



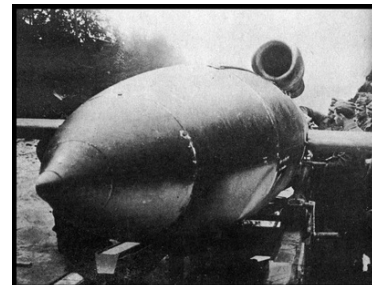
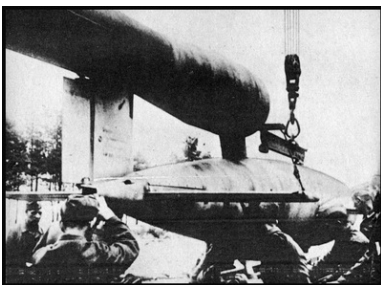
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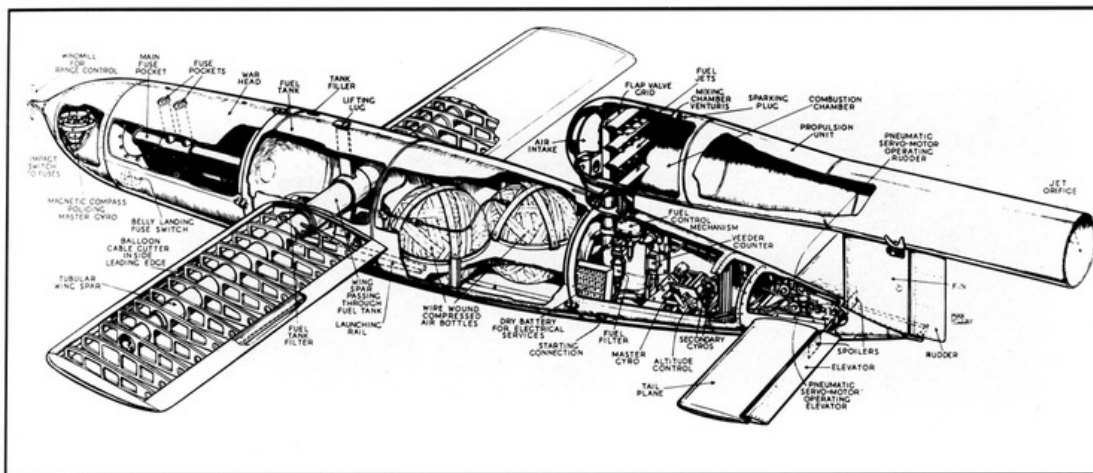
Bound for England! Each V1 that made it into our airspace was given a "Diver" identification number.

On the night of June 12th /13th 1944 the British population were the first to witness the arrival of four small and noisy pilot less planes. The distinctive pulsating drone immediately caught the attention of those still awake that night as these unusual aircraft followed their respective courses over Sussex and onto London. One fell short and landed in the Sussex countryside; one fell on Sevenoaks, one on Gravesend and the last on Bethnal Green. Ten had begun the 15 minute journey from their launch sites in Northern France but haste in the German preparations for this new bombardment of London had accounted for the failures.

This weapon was different indeed and though the British Intelligence Services had known of its existence for some years the sheer audacity of having four of them dropped indiscriminately on the population of southern England was hard to bare.



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The Fieseler Fi103 in cross section showing the various parts. They were cheap to build and easy to assemble and ran on low grade petrol.

There was a delay of three days while the Germans got their act together and all the operational launch sites in northern France could be coordinated after which the bombardment by the newly christened "Flying Bomb" or "Doodle-Bug/Buzz Bomb" began for real. The world was about to be introduced to the first ever robotically controlled guided bomb; in effect a Cruise Missile. (The name "Doodle-Bug" reportedly came from a New Zealand pilot who likened the sound they made to that of an native insect of his home country).

