



TANKS ILLUSTRATED No 27

Hitler's Panzers

THE YEARS OF AGGRESSION
BRYAN PERRETT





Cover illustration: As the new generation of Allied tanks began to reach North Africa the Pz Kpfw III's armour became less and less adequate, and spare track links and roadwheels were piled aboard the vehicle to give additional protection. (Charles K. Kliment)

1. Soviet infantry examine some of the 3rd Panzer Division's AFVs caught on a tank-killing ground which incorporates an anti-tank ditch. The armour-piercing strike to the left of the Pz Kpfw III's divisional sign does not appear to have achieved full penetration. (IWM)



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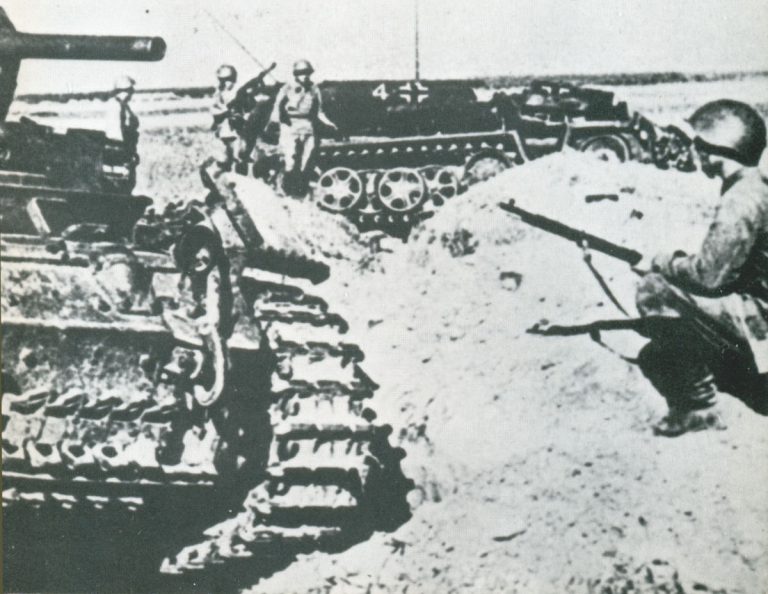
THE YEARS OF AGGRESSION

