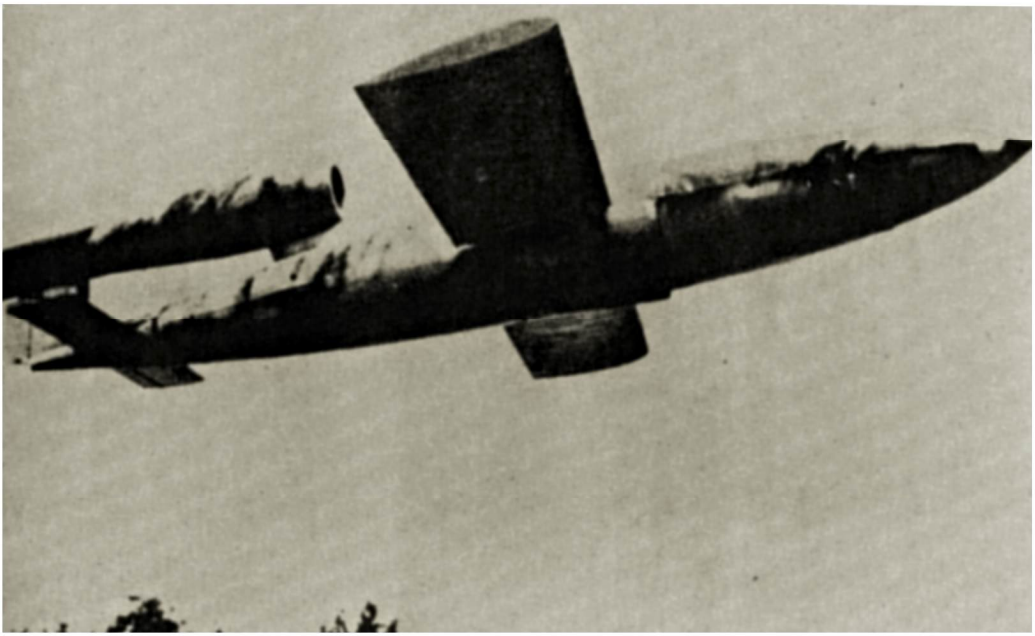
BOURNE DOODLEBUGS

North East Surrey and the Flying Bombs

by Peter and Iris Flint

Foreword by Group Captain John Cunningham, CBE, DSO, DFC



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Cover photograph
FIESELER Fi 103 Flying Bomb (V1)
Overall length 27 ft. 3.5 in.
Wingspan 17 ft. 4.5 in.

Photo - Imperial War Museum (CL 3433)

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Group Captain John Cunningham, CBE, DSO, DFC

Outstanding night fighter pilot and contributor to the tactical arrangement of air defence

Photo - Imperial War Museum (CH 13614)

FOREWORD

by Group Captain John Cunningham, CBE, DSO, DFC

This booklet covers a very important period of the 1939-45 war when the RAF and USAF were extremely busy both bombing the launching sites in France of the yet to be launched V1s and preparing for the successful return of the Allied Ground Forces to the Continent.

The arrival of the V1 in the London area shortly after the Allies landed in Normandy added to the pressures on Headquarters No. 11 Group at Uxbridge - which was the RAF Group responsible for the fighter defence of the south of England - and Anti-Aircraft Command, responsible for the deployment and use of AA guns.

The initial division of the areas to be given to the fighters, AA guns and balloons did not prove to be very practical. It was not until Air Marshal Sir Roderic Hill, C.-in-C. Fighter Command at Bentley Priory, who had overall command of the 'Diver' operation took action in the middle of July 1944 that the change in the positioning of the AA guns took place.

This change meant that the AA guns were concentrated in a dense area along the coast, only firing out to sea and allowing fighters to operate both over the Channel outside the AA guns' range and inland between the AA guns and the balloon barrage, and produced a real improvement in the destruction rate of the V1.

Chapter 1

IN 1943 British Intelligence carefully accumulated information on the development of German secret weapons on trial at a highly secret experimental establishment at Peenemunde and its subsidiary site at Zempin on the Baltic coast. One such weapon was believed to be a large rocket, later to be known as the V2. Another attracting attention was a small pilotless aircraft which was later proved to be nothing less than a jet-propelled flying bomb. It was the latter, the V1, which during the summer of the following year was to create considerable damage to property and loss of life in south east England, especially in the southern and eastern suburbs of London.

Photographic surveillance of the sites eventually produced a picture showing a small aircraft positioned on a distinctive ski-shaped ramp which appeared to be part of a launching facility. Further investigation indicated flight trials of the missile were being carried out over the Baltic Sea and, most fortuitously, radio messages between a chain of radar stations were in use to monitor and report on each flight. British Intelligence was also able to pick up the radio traffic emanating from these trials, and it became an invaluable source of information on the performance and development progress of the weapon.

Earlier, reports arriving from France had told of large concrete structures being built in the coastal regions all within striking range of London, and pointing in that direction. Aerial photographs showed them to be almost identical to the one seen on the Baltic coast, leaving little doubt as to their purpose. Guesses were made about how long it would be before they could become operational. Peenemunde was bombed at night by the RAF and a programme to destroy the 'ski' sites got underway with the United States Eighth and Ninth Air Forces and components of Bomber Command finding their targets by daylight. The cost in men and machines was expensive; nevertheless, although the targets were difficult to destroy, the measure of success was thought to be sufficient to reduce the threat to a negligible level.

