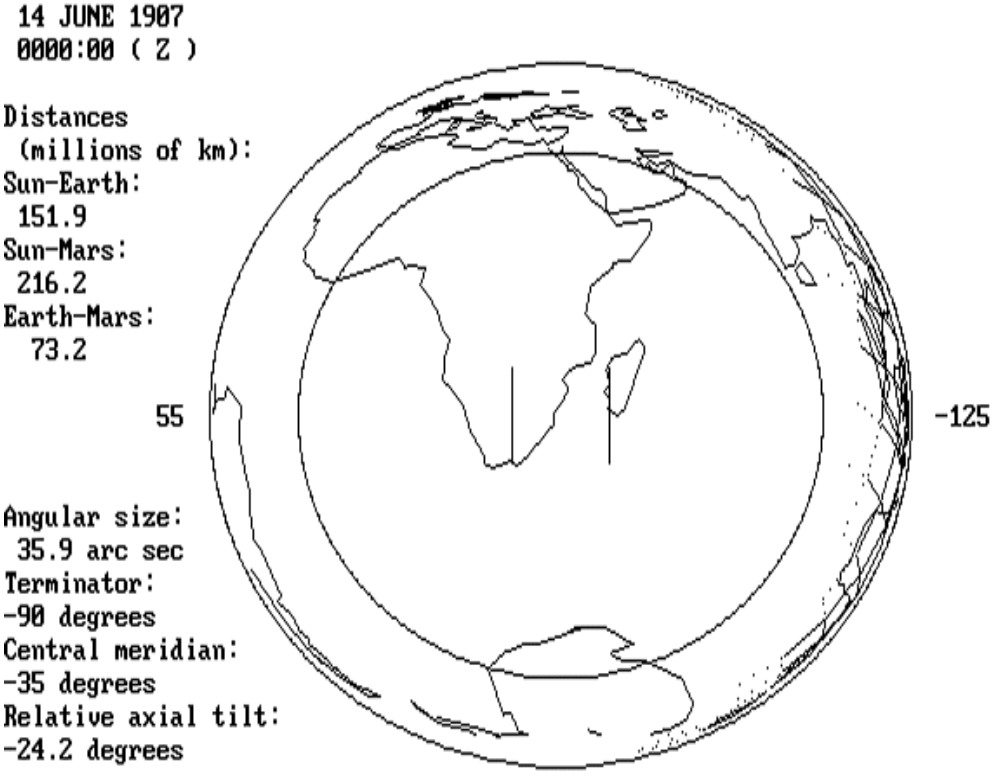


**Figure 1: Earth Viewed from Mars on 14 June 1907**

First of all, Wells states on page 53 that Mars was approaching opposition, i.e., an alignment of the sun, Earth, and Mars. This alignment did not occur until 6 July 1907. Leading up to that alignment, Mars was ahead of the Earth in their respective orbits around the sun, but since Earth's orbit is closer to the sun and therefore our planet travels more rapidly, it was catching up to Mars.

Figure 2 shows the changing positions of Earth and Mars as they moved into alignment in 1907. Measured in reference to the position of Earth at the time of its vernal equinox (first day of spring) on 21 March, Earth was at a heliocentric longitude ($L_S$) of 52° on 13 May, and Mars was at $L_S$ = 73°, 21° ahead of Earth. It was on this date that the Martians launched their first invasion craft. At this time, the midnight meridian of Earth would not have been pointed directly at Mars.

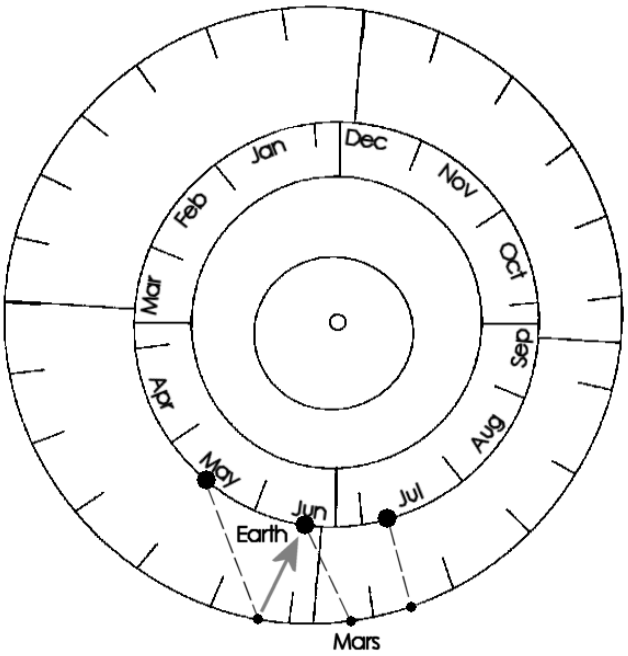


**Figure 2: Positions of Earth and Mars, 13 May 1907 through 6 July 1907**

Secondly, one must consider that the Martians were aiming at a moving target, and therefore had to lead that target. It took 32 days for the first cylinder to cross the distance from Mars to Earth. During that time, Earth had moved forward in its orbit to $L_S$ = 83°. (On that date, Mars had progressed to $L_S$ = 91°, now only eight degrees ahead of Earth. On 6 July, Earth and Mars were aligned at $L_S$ = 104°.) The direction of travel for the first Martian spacecraft would have been from the position of Mars on 13 May ($L_S$ = 73°) to the position of Earth on 14 June ($L_S$ = 83°). Thus, the Martian cylinder would not have headed directly toward to sun in order to reach Earth, but would have approached from an angle considerably west of Earth's midnight meridian. From Figure 2, it can be seen that in terms of relative angles, the view from Earth from the approaching cylinder a few hours before landing would be comparable to the view of Earth from Mars when the two planets were simultaneously at $L_S$ = 73° and $L_S$ = 83°, respectively. The angular offset from the midnight meridian would have been 25°, an angle through which Earth rotates in an hour and 40 minutes. From the

point of view of the approaching first cylinder then, London would be on the central meridian of Earth at 10:20 PM on 13 June 1907 Greenwich time, which would be the optimum time for the cylinder to land (see Figure 3). Because of the slight difference in the planetary configuration when the tenth cylinder was launched on 22 May 1907, and the fact that the transit time was probably only 31 days rather that 32, the optimum time for the landing of the last cylinder would have been a bit earlier on the evening on 21 June 1907, at about 10:08 PM.

