

German Rocketry in World War II

Nicholas Shreiber

In 1939 Germany started a “small” war against Poland, but by 1942 she and the Axis countries were fighting the world. The Battle of Britain—an all-out assault by the German Luftwaffe on the British Isles—had taken place in 1940, and was a failed attempt to break the back of the British air force and the will of Britain’s population in preparation for Operation Sealion, the planned land invasion.



Lt. N. Shreiber Sr.

After the Battle of Britain, the tide of war slowly but inexorably changed in favor of the Allies. Italy started to crumble, the German offensive in Russia bogged down, and the Japanese—despite early successes in the East—were facing the growing might of the United States, whose mainland factories were too far away to be bombed. Germany would never win the War using conventional weapons. Her only hope lay in developing radically new weapons with which to swamp her enemies.

The ace up Hitler’s sleeve were German technological advances in weaponry that could only be dreamed about by the Allies. Chief among these developments was the rocket program. On June 13, 1944 the V1 “flying bomb” began raining down on London and the south of England. Thousands were launched at England during the next 80 days. This development was followed later in 1944 and in 1945 by the much larger V2 supersonic rockets.

Both of these were fiendish weapons that struck as much terror in the population as the physical damage they created. At first, the Allies were somewhat complacent about the advanced German plans, believing they could simply out-build and outnumber the Axis powers with conventional weapons. But they were in for a nasty surprise that came close to having a more tragic outcome.

In this article I will talk only about the rocket V1 and V2 program (the “V” standing for “Vergeltung”, or

“Revenge”) but it should be noted that by the end of the War, Hitler’s grand plan of radical warfare included, amongst other innovations, jet- and rocket-propelled Messerschmitt aircraft and, even more impressive, drawing-board designs for surface-to-air missiles and long-distance rockets to cross the Atlantic and strike eastern United States. My father, Nick Shreiber, Sr, was a Lieutenant in the

Intelligence branch of the Royal Air Force. He was assigned to study the V1 and V2 program and by the end of WWII was one of Britain’s foremost experts in German rocketry. All facts in this article were taken from his notes, from newspaper clippings, and from other official material he saved.



A V1 flying bomb over Kent, England

The V1

Dubbed the “flying bomb” because that’s what it was - a relatively unsophisticated weapon compared to what would come later - the V1 was actually a jet, not a rocket. It was relatively small (26 ft. length, 17 ft. wingspan) powered by an “impulse duct engine” that provided intermittent jet thrusts - about 45-50 thrusts per second. It was guided by a magnetic compass, a simple gyroscope and a few servo mechanisms. The fuel pump and servo mechanisms were powered by compressed air. The V1 weighed 4,800 lbs. of which 40% was its high-explosive warhead. The device was ingenious because at a preset moment into the flight, a servo-motor would activate small flaps under the elevators, causing the tail to rise, the engine to cut, and the fly-bomb to dive to earth. The blast could damage buildings up to 150 yds. away.



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immediately after the War and lives in Buenos Aires. His brother Peter, also born in Buenos Aires, lives in the Lake District, England.

The V1 was launched from dozens of mobile ramps built in the northern part of occupied Europe and created a devastating psychological effect: people in the path of a flying-bomb could easily hear it, and could watch it cruise at an altitude of only 2,000 to 4,000 ft. Once the engine cut off came the dreaded silence broken only by the explosion on impact.

However, their low cruising altitude and the fact that they flew at about 400 m.p.h. - no faster than a conventional propeller plane - made it possible for RAF pilots and ground - based anti - aircraft guns to shoot them down. Experienced RAF pilots were even known to have flown alongside them over the English Channel and use their own wing-tip to unbalance the wings of the fly-bombs, sending them plummeting into the water. Balloon “belts” just outside London were also used to entangle incoming bombs but, because they did not move, their effectiveness was rather random. The British high command thus faced a delicate defense dilemma: should they attempt to shoot down flying bombs over the sparsely-populated Kent countryside, thus condemning to death a small number of their countrymen who would otherwise have been spared, or allow the flying bombs to follow their course and descend on densely populated London? They sensibly chose the former path, but not without some difficult moral debates reflected in press reports of that time.

The main assault of V1 rockets, “Operation Crossbow”, lasted about two-and-a-half months during which over 8,000 bombs were hurled at England, of which 2,300 hit London! In the first week of the attacks, about one-third were brought down by the combined defenses. Towards the end of the assault, 70% were being brought down and only 9% reached London. Several hundred people were killed and a few thousand injured. Heavy aerial bombardment and the Normandy Invasion in June 1944 closed down dozens of launch sites, thus avoiding a potentially much higher toll.