In April 1944 the bombing emphasis reverted to other tasks of greater importance, mainly the bombing of continental rail centres in preparation for the allied ground forces' return to the Continent in June, which could be of vital importance to the rail network that the Germans would most likely use for transporting reinforcements and supplies to the battle front. The region they wished to isolate was Normandy and the landings were given the codename 'Overlord'. It was

Launching Ramp

'Modified' type. The bomb reached over 200 mph when leaving the end of the ramp

Photo - Peter Flint

hoped the invasion force would achieve sufficient momentum to take it across occupied Europe and finally into a war winning situation with the capitulation of Germany. By chance, the 'Overlord' bombing strategy later became of great benefit in restricting the flow of German 'V' weapons to their launching sites.

The role given to the home air defences during the 'Overlord' operation was twofold. They were to defend the invasion forces as they assembled and until they were established on the other side, and continue their normal home defence against orthodox aircraft. Also, should they arise, attacks from 'V' weapons (Vergeltungswaffen).

This strategy became known as the Overlord/Diver Plan, 'Diver' being the codename for measures taken against the flying bombs. With the threat from robot weapons now thought to be much diminished and the date for 'Overlord' getting closer, interest became more centred on safeguarding the embarkation ports, now crammed with equipment for the assault. To achieve it, additional guns, searchlights and balloons were taken from elsewhere, including London defences.

On 6th June (D-Day) the Allies landed in Normandy and secured a foothold. Six nights later, on 12th/13th June, four aircraft recognised as pilotless 'Divers' crossed the coast and came to earth in south east England. Some imagined this was to be the extent of the 'V' weapon campaign. This delusion was short lived; between midnight on 15th and 6am on 17th June, radar stations reported 396 'Divers', 268 of them proceeding overland; most had been launched on a broad front between Calais and Dieppe.

What the British had failed to recognise was the advanced state of a large number of new sites they had recently discovered. These were of a new design based on prefabricated sections easily assembled to produce a launching ramp roughly 150 feet long. These 'modified' installations, constructed in great secrecy and well camouflaged, were now showing their worth. Those responsible for organising countermeasures had been neatly deceived. A belated offensive to neutralise the numerous launching sites using heavy bombers failed and by the end of June it was generally accepted that it was a waste of effort which could be more profitably used on wrecking what were thought to be missile storage sites.

At 4.38am on 16th June a violent explosion shook the Warminster Road neighbourhood in South Norwood; this was the arrival of the first of the many V1 flying bombs to fall within the Croydon boundaries; in the following 2½ hours three more fell in the borough. During the morning there were other

incidents: one near Dunmail Drive, Purley and another nearby in Riddlesdown Road.

Netherne Cottages in Woodplace Lane, Coulsdon, were hit and five minutes later a bomb impacted in a copse in Princes Field, Markedge Lane, Chipstead. Other flying bombs fell in Chestnut Avenue, Tatsfield and Chaldon Road Caterham near the junction with Heath Road. Here Surrey Police reported a factory being 'in a dangerous condition' and 12 houses damaged; 100 others needed minor repairs. This figure was later revised to a total of 294 when the extent of the blast was realised. It had carried as far as the Caterham Station area, a mile away.

Depending on the nature of the ground, some bombs made a very small crater, little more than several feet in diameter and two or three feet deep. A final count of casualties from the bomb in Chaldon Road reached 20 adults; at least one death and ten children. The bomb came from a batch of 33 launched from the St. Omer-Dieppe region of France, only half of which found their way through to Greater London. The Riddlesdown Road bomb was also from this series of firings.

The authorities issued explicit instructions to the police about reporting incidents and guarding sites where PACs (at this stage referred to as 'Pilotless Aircraft') had crashed, 'whether exploded or unexploded'. There was no guidance offered about how close a constable could stand when guarding an unexploded specimen and it would seem that this was left to the discretion of the individual. On this basis perhaps one could be forgiven for standing half a mile away. The policeman's duty ended once an RAF Intelligence Officer had attended the incident and given clearance for the bomb fragments to be disposed of. On the other hand, if the officer had not appeared after six hours, it was in order for the police to gather up the fragments and remove them to the local police station to await scrutiny.

Members of the public were urged to report the findings of any unusual scraps of metal. This enterprise was not always of value to scientists who were feverishly working on analysing bomb fragments to determine how the bombs functioned. In one instance the Police recorded 'The metal object reported from Bletchingley Report Post. This object has now been ascertained to be the metal top of an O'Cedar mop.' On another occasion a mysterious object was found to be a cowl off someone's chimney pot. The analysis of fragments, especially those from bombs which had shattered on impact but where the warhead had failed to detonate, made it possible for scientists at the Royal Aircraft Establishment at

Farnborough to make a detailed assessment of the robot aircraft within a few days; a truly remarkable feat[1].