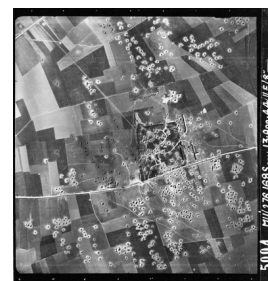
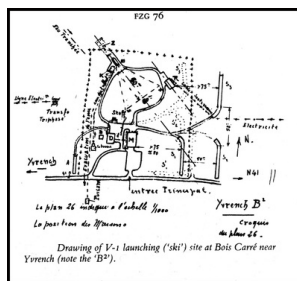
It was known by the German Scientists as:

The Fieseler Fi 103 or FZG 76.

Cover name: Flakzielgerät 76. (Anti Aircraft Aiming Device 76)

Codename: Kirschkern. (Cherrystone)

And by the German Military as: Vergeltungswaffe Eins; (Retaliation Weapon No.1) > "V-1".



The three photographs above show the first "Ski Site" to be identified as a launching site for V-1 flying bombs. The sketch in the middle was done by a French labourer working for the Germans at the site. It shows how accurate the drawing was when compared to the RAF photograph on the left. The drawing clearly shows the location as "Yvrench B2". This was a clever way of deceiving the Germans as Yvrench was the nearest village to the site and "B" stood for "Bois" - Wood; the "2" for square route in French is "Carre", Hence the location was Bois Carre, near Yvrench!



A model of a typical Ski Site often camouflaged in wooded areas



A model of an operational V-1 launching ramp

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oplane aircraft with a wingspan of 17ft 6ins (5.5m) and a length of 25ft 4ins

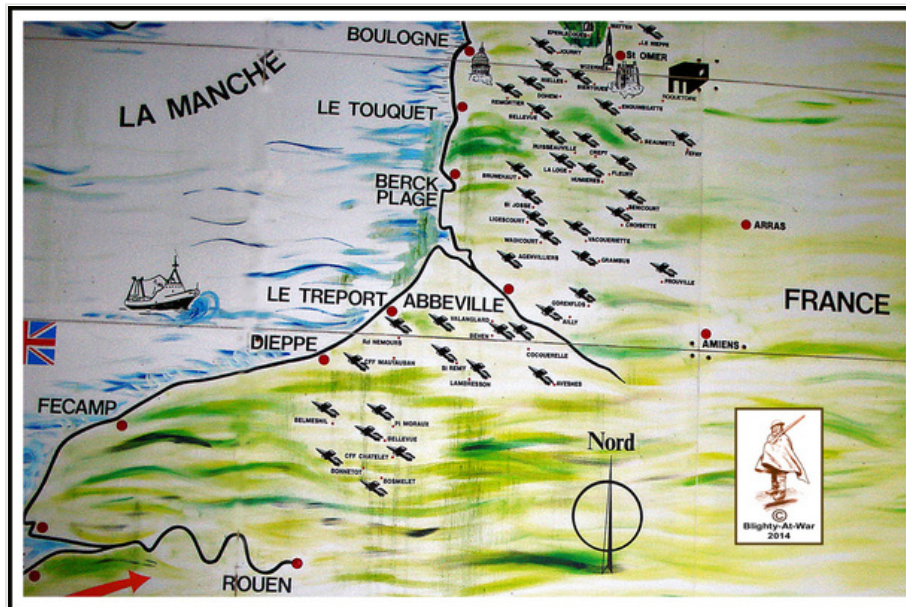
(7.5m). To save on precious aluminium it was constructed of pressed steel sheeting and plywood each costing in 1944, about £600 to build. The machine weighed a little over 2 tons of which 1,870 pounds (850kg) was the high explosive war head; about 40% of the total mass. As the war proceeded further cost cutting and range extending plans were initialised to the point where that last V-1s to fall in Britain were largely made of crude steel paneling with plywood wings.

The power unit was a single Argus pulse jet engine developing 740 pounds (336kg) of thrust with an operational life expectancy of just thirty minutes though some examples were later found to have had seriously deteriorated inlet shutters after much less than this time, probably due to the shortage of suitable materials in manufacture.