Now, why were all of the launchings from Mars also at midnight Greenwich time? Why did Wells think that the journey from Mars to Earth needed to take exactly 31 or 32 days, and not some number of hours either more or less than that? Wells probably reasoned that the great gun had to be pointed at Earth when it was fired, and since Earth was in the noon sky of Mars, the gun would have to be fired at noon every day. However there is no reason why the gun's location on Mars had to cross the noon meridian at the same time that London crossed Earth's midnight meridian. One has nothing at all to do with the other. Local noon at the gun's location on Mars might have occurred at tea time in London, for instance. Of course, it was more dramatic to describe the flashes on Mars occurring near the stroke of midnight.

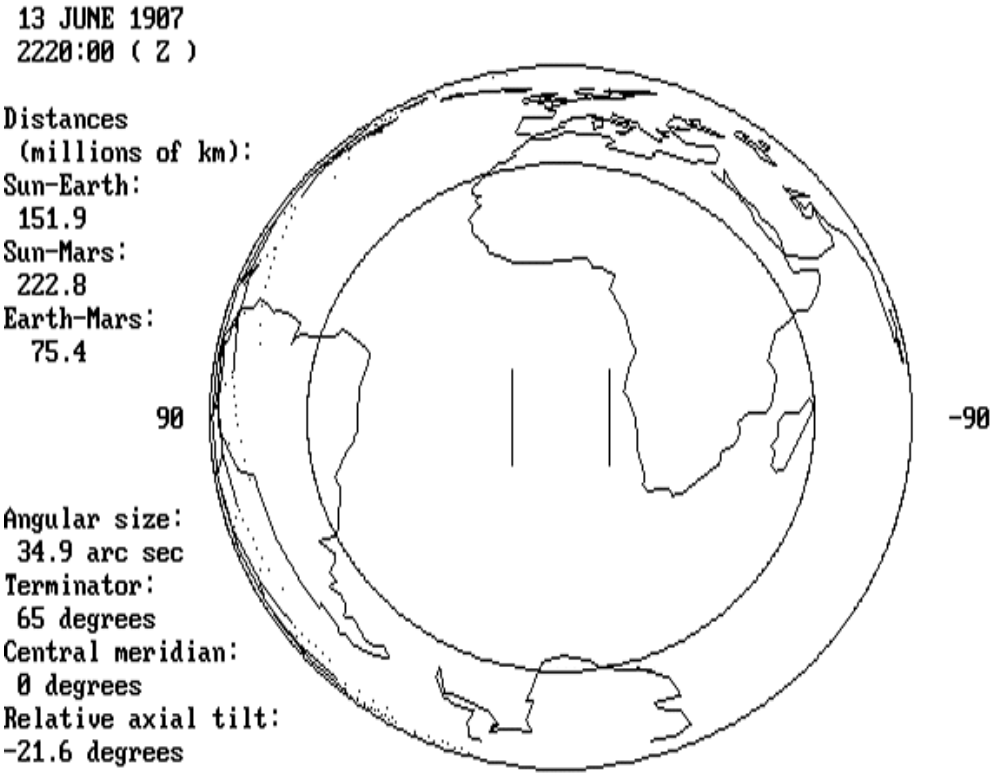


**Figure 3: Earth Viewed from the Approaching Cylinders**

In any case, Wells may have believed that the gun had to be pointed at Earth when it was fired, and thus it had to be fired at Martian noon every day. We have already discussed the fact that the Martian cylinders would not have travelled directly toward the sun in order to reach Earth, but would have had an angular offset of 25°. So, just as the Martians should have landed an hour and 40 minutes before midnight, Greenwich time, they should also have launched their cylinders well before noon, local Martian time. Even disregarding this fact, Wells was entirely mistaken in describing the gun as being fired at 24-hour intervals. Why? Because a Martian day is not 24 hours long. At the turn of the 20th century, it was well understood by astronomers (quoting from Lowell's *Mars,* written in 1895) 'that the Martian day is about 40 minutes longer than our own'. Thus the launch window at the location of the Martian gun must have occurred once every 24 hours and 40 minutes according to a terrestrial clock. Accordingly, if the first cylinder were launched at midnight London time, the second spacecraft should have been launched 40 minutes past the following midnight, the third at 1:20 AM the following night, et cetera. The tenth and last cylinder should have been launched nine days and 360 minutes after the first one, at 6 AM on Wednesday, 21 May 1907.

But, if the Martian cylinders were launched every 24 hours and 40 minutes, could they have landed in England 24 hours apart? Certainly. Each successive cylinder would simply have had to travel a little faster to make the journey across the gulf of space. We have already determined that some spacecraft transited in only 31 days, whilst others took 32 days. Thus the first cylinder could have travelled the distance in 32 days, the second in 31 days, 23 hours, and 20 minutes (40 minutes less time), the third in 31 days, 22 hours, and 40 minutes (80 minutes less time), etc. According to this scheme, in order to land each spacecraft on successive midnights (and not landing the fifth and sixth vehicles on the same night), the tenth cylinder would have made the crossing in 31 days and 18 hours.

Having remarked at how near Britain was to the northern limb of Earth as seen from Mars at the time the Martians launched their invasion, one must point out that from the opposite point of view, Mars was not all that easy to observe from the United Kingdom. In fact, at the latitude of London, Mars rose in the south-eastern sky only 23 minutes before midnight (see Figure 4). By midnight it would have hung but a few degrees above the horizon, for its path through the evening sky would have kept it from rising any higher than about 20 degrees (which it would not have reached until 3:54 AM). It is therefore debatable how well the launch of the Martian cylinders could have been seen from Surrey, and if one's view to the south-east were obstructed by even a low hill, one would have missed the flashes from Mars entirely.