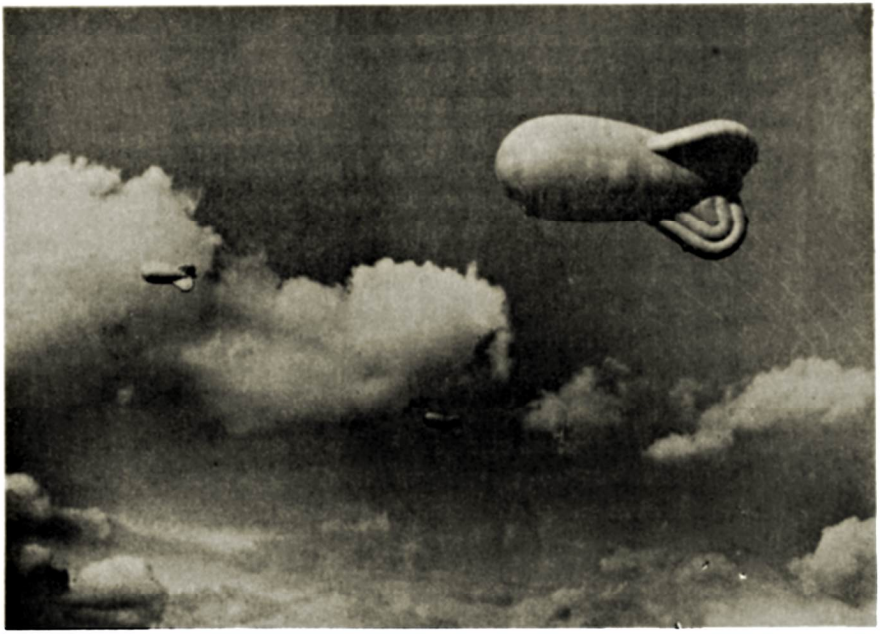
The intensity of the attacks in the opening stages of the bombardment gave cause for great concern and every effort was made to reinforce the defences in the now well-defined paths of the bombs.

At this time anti-'Diver' defences were arranged so that the three main components generally worked within their allotted zone of action. Weather and visibility dictated to some degree whether fighters should have freedom of action in the gun zone or whether guns should receive priority. The plan was for fighters to patrol and intercept over the sea and inland up to the southernmost edge of a searchlight and gun belt positioned in the approaches to London. Beyond this, and supposedly the last line of defence, was a high density balloon barrage.

This arrangement of defences was reliant on two factors. The launching sites in northern France which had been discovered were, in the main, seen to be pointing towards London. They were geographically spread on a broad front and naturally this diminished greatly as bombs were funnelled in towards the capital city. This made it possible to build up a heavy concentration of defence forces in that area. Another known fact was that the missiles, assuming there were no manufacturing faults, would fly a straight and level course. (The scientific examination of V1 fragments later showed the control system would make just one small correction of course soon after launching). Once on its way the missile was totally on its own with no guidance from the ground nor ability to take evasive action if attacked.

By 19th June a barrier of steel balloon cables covering an area 17½ miles by 4 miles deep was spread along the southern fringes of the North Downs in Kent and Surrey. In the next few days the number of balloons on station reached 480 and there were plans to double this figure by removing some from other sites throughout the country; it was hoped to expand the balloon screen to 22 miles long by 6 miles. What restricted any further extension to the west was the fear of bombs being dragged down on to the built up area of Redhill. It was an unforgettable sight when the entire barrage was 'shining'; each silver balloon spaced roughly 60 yards from its neighbour, glinted as it floated serenely in the air. But when one broke loose, for whatever reason, it became a hazard.

[1] There were three independent fuses for the warhead, making failure to explode a rarity. On 23rd June, at Battle in Sussex, this occurred for the first time. The remains were badly smashed, this specimen was, however, of great value. It would appear that all those falling locally exploded.



Barrage Balloons

Each one supported a steel cable

A surprising number of Doodlebugs collided with the cables and continued apparently unaffected.

Photo - Imperial War Museum (CH 1522)

Many balloons became victims of the weather; either strong winds or the presence of lightning usually kept them grounded. A rather nervous lady telephoned the Police to report one which was close to expiry languishing directly above her house, saying 'The balloon is very low and looks as if it is coming down any moment.' She had every reason to be concerned as, when in prime condition, they measured 64 feet with a diameter of 25 feet and it required a full measure of highly combustible hydrogen gas to give enough lift to support the cable.

A runaway would also drag its potentially lethal cable. The cable was so designed that when struck by an aircraft, it would divide. A section would become entangled around the aircraft and another left to be carried off by a deflating balloon. Calls to the Police reporting wayward individual balloons became commonplace. 'I have a barrage balloon in my cornfield', one farmer reported, and there were many other reports of cables strewn across people's property. At Coulsdon, a runaway was seen to drag its cable along the roofs of a row of houses effectively removing chimney pots in its path.

On one occasion, it was not the balloons which caused annoyance, but their handling crews. Farmer Lambert of Beech Farm, Chelsfield notified the local constabulary 'The RAF Balloon people have let about 60 head of stock out of one of my fields. If you have any reports of any found, will you let me know.' Farmers in this area endured the full effect of the balloon cables' ability to direct bombs earthwards. Many flying bombs shot down by guns and aircraft, when not bursting overhead, came to explode in the fields.

Messages to the police relating to unexploded gun and aircraft cannon shells kept them busy. In addition they were also responsible for the smooth flow through the district of a considerable number of large convoys of military vehicles and equipment on their way to the allied forces fighting in France.