After being catapulted off the ground the missile accelerated to its cruising speed of about 350 mph to 400 mph (570kmh) at an average height of around 3000 ft (900m). Though some missiles flew as low as just a few hundred feet and some were recorded traveling as high as 8000ft (2400m). However, above 6000ft (1800m) the air density was generally too thin for the engine to function properly.

On average they flew too high for the smaller calibre AA guns to shoot down and too low for the bigger large calibre AA guns to engage; a deliberate design plan of the German inventors. However Allied ingenuity was put into play during the assault with the invention of the American made proximity fuse which caused a standard anti aircraft shell to exploded when a large metal object was detected close by it. This led to some spectacular one shot kills that amazed even the Germans!

The missile used 150 gallons of low grade petrol, at a consumption rate of one mile per gallon, then in plentiful supply contrary to high octane petrol for aero engines that was getting impossible to obtain by 1944. In fact the synthetic manufacture of oil products was one of the outstanding German achievements of the last years of the war due to the success the Allies were having in destroying the natural oil refineries so desperately needed for the mobilisation of the German mechanized fighting units both on the ground and in the air.



A map showing the location of the many planned launching sites in Northern France. Not all were built but had the offensive been successful some 10,000 missiles could have been fired at England in any 24hr period.

Throughout July to August 1944 launchings were averaging between 120 & 150 missiles per day and sites in the Pas de Calais, Lower Normandy south of Dieppe, and Upper Normandy on the Cherbourg peninsular, began to bombard London and the south east, Portsmouth, Southampton, Bristol and the south west.

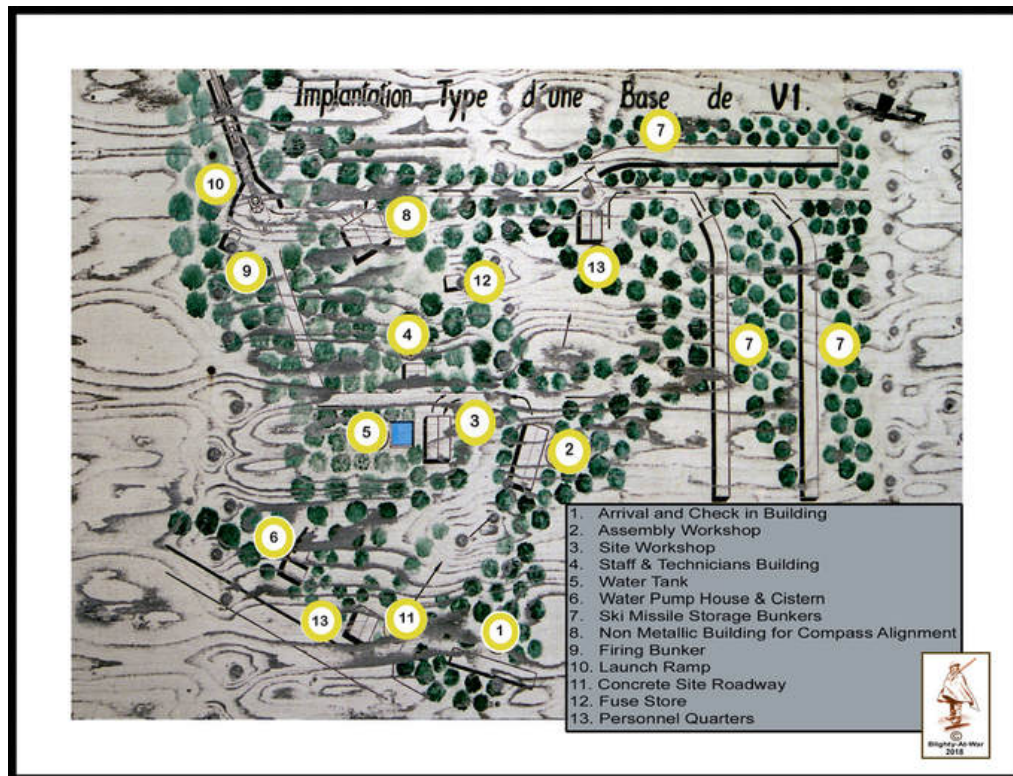
By the end of the first phase of the sustained attack at 0400 hrs on 1st September 1944, some 8,617 flying missiles had been launched against English cities. The second phase covered the period 6th September 1944 to 1st October 1944 and included the air launched V-1 attacks. The final phase covering 3rd to 29th March 1945 saw the last V-1 attacks on England.