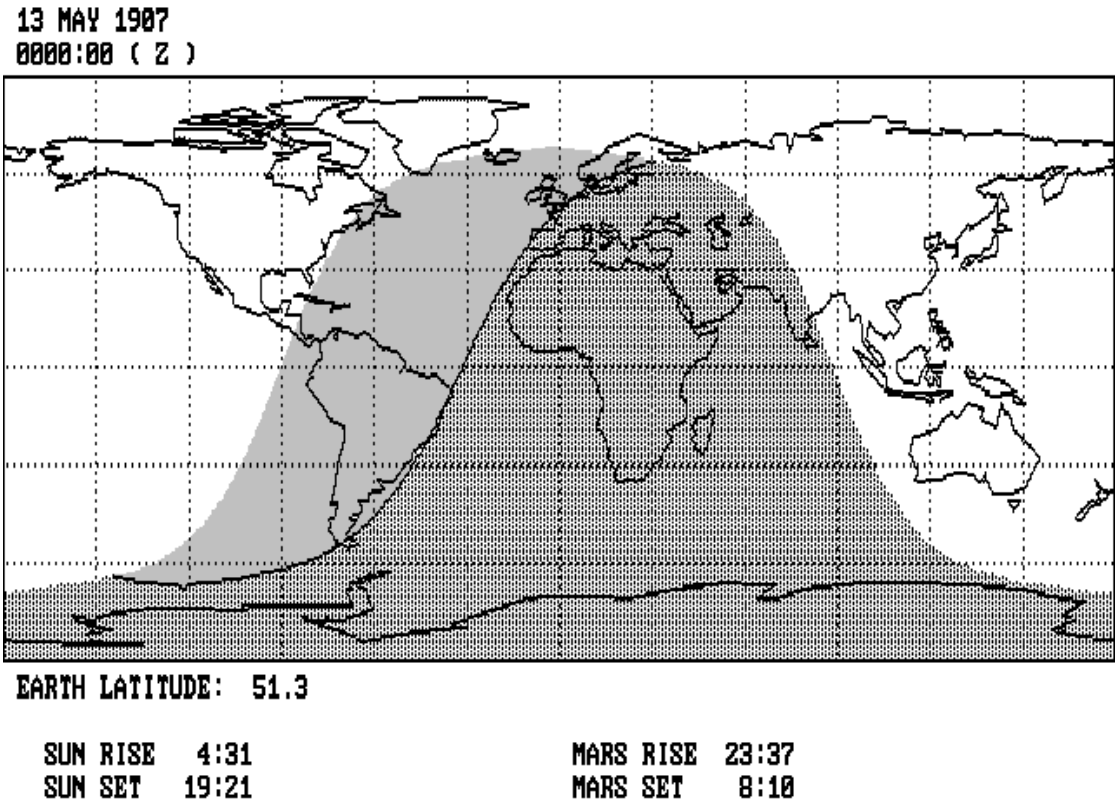


**Figure 4: Rise and Set Times for the Sun and Mars on 13 May 1907**

## The Battle of Horsell Common

*'A shell in the pit' said I, 'if the worst comes to the worst will kill them all.'*

The first Martian cylinder landed on Horsell Common, east of Horsell and north of Woking, at midnight on Friday, 14 June 1907 (see Figure 6). The astronomer Ogilvy located the cylinder soon after dawn. Around 6 AM Ogilvy walked to Horsell to inform a London journalist named Henderson of his discovery and together they returned to the cylinder. By 8 AM a number of boys and unemployed men of the neighbourhood started for the common and within an hour a crowd of approximately twenty people had gathered at the edge of the pit. In the afternoon, Ogilvy was joined by Stent, the Astronomer Royal. As morning passed into afternoon, Oglivy, Henderson and Stent directed workmen in the task of excavating the cylinder. Approximately 200-300 people were on hand when the cylinder opened around 7 PM. At the sight of the Martians the crowd dispersed in horror from the edge of the pit. Later, their confidence somewhat restored by the lack of visible activity, the crowd began to slowly advance upon the pit once more. Their confidence was shortly to be proven ill-placed.

Hostile action began twenty and a half hours after the landing of the first cylinder. The Martians turned their Heat-Ray on the first contact Deputation, which included Ogilvy, Stent and Henderson, at 8:30 PM on Friday, 14 June 1907 (66). Several dozen onlookers were also killed. This unprovoked attack was thought to be due to the Martians' fear of the crowd gathered around the pit.