It soon became apparent to people in the district that the defences were causing an excessive number of missiles to fall in the locality and the Chief Constable of Surrey was asked to make a note of this in his regular Situation Report. Concern for the safety of children invoked the powers assigned to him under the Public Entertainment Restriction Order and he prohibited the holding of children's matinees in local cinemas. The managers of the Capital Cinema in Caterham and the Plaza at West Oxted were officially informed. These restrictions did not apply to adult performances.

The bombardment continued relentlessly. By 7th July, in spite of the rapidly improving defences, of the 2170 successfully launched flying bombs (or Doodlebugs as they had become known to the public) 1138 reached the Greater London area.

Chapter 2

AT the outset, senior officers thought the possibility of a fighter or AA guns hitting a Doodlebug's explosive warhead and detonating it in the air was 'remote'. However, air bursts did become commonplace. Pilots were warned about approaching too close when intercepting. They were advised not to open fire within 150 yards; experience had shown that there was every likelihood of the resulting explosion destroying themselves. A distance of between 200 and 250 yards was recommended for safety and it would also keep their aircraft relatively free from being holed should they fly through the debris of an explosion.

Most successful interceptions came from damaging a bomb so that it fell to earth or, more satisfactorily, harmlessly into the sea. In the opening phase of the bombardment, guns sited in central London were shooting down bombs into densely populated areas, which had the very effect the Germans intended. This practice was quickly stopped in favour of their being allowed to fly on over.

A study of films taken by intercepting aircraft produced a Tactical Memorandum from Fighter Headquarters. With the aid of radar, Ground Controllers broadcast by radio their estimated course of an incoming 'Diver'. This could be heard by all patrolling fighters. Pilots were to work out an interception course towards it endeavouring to keep to the side of the estimated track and fly at 5000 feet, which was above the normal height of the bomb. When sighting his quarry, the pilot was to achieve maximum speed while making a diving turn to get round behind it in pursuit and positioning himself slightly below. The memorandum suggested he should then carefully raise his aircraft's nose and fire slightly ahead of the target so that it flew into his cannon shells. The drawback of this procedure was that by using a general broadcast of the position of a 'Diver', several aircraft tried to intercept the one target. At night the large flame being emitted by the bomb's engine made initial sighting easier, but dazzling when trying to get into a shooting position. They were small targets and strongly constructed with surfaces mostly of steel, making penetration by small calibre ammunition difficult. The most effective aircraft weapon was the 20 mm cannon.

The Doodlebug

The nose section carried the magnetic compass and air log.

The second section housed a warhead containing 1,870 lbs. of explosive and the fuel tank, filled with low grade petrol, supported the wing.

The Argus jet engine can be seen to the rear above the fuselage. This example is on display at the Imperial War Museum, Duxford.

Photo - Peter Flint

The interception memorandum was no doubt of value but one suspects, with the small amount of time available with most bombs coming in at speeds in the region of 360mph and on occasions nearly 400mph, that pilots tailored interceptions to the prevailing circumstances. Their aircraft were the fastest types; some had engines modified to take higher grade fuel. In the quest for greater speed, minor alterations to the aircraft themselves were carried out and paint was removed to obtain a polished surface.

There were some remarkable achievements. In the late evening of 8th July when patrolling over Kent, Flying Officer R.F. Burgwal, flying a Mk 14 Spitfire of No. 322 Squadron, shot down 5 'Doodlebugs' in a period of 37 minutes. On landing at West Malling, his aircraft was found not to have used up all its ammunition. On the previous day, Burgwal had been 'scorched' through getting too close to his target and having it blow up in front of him. There is much evidence to confirm that pilots were closing up to well within the very minimum shooting range recommended by their superiors. A number were to pay the maximum price for doing so.

On 23rd June, Flying Officer K.Collier of No.91 Squadron sighted a bomb over Beachy Head heading inland in the direction which would have taken it into the Bourne Society area. He used up all his ammunition on it without noticeable effect and, being very close, he drew alongside and at the second attempt tipped it over with the wingtip of his Spitfire. It exploded when hitting the ground, which was thought to be somewhere near East Grinstead. Collier's much publicised, unorthodox technique caught on and soon others were copying it. Flight Lieutenant Bonham, flying a No. 501 Squadron Tempest, finished his ammunition shooting down a bomb, but on landing, claimed the destruction of three others, all of them tipped over using his wingtip[2]. While concentrating on the chase, pilots sometimes found themselves confronted by the balloons and it was not unknown for someone to collide with a cable.

The 7th July dawned dull with a grey overcast sky. Between 6am and 1.30pm activity was comparatively light. Of the 15 missiles that found their way inland only six reached the Greater London area. In the afternoon between 2.15 and 3.58 pm, the number of launchings increased and of the 14 launched, ten crossed the coast between Folkestone and Pevensey, four of these managing to slip through towards London. At New Barn Lane, Whyteleafe children at Kenley Council School were settled in the air raid shelters listening intently for the distinctive clamour produced by a flying bomb's ram jet engine.

[2] Other pilots positioned their aircraft so as to disrupt the flow of air over a bomb's wing. This had the same effect.