1945 was to be the final throw of modified, longer range missiles fired from Belgium and the ordeal of the V-2 Rockets launched from Holland.

By now though the British were gaining the measure of the V-1 and the co-ordinated efforts of both RAF Fighter Command and the anti aircraft gun defences along the south coast were beginning to take effect. The launch sites in France were quickly being found and over run by allied troops and both the USAAF and Bomber Command practiced a relentless program of seeking out and destroying both launching and storage sites on a daily basis.



The photographs above show how some of the ski sites look today. Many survive in excellent condition hidden away in dense woodland or in rural farming areas. Left, is the blast walls for the launching ramp at Bois Carre. Middle, the ski storage bunker at Maison Ponthieu. Right, the assembly workshop at Bois Carre.



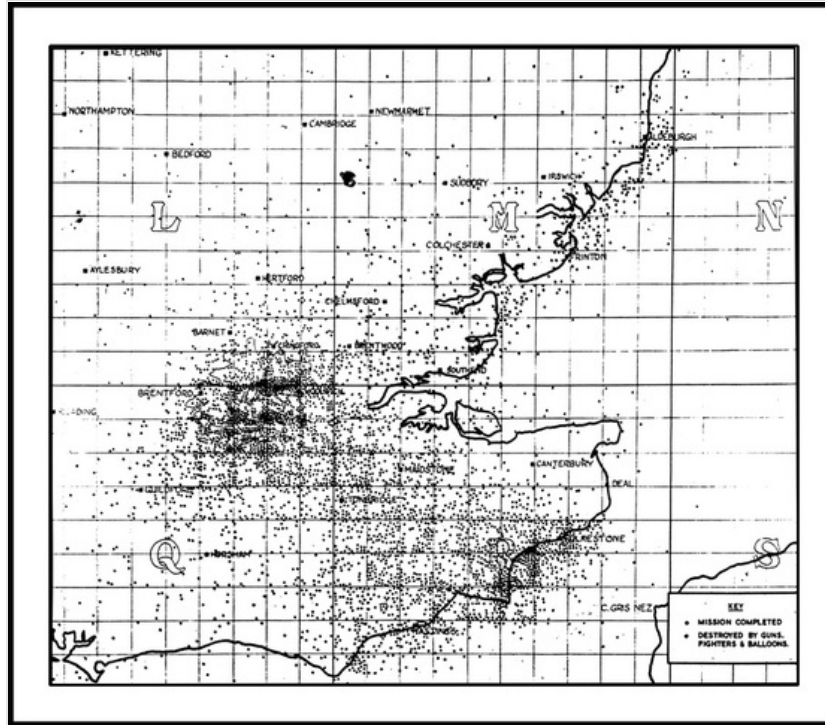
The standard layout for an operational Ski Site. Each one was originally built to the same exact plan. 30 missiles could be stored at each site enough for an intense 24 hours of launching's by a competent crew.

All in all; about 10,500 V-1's were fired at England. Of that total 7,488 crossed the British coast and 3,957 of these were shot down before they could reach their targets. Of the 3,531 which beat the defences, 2,419 reached London. About 30 reached Southampton and Portsmouth and just one hit Manchester.