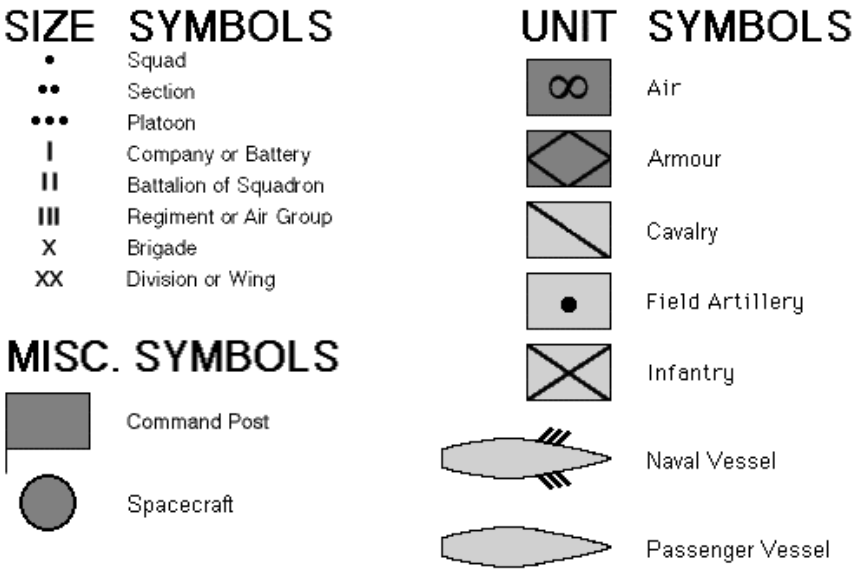


**Figure 5: Battle Map Symbols**

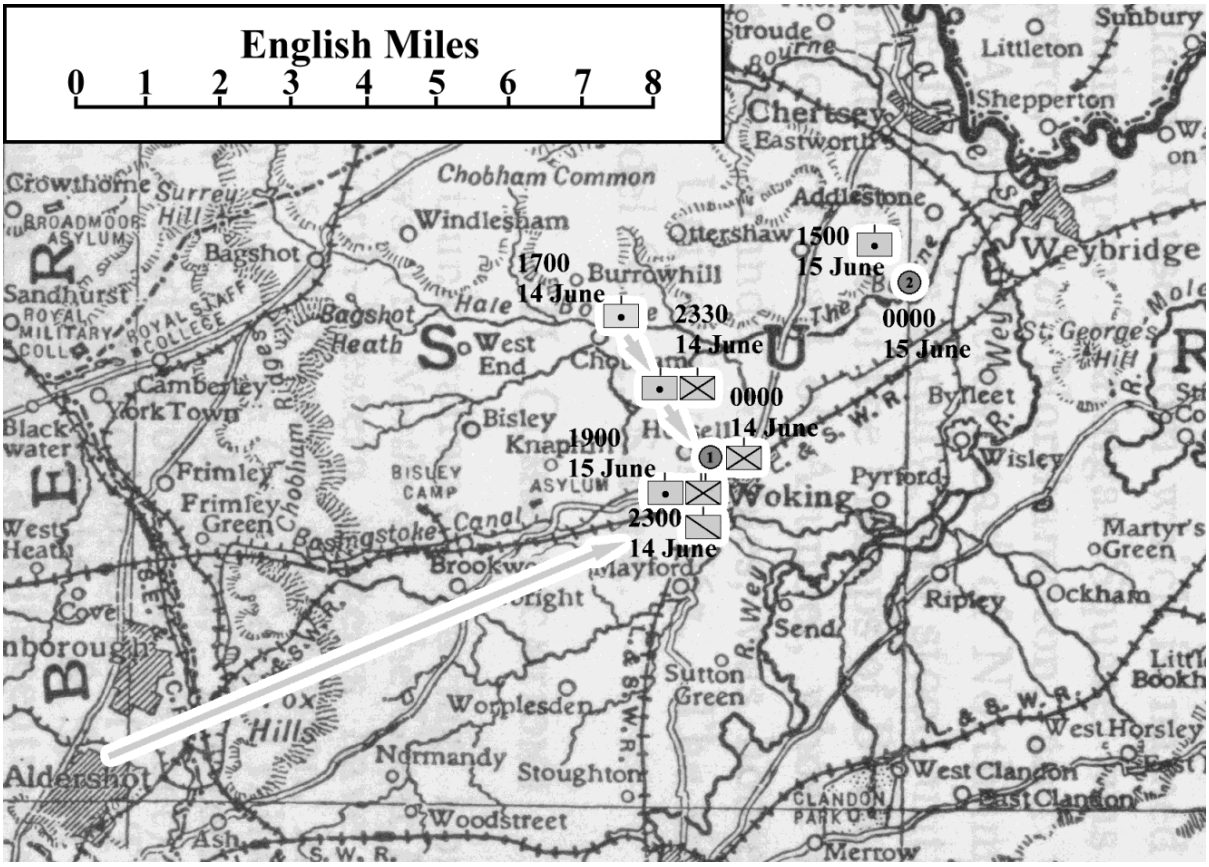


**Figure 6: The Battle of Horsell Common, 0000 14 June to 1900 15 June 1907**

About nineteen hours elapsed from the landing of the cylinder to the opening of the hatch. Why so long? Wells describes that it took many hours for the vehicle to cool after its descent through the atmosphere. This seems to be a technical error on Wells's part. He was acquainted with accounts of fallen meteorites, which being solid require a long time to cool. But the Martian cylinders were hollow, of course, and so would have cooled much more quickly. In our own time, after forty years of spaceflight, we know that vehicles returning from space have cooled off entirely by the time they have completed their controlled descent through the lower atmosphere. Astronauts and cosmonauts typically egress from their spacecraft only minutes after landing.

The British Army's response to the massacre was swift, but proved to be woefully inadequate in its force. At about 11 PM a company of soldiers passed through Horsell and deployed along the edge of the common to form a cordon. At about the same time, a squadron of hussars (light armed cavalry), two Maxim machine guns and about four hundred infantrymen of the Cardigan regiment started out from the British Army garrison at Aldershot, ten miles from Horsell Common. Half an hour later, an infantry company marched through Chobham to deploy on the north side of Horsell Common.

The second spacecraft landed in Addlestone Golf Links at midnight on Saturday, 15 June 1907 (76). Incredibly, it took 15 hours for the British Army to position guns to shell the Addlestone cylinder. Wells's narrator reports:

> About three o'clock [in the afternoon] there began the thud of a gun at measured intervals from Chertsey or Addlestone. I learned that the smouldering pine wood into which the second cylinder had fallen was being shelled, in the hope of destroying that object before it opened.

Actually, the best position for shelling the Addlestone cylinder would have been from the hill north-west of the links, near Ottershaw. However, Wells never mentions the Addlestone cylinder being destroyed. As will be discussed later, the five fighting machines that participated in the Battle of Weybridge the following day were almost certainly from the Horsell and Addlestone cylinders, which further supports the idea that the Saturday afternoon bombardment did not destroy the Addlestone cylinder. How could artillery have failed to hit such a stationary, defenceless target as it lay cooling in its pit? Was this due to the cylinder's exact position being obscured by the smoke of the burning woods?

At 5 PM on Saturday, 15 June 1907, a field gun reached Chobham for use against the Horsell cylinder. An hour later, a battle commenced between the Martians and soldiers around the pit of the first cylinder on Horsell Common. At about the same time, Hussars entered Maybury Hill. At 7 PM, the 12th Horse Artillery Battery arrived in Horsell Common (89; 92). The Horsell party of Martians began to move toward the Addlestone cylinder under what first appeared to by a large shield but proved to be a crouched fighting-machine, which shortly rose into an erect posture. The artillery battery was destroyed before it could be unlimbered and aimed. In the only infantry engagement of the war, a battalion of the Cardigan Regiment rushed the pit in skirmish order and was annihilated by the Heat-Ray. The hussars were out of range of the Heat-Ray as the battle erupted. Meanwhile, the Martians silenced the Maxims that were firing on them. The fighting-machine then destroyed Woking. Following the battle, the Martians deployed a second fighting-machine and the two machines departed for the Addlestone cylinder. Having established physical communication with the second spacecraft, one of the fighting-machines returned to Woking at 8 PM.

## The Battle of Weybridge

> *The shell burst clean in the face of the Thing. The hood bulged, flashed, was whirled off in a dozen tattered fragments of red flesh and glittering metal.*

As midnight struck to begin Sunday, 16 June 1907, the third cylinder landed near Pyrford (see Figure 7). At about the same time, a hailstorm moved into Surrey that lasted a few hours. The Pyrford cylinder formed, together with the Horsell and Addlestone cylinders, the Surrey Triangle, where the Martians would spend the next twelve hours consolidating their position. Shortly after the landing of the Pyrford cylinder, two fighting-machines from the Horsell cylinder moved to link up with the third cylinder. By 3:30 AM fighting-machines were seen shuttling between these two cylinders, transferring materiel. As the storm lifted and dawn broke, Wells's narrator could see fires burning around Chobham, suggesting that the Martians may have attacked targets in that area.