By now, like everyone else, they were fully aware of its characteristics; when the noise suddenly stopped they knew the bomb would very soon explode on the ground. Some counted the seconds of silence up to the time of the detonation. However, that afternoon at 2.35, things were different. An enormous explosion occurred nearby almost immediately after the engine cut out. It was very close. A large cloud of smoke and dust began rising over Hilltop Road, near its junction with Hillcrest Road. At No.30, Mrs. Kathleen Turini and her 2½ year old daughter were dead. Six houses had received the full blast of the explosion, many others were damaged to a lesser degree. At the Rose and Crown public house in Godstone Road, windows were shattered and ceilings were down. The schoolchildren emerging from the shelters peered through a haze of white chalk dust now engulfing the area. The realisation of the possibility that their families could have become victims added to their distress.

The Government was very much aware of the need to sustain public morale. Some areas, particularly Croydon, were being heavily hit. By the end of July, 113 incidents had been recorded with the figure for Coulsdon and Purley reaching 44. Lewisham, Camberwell and Lambeth were also suffering badly as were the Kent towns and villages along the missiles' usual route from France to the capital. People going about their daily business were remarkably resilient. Anyone leaving home even for a short period could not be certain it would be there when returning. One comforting thought was that the Fire, Police and Civil Defence organisations were outstanding.

There was a strict enforcement of food rationing and on occasions grumbles were heard about a lack of variety of meat. The nation appeared to be reliant on an excess of pork. Cheese was in short supply. The opportunity to drown one's sorrows with a generous intake of alcohol was difficult. The Surrey Chief Constable noted in his regular Situation Report that public houses in one area were closing for between one and four days a week. To allay feelings of disquiet about the bombardment amongst the public and to show them that the enemy was being hit back in turn, it was arranged for heavy bomber units of the United States Eighth Air Force to fly over London when returning from a daylight raid. This exercise to bolster morale was made 'for the benefit of the general public'.

The distance bombs were able to fly was set before launching. A registering mechanism turned by a small windmill in the nose recorded the programmed number of revolutions, then sent the missile on a downward path. A certain number of revolutions related to a known distance of travel. Engines cut out because the sudden downward plunge of the nose starved them of petrol. This was not an intentional feature of the design.

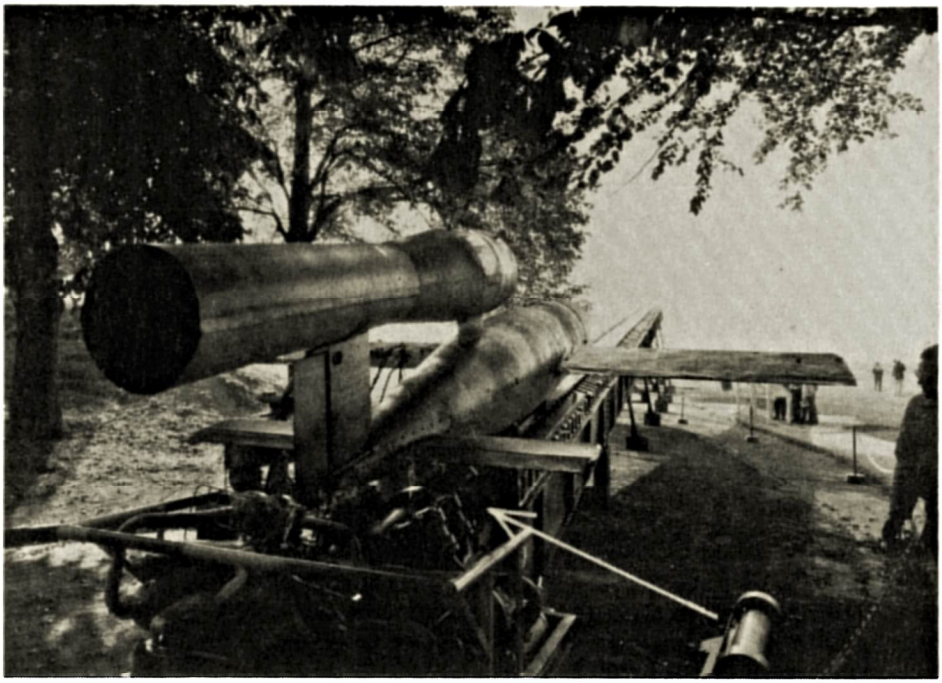
In a 90 minute period on 11th July commencing at 9am, 14 V1s were fired against England, only one reaching the Greater London area. At about 9.30 am one was heard approaching Coulsdon. Young Pat Burgess was casually looking out of the window of her home in St.Andrews Road and commented on the strange behaviour of an aircraft with its engine stopped, hovering birdlike over the valley. Her father in one deft movement grabbed and pushed her into their indoor air raid shelter, managing to complete the exercise before a great explosion shook the neighbourhood. The bomb had missed Chipstead Valley Road School and blown up in a copse at the back of the playing field about 50 yards from an air raid shelter in which the children were taking refuge. Blast damage to the school and houses nearby was extensive.

11 year old Miss Jenden was on her way to school at Whyteleafe and noticed the tell-tale cloud of smoke rising over the area of her home in Gidd Hill. She returned and walking up the road, her attention was attracted to the tileless roofs and shattered windows. The front door of her home was open and through it an ARP man emerged, having searched the house for casualties. Similarly, schoolboy Michael Blake and his mother hurried home to Ridgemount Avenue to see the extent of damage to their house, having seen the bomb arrive over the neighbourhood and plunge earthwards sending up a billowing cloud of smoke.