Therefore about three quarters of all the catapult launched missiles failed to reach any target at all for one reason or another. Those bombs that did get through caused the deaths of 6,184 civilians: an average figure of roughly three deaths for every five bombs launched. A further 17,981 people were injured in one degree or

Put another way, over the ten month long campaign it took on average five tons of high explosive delivered by £3,000 worth of robot technology (the cost of making five missiles at £600 each), to kill just three civilians!

Thus ended the short and somewhat unsuccessful reign of the V-1 and ushered in the beginning of the most sophisticated German weapon of all:- The V-2 stratospheric rocket. The V-1 legacy however cannot be easily overlooked; the missile was an ingenious weapon and in many ways the result of the German obsession for long range bombardment that dated back to the Paris Gun of WW1 with a 76 mile range. If we were then to draw a straight evolutionary line starting with the Paris Gun and ending with the modern Cruise Missile, a point of call would certainly be FZG76.



The fall of shot for the whole flying bomb offensive. Very few actually made it to London, their principle target.

In Conclusion

There are so many “ifs” that could have meant a far different outcome for Hitler’s warmongering scientists. Had the flying bomb been fired in vast salvos and co-ordinated with the manned bomber “Steinbock” raids of January 1944 - and the Germans did plan for this to happen - then the English defences would have been seriously saturated thereby allowing more missiles through to devastate London.

Had the allies not invaded France in June 1944 leading to the eventual capture of all the launch sites by ground forces sweeping through France, and left the invasion till much later; then each of the then modified launch sites would have been very hard to locate and be repeatedly put out of action by Bomber Command.

And then there is the biggest “if” of all which stands for all of Hitler’s V-weapons; Had the same amount of manpower, brain power, money and military strategy been put into the building of a substantial long range four engined bomber fleet together with the earlier instigation for the synthetic production of fuel to power them; on a par with that which was spent on so called, “wonder weapons” of little destructive power but of far greater complexity; then the “Vergeltungswaffe” programme might well have been of truly apocalyptic proportions producing the very outcome that Hitler wanted:- The total destruction of London and with it force Britain’s decision to surrender and to sue for peace under Adolf Hitler’s terms!

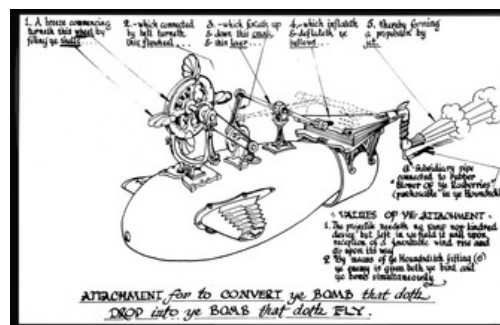


The assembly building at Zudausques now used as a farm building. Many such sites still exist around Northern France.