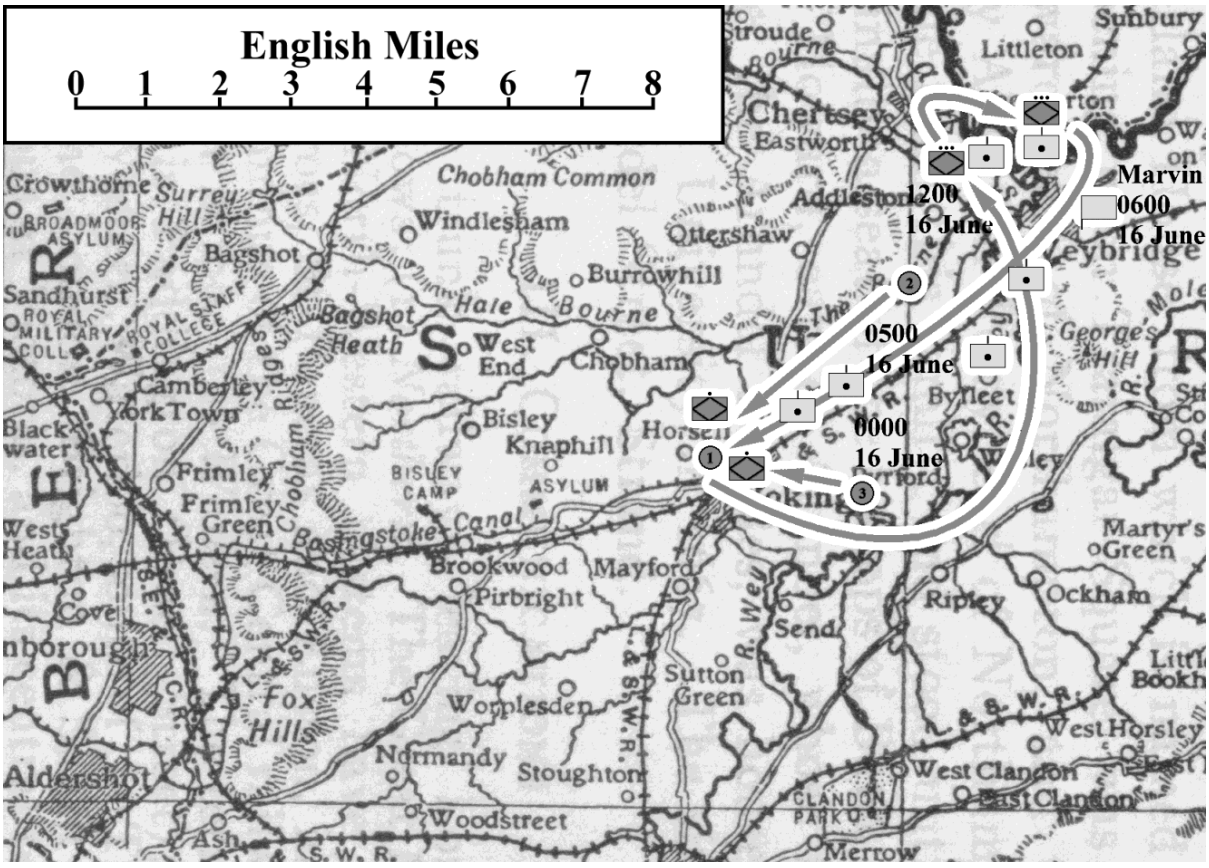


**Figure 7: The Battle of Weybridge, 0000 to 1200, 16 June 1907**

By 5 AM the British Army had deployed artillery batteries in a meadow between Woking and Byfleet, and also at Shepperton. Brigadier General Marvin was on the scene at Weybridge. The 8th Hussars were clearing civilians from the

area between Woking and Byfleet. Meanwhile, the Martians remained within their perimeter throughout the morning.

Finally at noon, five Martian fighting-machines advanced down the Wey River to the confluence of the Thames (96-97). One fighting machine incinerated Chertsey, then swung east to join the other four machines. Well-hidden artillery batteries at Shepperton surprised the Martians, scoring a direct hit to the cockpit of one fighting-machine. Its driver 'was slain and splashed to the four winds of heaven', and the wrecked vehicle reeled into the tower of Shepperton Church before collapsing into the river. However, the remaining four Martians destroyed Weybridge by Heat-Ray. The Martians still had an effective force with which to continue their offensive, but they seem to have been stunned by the loss of the one vehicle. The Martians instead withdrew to the Surrey Triangle, carrying the wreckage of the destroyed fighting-machine. The repulse of the Martians at Weybridge was the British Army's finest hour, but this small victory would prove to be short-lived. In a few hours, the Martians would be back, more formidable than ever.

## The Battle of London

> *Did they grasp that we in our millions were organised, disciplined, working together? Or did they interpret our spurts of fire, the sudden stinging of our shells, our steady investment of their encampment, as we should the furious unanimity of onslaught in a disturbed hive of bees?*

As the Martians withdrew from Weybridge, British Army scouts with heliographs carefully approached the pit on Horsell Common to warn of any Martian activity. The Martians spent Sunday afternoon transferring all of their equipment from the Addlestone Golf Links and Pyrford to the original pit on Horsell Common in preparation for the assault on London. Meanwhile, the British deployed artillery around Kingston and Richmond. Additional guns were in rapid transit from Windsor, Portsmouth, Aldershot, Woolwich and from the north. At 5 PM, trucks bearing huge guns and carriages, and crammed with soldiers, passed through Waterloo Station from Woolwich and Chatham en-route to Kingston.

The Martians began their push on London at 8 PM, when three fighting-machines advanced from Horsell through Byfleet and Pyrford towards Ripley and Weybridge (see Figure 8). Batteries deployed at Ripley and St George's Hill engaged the enemy within half an hour. The Ripley gunners fired one wild, premature, ineffectual volley, then abandoned their position. The Martians destroyed the battery at Painshill Park. The St George's Hill battery damaged one fighting-machine before being destroyed.

The Martians paused for half an hour whilst they repaired the damaged fighting-machine. Shortly after 9 PM, the Martians brought up four more machines from Horsell Common. The new arrivals carried Black Smoke launchers, which they also distributed to the other three fighting-machines. All seven Martian fighting-machines then fanned out along a curved line between St George's Hill, Weybridge and the village of Send (see Figure 9). Four of the fighting-machines crossed the Thames, two of which positioned themselves to face Sunbury and Staines. At this time, the British Army had batteries deployed at Staines, Hounslow, Ditton, Esher and Ockham. The Sunday evening newspapers reported that 116 guns were in position or being hastily placed. The reports indicate that these were all or mostly 12-pound guns, whilst much larger wire-guns of ninety-five tons were en-route from Woolwich.