Among other residents in Gidd Hill, the Brown family was eating breakfast indoors, having slept the night in the garden air raid shelter. A strange swishing sound signalled the arrival of the bomb above the roof of the house seconds before it crashed, blasting splintered glass from the windows in all directions. Audrey Brown and her mother were taken to hospital to have the fragments removed. There were no injuries to the schoolchildren. A teacher suffered severe bruising. Surprisingly, considering the condition of the buildings four children turned up for school in the afternoon and the following day 12 attended.

It is said that some children were about to be evacuated to safer areas of the country when the Doodlebug struck. Ironically, a number of families had moved into the Coulsdon area to get away from Luftwaffe raids on London.

Blast from the bomb, trapped in the valley travelled a distance of ¾ mile, leaving in its wake a trail of damage, most of which was of a minor nature. A final survey recorded that 406 houses were affected. On that day 99 missiles were detected by coastal radar stations and the Royal Observer Corps; 30 of them reached London.



Launching

The ramp was basically a tube on which a railed track was supported.

A heavy dumbell shaped piston (seen bottom right) was inserted into the firing tube and located in a slot on the underside of the missile. A chemical reaction between hydrogen peroxide and a permanganate solution supplied energy which forced the piston driving the bomb up the tube, assisting its own propulsion unit.

Photo - Peter Flint

Chapter 3

DR R.V.Jones of British Scientific Intelligence had earlier been responsible for uncovering the secret work on missile development being carried out at the German experimental establishment at Peenemunde and over the Baltic Sea. As mentioned earlier, one of the most valuable sources of information came from German radio transmissions which gave details of flight trials.

From these close observations he detected a general trend of the bombs to fall slightly short of their intended range. From the evidence of the first day of the bombardment, Jones realised this range deficiency had not been corrected if one worked on the basis that the aiming point would most likely have been in the region of Charing Cross; in fact, it was Tower Bridge, not far away. He also realised how beneficial it was to have bombs falling short in the less heavily populated London suburbs and when, soon after the bombardment started, German Intelligence was pressing its spies for evidence on the fall of the missiles to assess whether their range should be adjusted, he advised the sending of bogus information.

His idea was to match sites of incidents occurring beyond his assumed Charing Cross target area with times of incidents where bombs had fallen short. This could be fed to German Intelligence through secret agents, who were now compromised and being used by the British for deception. Should any other source of information available to the Germans, for example, foreign Embassy staffs, be used to check the agents' reports, the evidence in the form of bomb sites was there to be seen. If the launching crews used the information, it would have the effect of shortening the range. By having the spurious agents communicate acceptable information, it also protected their integrity.

Jones implemented the plan, but news of it leaked out and at the request of the Chiefs of Staff Committee of the War Cabinet, Sir Findlater Stewart of the Home Defence Executive looked into the idea of a deception policy and reported on 5th July. His conclusions were much the same as Dr. Jones' and he advised that 'by special means [agents], we should try to create the impression that the bombs were appearing to overshoot the target (which we assume to be Central London) in the hope that the range and deflection may be moved further to the east and south than it is at present'

At the Chiefs of Staff meeting of 7th July, they asked Stewart to report further on the deception plan proposal. This he did on 16th July reiterating the earlier proposals. He also pointed out that 'in anticipation of the Chiefs' of Staff approval, selected double agents have begun to implement the proposed policy'.

He reported again on 24th July informing them of opposition from the Ministry of Home Security and the Ministry of Production who were concerned about absenteeism from work and the amount of time workers were spending in shelters. They feared that moving the mean point of impact into another district would destabilise what had now become the accepted level of attacks in those areas, affecting the civil defence organisations and the populace at large.

Interestingly, these levels were already being influenced as the debate progressed. As mentioned earlier, the plan was already in use. Stewart concluded his 24th July report suggesting 'that on balance, and apart from the question of principle whether certain sections of the population of London should be exposed to more severe attack for the benefit of the whole, the policy of moving the mean point of impact to the southeast in accordance with the proposal set out in my reports of 5th and 16th July is the most advantageous course open to us.'

Certain members of the War Cabinet were not satisfied and the discussion continued for weeks afterwards without any positive decision.

A later study of German documents showed that the deception policy had worked. It is impossible to quantify the number of lives it preserved by maintaining the target area in the eastern and southern districts of London. From a local aspect, the percentage of bomb incidents appears to have remained relatively much as before, with quite a high proportion falling in fields, on golf courses and open spaces.

The geographical arrangement of the components of the defences was creating problems and proving inefficient. Fighters were being shot at by AA guns, in one or two instances with fatal consequences. There were periods when guns were given priority over fighters and vice versa. The demarcation lines were in practice often confusing and it was generating much hostility between gunners and pilots. On 15th July, Air Marshal Sir Roderic Hill, in overall command of air defence convened a meeting of senior officers who had practical experience of the day and night air defence systems.

Among those present and advising on matters within his own particular field of expertise, that of night fighter interception, was Group Captain John Cunningham, DSO, DFC, one of Croydon's most famous sons. The meeting decided to alter the existing layout to improve co-ordination between the two main participants and also generally make them more effective.