The V2

This was a totally different animal - a true rocket - for ~~which Germany faced and~~ overcame amazing technical obstacles. Flying at

more than four times the speed of sound with a parabolic path reaching 70-80 miles above the earth, the V2 required radically new thrust technology, fuel mixtures such as liquid oxygen, and control mechanisms. They had to overcome many failures such as the early models (aimed at Russia) that blew up in mid-air through overheating of the skin as they flew through the ozone layer.

V2 rockets were 13-ton monsters, 46 ft. in length. They accelerated from launch to 3,000 mph in 30 seconds, and were impossible to detect, chase, or shoot down by conventional means. They would impact with no warning and blow a deep crater the size of a house. Their impact accuracy of 1 per 1,000 of range (e.g., 300 mt. per 300 km range) was, while nothing compared to today's laser-guided bombs, a major accomplishment for those times.

The first ten V2 rockets were built in February 1943, and German plans called for over 12,000 to be built by the end 1944, as part of their “Operation Big Ben”. Again, aerial bombardment and the Normandy landings thwarted these efforts: only about one thousand were ever built and launched. Nevertheless, the effect on the population and on military commanders was immense.

The Need for Knowledge

The German rocket program was held in the strictest secrecy, complicating Allied efforts to understand its implications and contributing to their initial complacency. A crucial breakthrough came in the August, 1943 bombing of the research and experimental installations

in Peenemünde, on the Baltic coast of Germany. The attack also killed a number of eminent scientists and set the rocket development program back several crucial months.

But more information was needed, both to understand the seriousness and possible implications for the War and to reassure the British population: ignorance breeds its own fear, which can actually be worse than reality. Simply understanding what they were up against would provide a measure of solace to the population. Reports of unknown weapons



V2 supersonic rockets on their launching pads in firing position, being prepared for launching in 1944.

falling on populated areas could have a devastating effect on the morale of troops at the battle-front hundreds of miles away with families back home.

This is where my father came into the picture. He was somewhat of a hybrid: Russian by birth and naturalized a British citizen after his family was exiled from St. Petersburg during the Bolshevik Revolution, he was living in Buenos Aires when the War broke out. He had met and fallen in love with my mother, Phyllis May Clydesdale. During the War they married and, like many British patriots, returned to England to fight. Fortunately, although the convoy that transported them was attacked by German aircraft, their boat was not sunk (although somewhere amongst my parents' belongings is a piece of shrapnel that fell on the deck of their ship during an attack.) On arriving in England my father enlisted in the RAF. Although too old to be a pilot, he did have an Engineering education. Being also blessed with an analytical bent and inquisitive mind, he joined British Intelligence, and was assigned to the German rocketry program.

Despite representing true technological breakthroughs, there were amazingly few failures of V1 and V2 weapons. For example, only four of the first 2,700 flying bombs to hit England did not explode! In part, this low failure rate was due to simplicity of design, and multiple back-up systems. For example, the main detonating device was backed up by two other systems. These few unexploded bombs were analyzed by my father and provided a golden opportunity to glean bits of intelligence. Pieced together with the debris of actual explosions, they yielded enough information to make complete designs of the weapons. The drawings and diagrams rendered by my father and his team were so accurate that after the War they were inducted to the Imperial War Museum in London, where to this day they are still on display - with his name proudly attached.

Apart from analyzing how these weapons were manufactured, launched and operated, my father's responsibilities were to brief military commands and lecture to troops and commanders in the field, including those whose task it was to destroy the infamous launch sites after the Normandy Invasion. In fact, Dad was lecturing troops on the Continent soon after D-Day when the first V2 landed in September, 1944 in Chiswick, the borough where he and my mother lived. He suffered the anxiety of all troops away from home, until he could ascertain, a few days later, that his wife had not been affected by the bombing. Remember, there were no cell phones back then...

After the War my parents returned to Argentina and remained here the rest of their lives. Dad gave a number of lectures, in schools and in other institutions.

Although German technology was soon superseded by the arms race, the Cold War and the extraordinarily successful Apollo moon project, the subject of V1 and V2 rockets caught people's imagination because of how advanced German weaponry had been compared to the Allies'. The ironic turn of events is that one of the main brains behind the Saturn rocket (that propelled the Apollo astronauts) was Werner Von Braun - the architect of German weaponry during WWII, who in 1945 delivered himself and another 500 scientists to the United States.

It must give us pause for reflection that, had Hitler had more time and resources at his disposal, the outcome of WWII could have been quite different. ☐

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