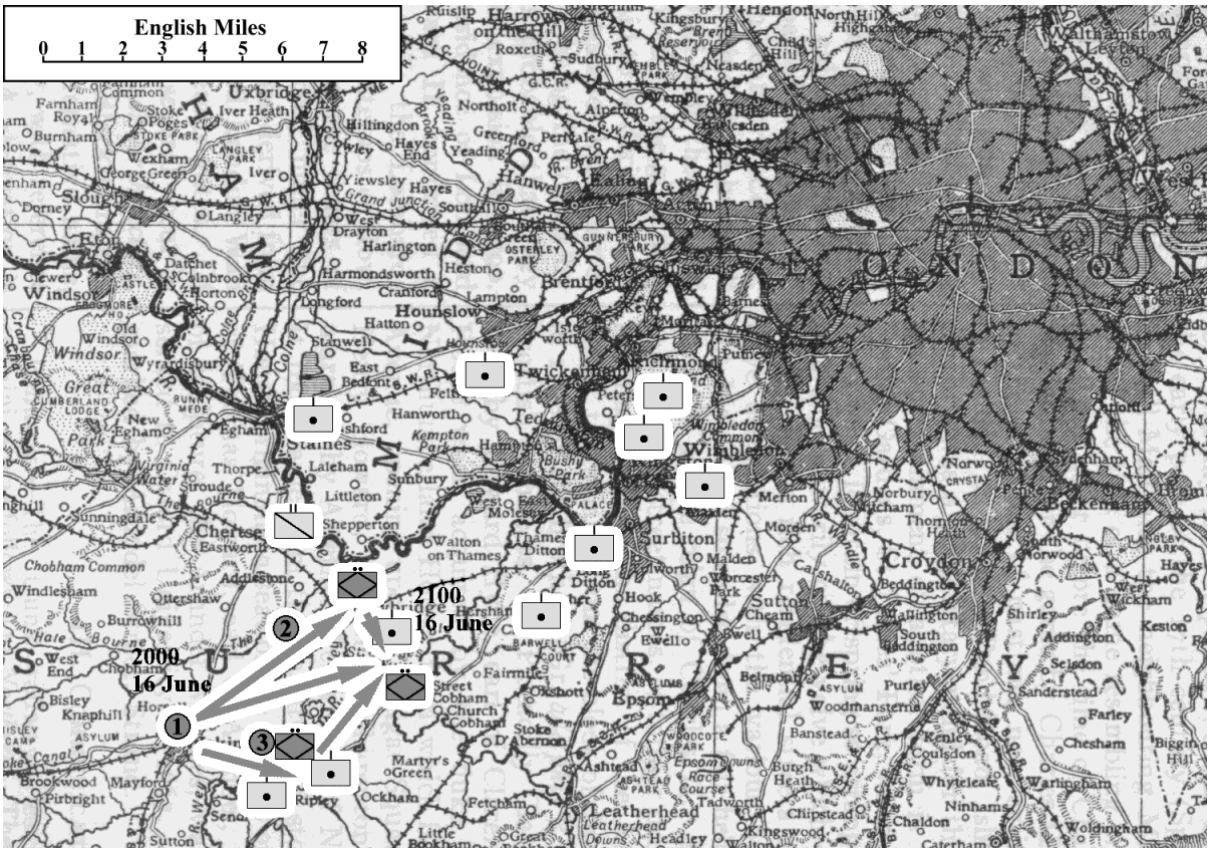


**Figure 8: The Battle of London, Phase 1, 2000 to 2100, 16 June 1907**

It would seem that the British Army had succeeded in concentrating sufficient firepower to defend West London: 116 guns against seven fighting-machines. However, before the Martians advanced within range of this formidable arc of artillery, they launched their Black Smoke rockets across the valley of the Thames, advancing through Street Cobham and Ditton. This poison gas attack began at 9:30 PM. The heaviness of the Black Smoke caused it to settle below the siege guns at Richmond Hill and Kingston Hill. At 11 PM, these batteries fired chance shots towards Hampton and Ditton in the hope of hitting

the Martians, but the volley gave away their positions and the fighting-machines incinerated them within fifteen minutes. The Martians then destroyed Richmond, Kingston, and Wimbledon.

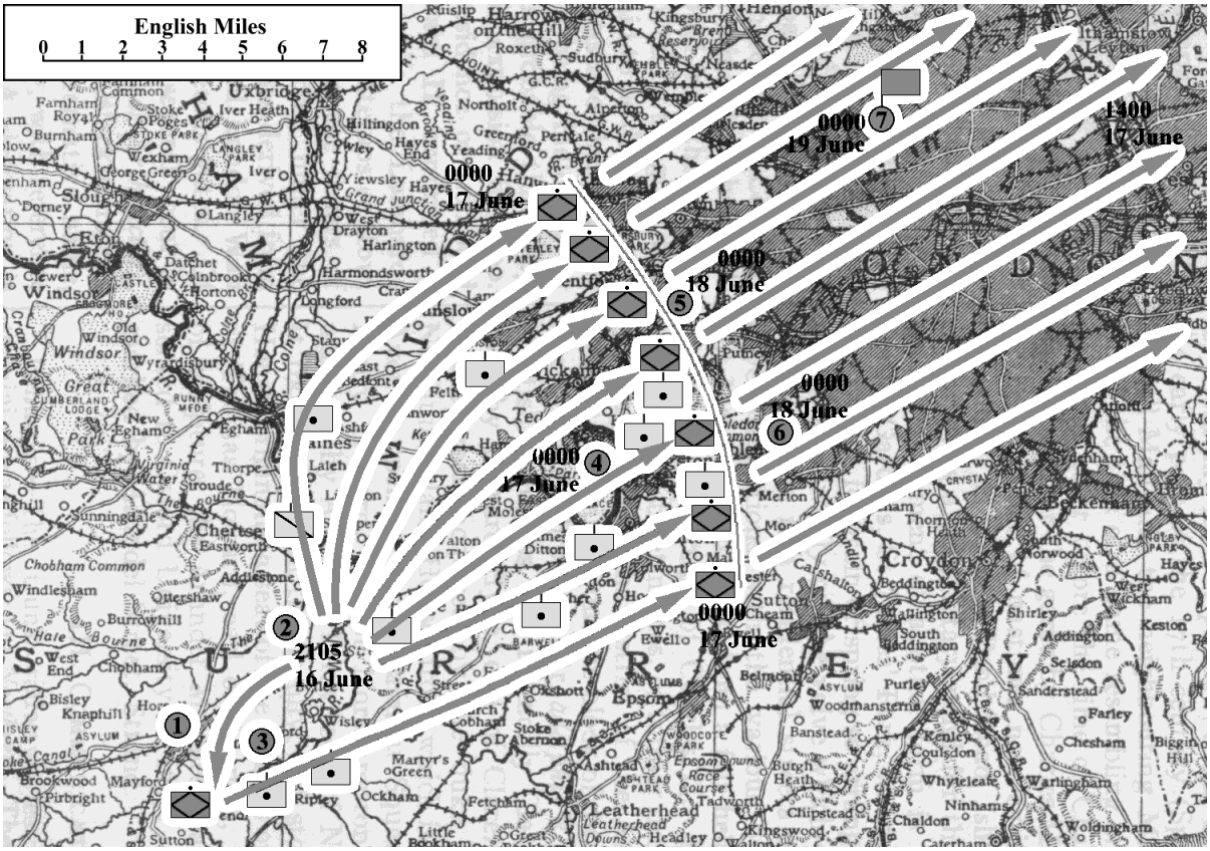


**Figure 9: The Battle of London, Phase 2, 2100 16 June 1907 to 1400 17 June 1907**

By 12:30 AM Monday, 17 June 1907, the Martians had advanced in a line from Hanwell in the north to Coombe and Malden in the south, having made heavy use of their devastating chemical weapon. Organised resistance by British forces collapsed in the face of the Black Smoke, against which there was no defence.