Heavy Anti-aircraft Gun site

Shell bursts indicate the track of a bomb

Photo - Imperial War Museum (H 39948)

The new plan relocated the artillery, then sited in a belt stretching between the Thames and Redhill, to a forward position on the coast ranged between St. Margaret's Bay and Beachy Head. With guns firing seawards, fewer missiles would fall on land as a result of their actions and they could also operate around the clock with no interruptions. Their radar would be more effective and benefit would accrue from the use of a new type of shell. Aircraft were now to operate over the sea beyond the range of the guns and overland behind them as far as the fringe of the balloon zone.

Much to the chagrin of his superiors, Hill implemented the plan without their consent. This new layout proved to be very successful. The guns' improved performance far outweighed the anticipated drop in fighter victims. It was of little comfort, however, to the people living on farms and in villages along the North Downs. The hazard from bombs falling to an ever increasing balloon barrage offset the benefit gained from moving the artillery to the coast. In addition fighters now had complete freedom of action over the area. Despite every effort being made to stop them, many bombs continued their undeviating course inland to cause death and destruction. Many were launched during periods of bad weather to gain some advantage from the poor visibility.

It was during such conditions, low cloud and occasional drizzle, on the morning of 3rd August, that the scale of attacks reached a high point. Between 5.30am and 12.30, radar stations reported the firing of 120 bombs. Those managing to run the gauntlet of the defences to reach London and its environs amounted to 37. There were suspicions of one or two having been launched in flight from Heinkel 111 bombers. The exceptional range indicated by radar suggested this theory. It was known that some aircraft were being adapted to do this type of work.

In a little over five hours, commencing at 5.20am, six fell in the Coulsdon and Purley district. Godstone Road was heavily hit. At 6.55am one crashed into the ground near its junction with Old Barn Lane, at the rear of the Rose and Crown public house.[3] As usual, damage from the blast was spread over a wide area. Nearly three hours later, another fell in the road near the junction with Bourne View and this time damage was more serious. Tiles lifted off many roofs were lying everywhere and the road was awash with water gushing from a fractured main. A detachment of Royal Marines on a scheme providing temporary repairs to bomb damaged houses were working on roofs nearby at the time of the explosion and three were fatally injured.

[3] The public house had already been blasted by the explosion in Hilltop Road and during the 1940 'Blitz' two High Explosive bombs had fallen on allotments nearby. After the war, it was almost completely rebuilt.

Mrs. Rosina Feathers, a resident of Ivy Cottage in Godstone Road, was caught out in the open while walking her dog. Her remains were found 13 days later. Doris Waller and her three-year old son, living at 'Woodstock', a dwelling near the point of impact also perished. An army ammunition lorry parked nearby was set on fire and it required some hasty and courageous work by the soldiers to remove its dangerous load to prevent a greater catastrophe. Godstone Road was in a bad state and the Police closed it to traffic north of Hillbury Road. Nine days were to pass before it returned to use.

It was thought that a balloon cable was instrumental in bringing the bomb to earth but no evidence was found to substantiate it. This latest incident may well have given rise to the belief in the minds of the Godstone Road community that the Germans had selected them for special attention. It was the third occasion on which some of the houses had been damaged by flying bombs and several others had fallen nearby. The inaccuracy of the weapon rules out any theory about Kenley Aerodrome having been the likely target.

It was a strange paradox, therefore, that people travelled from outside the area to shelter in the caves under Riddlesdown in Godstone Road. These were originally old chalk workings which the Ministry of Defence had expanded and used, it is said, for storing ammunition. They were now being used as civilian air raid shelters.

Coulsdon and Purley, for some inexplicable reason, was often officially referred to as being in the Balloon Barrage Belt, but those residing in Bletchingley, Godstone, Oxted, Woldingham, Tatsfield, Chelsham and other North Downs communities were in no doubt that they were. Throughout the various stages of the Doodlebug bombardment, they were resolutely coping with the falling remains of aerial warfare, and of course, the bombs.

All components of the defences at one time or another were intent on bringing bombs down in the area which afforded the last opportunity to destroy them over fields and farmland before they carried on to impact in London. On the hillsides scars standing out in the white chalk were clearly seen where missiles had exploded. In addition during the latter stages, patrolling aircraft were receiving assistance in locating incoming bombs from Bletchingley Royal Observer Corps who were firing distress rockets attracting attention to them. Fighter activity on occasions spilled over beyond the boundaries and bombs were seen to be chased beyond the defence zone with pilots intent on their destruction by gunfire or by tipping them over, then, becoming aware of the built up area, they broke off the engagement.

Once damaged, the bombs' normally straight flight became unpredictable and it was impossible to foretell where they would fall. The RAF, replying to an enquiry about vulnerable fuel depots and dumps from the local Civil Defence people at Tunbridge Wells, answered 'The flying bomb, once it has been hit, does not necessarily dive straight to the ground but may glide for some distance or even execute a small circuit. It is pointed out that even if it were possible to avoid shooting down flying bombs over these fuel dumps and depots there is no guarantee that the missile, owing to its unpredictable course, may not eventually crash on one of these depots.'