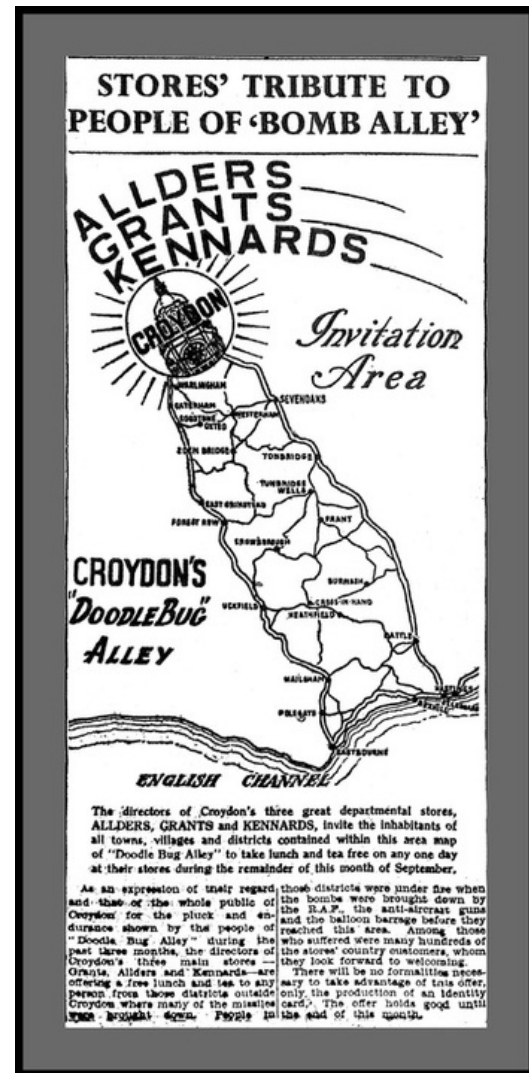
STATISTICS OF THE FLYING BOMB CAMPAIGN AGAINST THE UNITED KINGDOM				
	<i>Ground launched (125 to 130 miles)</i>	<i>Air launched (120 to 150 miles)</i>	<i>Ground launched (190 to 200 miles)</i>	<i>Total</i>
Period	June 13 to Sept. 1, 1944	Sept. 5, 1944 to Jan. 14, 1945	Mar. 3 to 29, 1945	
Daily average	102	8	6	
Maximum effort in a 24-hour period	295	62	16	
Total plotted	8,081	1,012	158	9,251
Number overland	5,232	388	52	5,672
Number reaching London	2,340	66	13	2,419
Number destroyed by:				
Anti-aircraft	1,564½	320	86½	1,971
Royal Air Force	1,902½	72½	4	1,979
Balloons	278			278
Royal Navy	20	11½	1½	33
Total destroyed	3,765	404	92	4,261

Ally Le Haut Clocher	V-1 Launching Site
Audincthun	V-1 Launching Site
Bimont	V-1 Launching Site
Beauvois	V-1 Launching and Storage Site
Bellevue	V-1 Launching Site
Belmesnil	V-1 Launching Site
Bergueneuse	V-2 Storage Site
Bois Carre	V-1 Launching Site
Brunehaut	V-1 Launching Site
Comette	V-1 Launching Site
Croisette	V-1 Launching Site
Domleger	V-1 Storage Site
Groseillier	V-1 Launching Site
Gorenflos	V-1 Launching Site
Gueschart	V-1 Launching Site
Hesdin La Loge	V-1 Launching Site
Humieres	V-1 Launching Site
Huit Rues	V-1 Launching Site
Ligescourt	V-1 Launching Site
Lottinghen	V-1 Massive Launching Bunker
Maison Ponthieu	V-1 Launching Site
Maisoncelle	V-1 Launching Site
Mimoyecques	V-3 Massive Launching Bunker
Nucourt	V-1 Storage Site

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Ruisseauville	V-1 Launching Site
Roquetoire	V-2 Radar Tracking Site
Siracourt	V-1 Massive Launching Bunker
Sautricourt	V-1 Storage Site
St. Josse	V-1 Launching Site
St. Remy Aux Bois	V-1 Launching Site
St. Lue d' Esserent	V-1 Storage Site
Thiennes	V-2 Launching Site
Tammercourt	V-1 Launching Site
Vacqueriette	V-1 Launching Site
Val Ygot	V-1 Launching Site
Yvrench Bois	V-1 Launching Sites
Watten	V-2 Massive Construction and Launching Site
Wizerne	V-2 Massive Construction and Launching Site
Zudausques	V-1 Launching Site



On our most recent visit we discovered that within a few miles of the first site to be discovered by the PRU at Bois Carre, five identical V-1 launching sites were under construction (the original plan was to have 150 sites fully operational by the Spring of 1944). This one small area of the Pas d' Calais could have fired some 150 flying bombs at London in each 24 hour period relentlessly, quite a thought? Above: A model of FZG76 being readied for launch; the process was complex and not all V-1's got airborne; poor manufacture, deliberate sabotage and inexperienced crews were to blame.

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