> Even the crews of the torpedo-boats and destroyers that had brought their quick-firers up the Thames refused to stop, mutinied, and went down again. The only offensive operation men ventured upon after that night was the preparation of mines and pitfalls, and even in that their energies were frantic and spasmodic.

By 10 AM Monday police organisation in London broke down as fear-crazed mobs fought over any available means of escaping the doomed city. A couple of hours later, as a Martian fighting-machine was seen at Barnes and Black Smoke drifted over Ealing and the flats of Lambeth, the metropolitan railway system

collapsed. Once overcrowded trains had carried refugees out of London, their crews refused to return for more. By 2 PM, the Martians reached the centre of London.

## The West London Triangle

> *'The fifth cylinder,' I whispered, 'the fifth shot from Mars, has struck this house and buried us under the ruins!'*

The fourth Martian cylinder landed in Bushey Park whilst the Martian advance on London was still in progress. Indeed, the Martians had pushed through the area barely an hour before the landing. This cylinder was the first of three that constituted the West London Triangle (see Figure 10).

Our information on exactly what equipment was transported in this and later cylinders is very sketchy. We know nothing of the contents of the Bushey Park, Wimbledon (the sixth) and Primrose Hill (the seventh) cylinders, and Wells does not even mention the eighth, ninth, and tenth cylinders. It is only in the case of the Sheen (the fifth) cylinder that we have information regarding what equipment was deployed. The digging mechanisms and handling-machines that Wells's narrator observed in Sheen were never reported in Surrey, so we can surmise that the Surrey cylinders contained no such machines.

A few hours after the landing of the Sheen cylinder, the narrator saw a fighting-machine standing sentinel over the still-glowing cylinder. Clearly, this fighting-machine did not emerge from the cylinder, since it was still glowing, but came from one of the other cylinders. The question is, what was the fighting-machine guarding against? The Martians had already employed the Heat-Ray and Black Smoke to clear West London of artillery, which was the only credible threat to the fighting-machines. A logical conclusion is that the Sheen cylinder (and possibly the others that formed the West London Triangle) carried no armament, not even for defence, but transported only logistical equipment to Earth. Possibly this equipment would have been vulnerable to small arms fire as it was disgorged from the cylinder, necessitating a guardian to watch over the cylinder as the equipment was assembled. Also, the Martians may have considered the possibility that the British Army might have been bold enough to bring up fresh field pieces following the Martians' suppression of the Black Smoke.

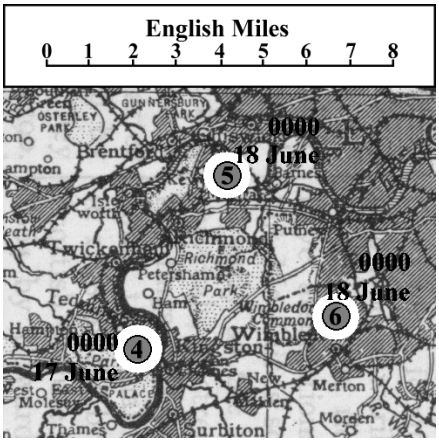


**Figure 10: The West London Triangle**

In any case, Wells's account indicates that the Sheen cylinder may have landed with one handling-machine and one digging mechanism pre-assembled, or perhaps they were assembled whilst the cylinder cooled. The Martians assembled at least one additional handling-machine from the equipment in the Sheen cylinder, as well as an aluminium extractor which was an adjunct mechanism to the handling-machine (153).

## The Battle of the Blackwater

> *A flicker of flame went up through the rising steam, and then the Martian reeled and staggered. In another moment he was cut down, and a great body of water and steam shot high in the air. The guns of Thunder Child sounded through the reek, going off one after the other....*

During the two days following the Battle of London, the Martians consolidated their hold on the city and expanded into Essex. By Wednesday morning, 19 June 1907, it was reported that the Waltham Abbey Powder Mills had been destroyed in a vain attempt to blow up one of the invaders. That afternoon, the Martians reached the Essex coast and threatened an armada of civilian shipping that had assembled to carry refugees to the Continent. It was then and there that the British carried out their last military action against the Martians (135-37).

In the only naval engagement of the war, *HMS Thunder Child,* in order to cover the escape of refugee-laden passenger vessels, made a suicide run at three fighting-machines near the mouth of the Blackwater (see Figure 11). 'It would seem that they [the Martians] were regarding this new antagonist with astonishment.' Indeed, it is likely that the Martians did not at first perceive her as a threat. 'They did not know what to make of her.' The first Martian response was for a fighting-machine to lob a Black Smoke canister at the ironclad, which bounced harmlessly off the hull and into the water, and once the canister hit the

water, it ceased to generate Black Smoke. The Martians' chemical weapon was a poor choice for a naval battle. The Martians certainly knew that water rendered the Black Smoke harmless, for in the final stages of the land battle the Martians themselves had sprayed water to suppress the Black Smoke after it had killed all of the humans in an area. This must be noted as a serious tactical blunder on the part of the Martians, for the delay in directing the Heat-Ray upon *Thunder Child* resulted in the loss of two fighting-machines. *Thunder Child* quickly drove through the small cloud of Black Smoke generated by the canister before it hit the water. Realising its error, the fighting-machine set the ship ablaze with its Heat-Ray, but the ironclad was still able to smash the Martian with a volley from her guns. The British ironclad blew up when a second Martian fighting-machine brought its Heat-Ray to bear at close range. The force of the explosion staggered the Martian, and the flaming wreck collided with the fighting machine. The battle was a British victory in that all of the refugee ships were able to get far enough out to sea that the one remaining fighting-machine was unable to menace them.