By the end of August the bombardment slowed to a mere trickle as rapidly advancing allied armies overran the launching sites forcing activity eastwards. The extent of the retreat was soon to put the weapon beyond range of London. A strong feeling of the end being near took hold, a false impression nurtured by official sources. On 8th September, Duncan Sandys MP, Chairman of the Flying Bomb Countermeasures Committee, called a Press Conference at which he prophesied, 'Except for a few last shots, the battle of London is over'. His astonishingly detailed description of the campaign, the methods employed by the defences and their geographical positioning were presented to the public by the press the following day.

Not surprisingly, it was also read within hours by German Intelligence. With the means of striking at London from continental ground sites diminished, German crews were now concentrating on a devastating bombardment of the Belgian port of Antwerp to deny its use to the allied armies for supplies and equipment. To continue attacks on London, the Germans now relied upon their other system for launching, using Heinkel 111 aircraft to carry missiles to within range and firing them in flight from over the North Sea.

This naturally negated the existing defence layout. It is perhaps ironic that the biggest loss of life in the Bourne Society area came from one such missile and at a time when the populace was beginning to realise that the worst was over. The well defined tracks of earlier bombs on their way into and over the district were now silent.

During the period between 6.22 and 6.49 am on 31st October, four Heinkels approaching over the North Sea despatched their bombs in the direction of London. Only one reached the target. The others fell to the defences. At 6.50am an enormous explosion rocked the Dale Road/Olden Lane area of Purley. The local air raid warning siren had given only 5 minutes' notice of the bomb's arrival over Purley. Through the great cloud of dust and smoke a number of houses were

seen to be badly damaged. Prominent in the centre of the destruction was the St.Marie's Hotel, which had received a direct hit. When the emergency services had completed their work, the death toll had reached 17. There were ten other casualties.

Damage opposite the "Windsor Castle" at South Croydon from a bomb which fell at 07.41 on 18th July 1944. Rescue workers can be seen sifting through the rubble.

If German scientists and technicians had been given time to continue developing the weapons unmolested by Allied bombing, and if they had been allowed sufficient time to produce them in the quantity they had envisaged earlier for use in the spring of 1944, the original timing for opening the bombardment, the British would have been faced with a very serious problem. An early attack on the vast invasion force assembling in southern England may well have altered the course of events. The defences were inadequate for protecting the 'Overlord' operations while simultaneously taking care of the capital city.

In contrast to the pounding the Bourne Society area received from Doodlebugs, when the Germans extended their campaign of destruction using an impressive long range rocket, the V2, to transport a similar amount of explosive to London, the district escaped with only a mere handful of incidents. Discerning people, however, realised the potential of this latest product of advanced technology. Here was a weapon heralding a new era in warfare, a weapon which could be used over great distances to inflict untold destruction and taking of life.

SOURCES USED

Documents in the Public Record Office, Kew

AIR 27	RAF Squadron Records
AIR 25	No. 11 Group Operations Records
AIR 50	Pilots' Combat Reports
AIR 24	Operations Record Book (Air Defence of Great Britain)
	Daily Report on Bombing and various other reports
AIR 8	Fighter Defence against Flying Bombs
AIR 41	RAF Narrative Vol. 1
	V1 Flying Bomb and Rocket Campaign
AIR 37	Commanders' Conferences - Bombing Priority
AIR 16	Deployment of Defences against Flying Bombs
	(Meetings, Correspondence, etc.)
CAB 80	Papers relating to Flying Bomb Deception Policy
WO 199	War Office - Headquarters Papers - Home Forces
HO 198	Home Office reports of Flying Bomb Incidents

Documents in the Surrey County Records Office, Kingston

Surrey Joint Police Force - Day Book

Documents in Croydon Library Local Studies Section

Borough Engineer's Reports on Air Raid Damage

Books

'Most Secret War', by R.V. Jones, Hodder & Stoughton

'The Doodlebugs' by Norman Longmate, Arrow Books

'The Flying Bomb' by Richard Anthony Young, Ian Allan

The Arthur Battle Story, 'The Warren'. Metropolitan Police, 4 Area, magazine.

Despatches in the London Gazette

Air Operations by Air Defence of Great Britain and Fighter Command

The German Flying Bomb and Rocket Offences, 1944-1945 by Air Chief Marshal Sir Roderic Hill

The Anti-Aircraft Defence of the United Kingdom by General Sir Frederick A. Pile.

Correspondence and interviews with local residents.

THE BOURNE SOCIETY

THE Bourne Society was formed 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 northward into the River Wandle. The objects of the Society - England's largest local history society - are to extend the knowledge of local history in Coulsdon & Purley, Caterham & Warlingham, and Godstone districts and their associated areas (these were pre-1964 boroughs) and to ensure the preservation of records and objects of historical interest.

The Society is able to help newcomers to satisfy their curiosity about the area, and to stimulate residents to search out further information. Through its publications, visits, speakers, meetings, placement of plaques, and archaeological work, the Society seeks to place the area in a historical perspective.

The Bourne Society is a registered charity, and as well as general work it has active special-interest groups in archaeology, photography, and natural history. Regular outings, meetings and events are arranged, and a wide range of publications produced, including a quarterly Bulletin and this publication, which are sent free to members.

Membership is open to individuals, families, and organisations; the membership rate for individuals and family members at one address is just £10 a year.