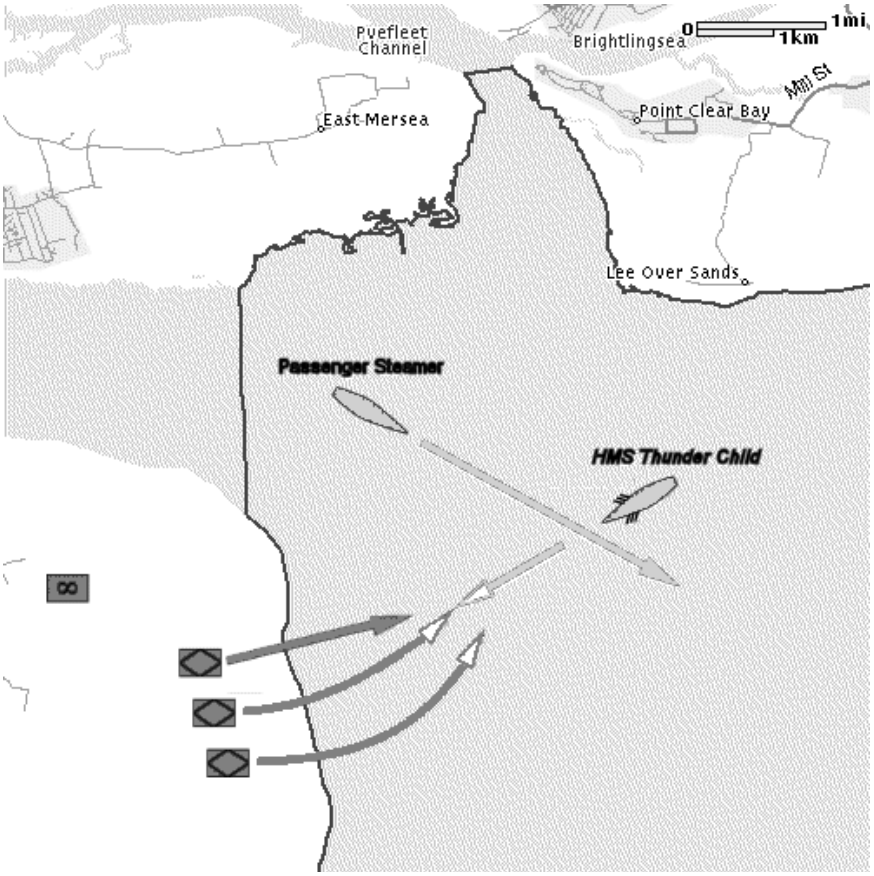


**Figure 11: The Battle of the Blackwater, 1700 to 2100, 19 June 1907**

As the steamer carrying the narrator's brother fled from the coast, he caught a glimpse of a Martian aircraft in the twilight, raining down Black Smoke upon Essex.

## The Last Triangle

> *In all ten cylinders had fallen upon the earth, all of them falling into the county of Surrey except the ones at Hounslow and Hampton Court. The furthest south was the one at Merrow, the most easterly that at Wimbeldon, the westward one fell at Bagshot.*

As discussed earlier, an early, unpublished draft penned by Wells contains the above passage. Since it did not appear in his official account of the war, it is likely that he considered this intelligence to be of doubtful authenticity. We know from the published versions that the fourth cylinder landed in Bushy Park, near Hampton, and that the sixth Martian spacecraft landed in Wimbledon. The seventh landed on Primrose Hill in London. The Hounslow, Merrow and Bagshot locations may correspond to the eighth, ninth, and tenth cylinders, the landings of which Wells makes no mention in the published accounts (see Figure 12).

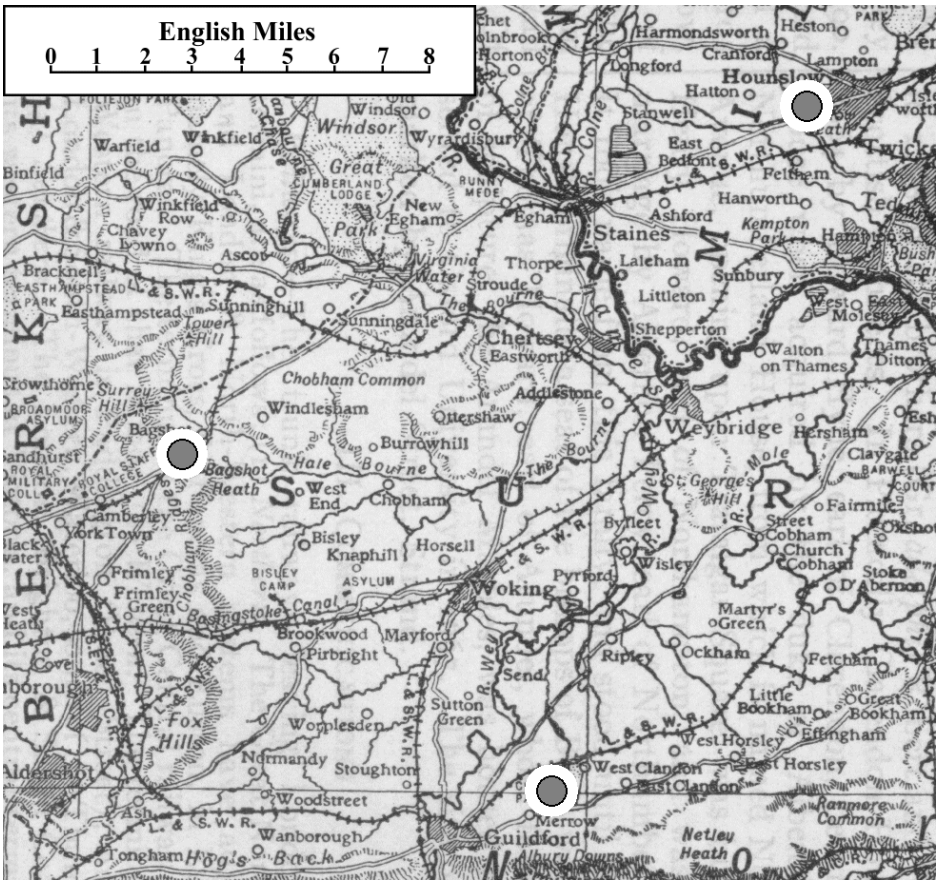


**Figure 12: The Last Triangle**

## The Enemy Within

> *... slain, after all man's devices had failed, by the humblest things that God, in his wisdom, has put upon this earth.*

There is little of a military nature to comment on regarding the Martian occupation, for by definition this period covers the time following the naval engagement at the Blackwater, the last battle of the war. The Martians entered West London early on Monday, 17 June 1907 (120), by which time organised resistance by the British Army had collapsed. If we accept that the narrator's fortnight of imprisonment began on Tuesday, 18 June 1907, then when he emerged on the fifteenth day (counting inclusively) the date would have been Tuesday, 2 July 1907. He encountered the artilleryman the following day (Wednesday, 3 July 1907) and pushed on to London a day later (Thursday, 4 July 1907), whereupon he found evidence that all was not well with the Martians. At dawn on Friday, 5 July 1907, the narrator discovered scores of dead Martians in their pit on Primrose Hill (184-85). Earth overtook Mars in their race around the sun on the following day, Saturday, 6 July 1907. From that day onward Earth steadily pulled ahead of Mars, and the red planet dimmed in the evening skies of Earth as it receded into the depths of space. The war was over.

In Part 3 of this series we will discuss the war-fighting capabilities of both sides and analyse their strategies and tactics in employing these capabilities.

We express our thanks to Greg Brooks, who has been working on his own *War of the Worlds* project, for the many thoughtful questions he posed to us.