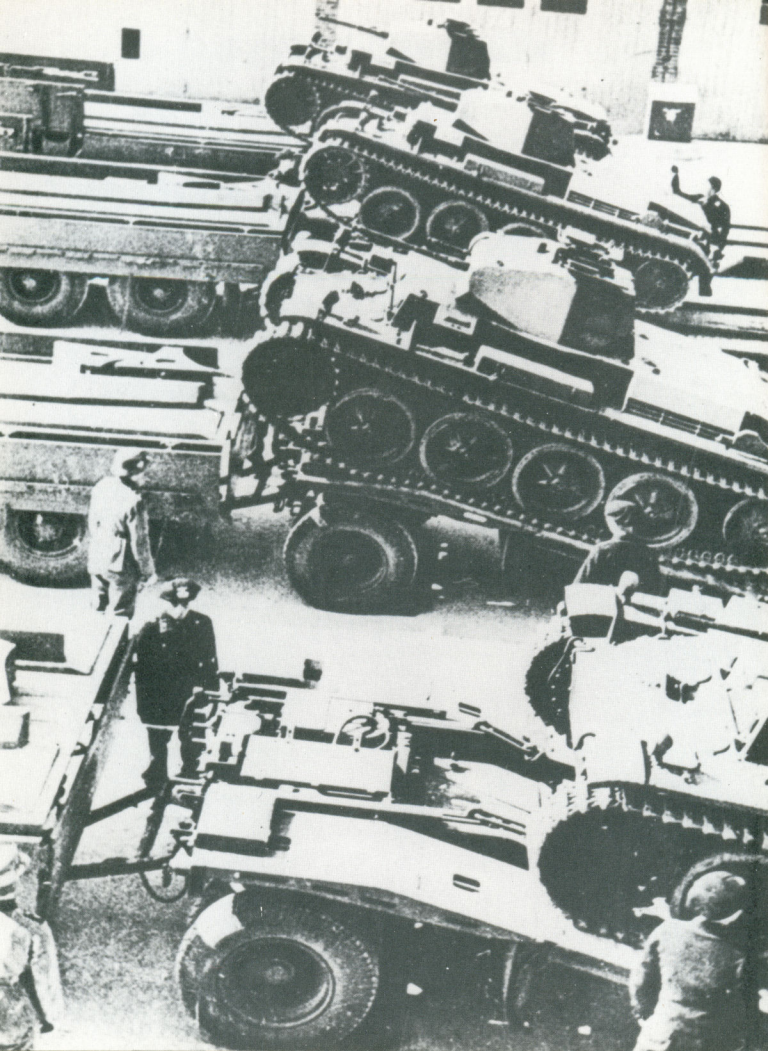
BRYAN PERRETT



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Introduction

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The architects of Hitler's *Panzerwaffe* did not believe that their creation should take the field until 1943 and were understandably far from happy when war broke out in September 1939; indeed, it was only the recent acquisition of the Czech tank fleet which enabled the German Army to embark on offensive operations with any prospect of success, even against an army as patently old-fashioned as that of Poland. Because of its enhanced mobility, the *Panzerwaffe* was in effect an army within an army and was therefore required to perform a strategic role. Its basic formation was the Panzer division, containing a Panzer brigade, a motorized infantry brigade, a motorized artillery regiment, an armoured reconnaissance battalion, motorized anti-tank, anti-aircraft and engineer battalions and divisional services; four cavalry-inspired Light divisions with a smaller establishment also participated in the Polish campaign but were elevated to full Panzer status in time for the 1940 offensive against the West.

After this triumph Hitler doubled the number of Panzer divisions by halving the tank element of each, and it was with this establishment that the *Panzerwaffe* went on to win further resounding victories in the Balkans, Russia and North Africa. These victories were generally gained against the odds, and the reasons for them were two-fold. First the *Blitzkrieg* technique dovetailed with the traditional German thought process known as the 'Annihilation Concept' which had defeated Austria-Hungary and France the previous century and failed but narrowly in 1914; and second, the operations of the Panzer divisions were co-ordinated by the headquarters of Panzer corps, Panzer groups and, later, Panzer armies – vital elements in the command and control apparatus which the *Panzerwaffe's* opponents lacked during the period 1939–42, with which this book is concerned.

The legend of the *Panzerwaffe's* success during these years often obscures the fact that it was, in the main, poorly equipped for the Herculean tasks which it was set. The proportion of light tanks remained far too high throughout; there were never enough of the all-important medium tanks to go round; the numbers of half-track armoured personnel carriers reaching motorized rifle regiments remained tiny; little was achieved in the field of self-propelled artillery mountings until experiences on the Russian Front induced the hasty development of tank destroyers based on obsolete or captured tank chassis; and the delivery of the *Sturmartillerie's* assault guns, designed specifically for infantry support, remained turgid until Operation 'Barbarossa', the German invasion of the Soviet Union, had all but run its course. That the *Panzerwaffe* fought at a qualitative as well as a numerical disadvantage makes its victories the more remarkable and serves to emphasize the excellence of the German technique.

The photographs contained in this collection came from many sources, but in particular I should like to thank Charles K. Kliment for his invaluable contribution and for his generosity in supplying so much interesting material.

Bryan Perrett

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2. A well-organized transporter pick-up for a Panzer unit equipped with Pz Kpfw II Ausf Ds. The Pz Kpfw II Ausf D and E were conceived as fast tanks for the Light divisions and employed a torsion bar suspension with large roadwheels. Two hundred and fifty were built, but the majority were converted to other uses. (RAC Tank Museum)



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3. When the *Panzerwaffe* was formed in 1935 it adopted the simple little Pz Kpfw I Ausführung A as a training vehicle with which basic crew skills could be taught quickly to large intakes of recruits. (RAC Tank Museum)

4. During this period German tanks were painted in a camouflage pattern of brown and/or green over grey, and for a while playing card symbols were used to designate companies within the battalion structure. A white air-recognition roundel has been painted on these vehicles' stern plates and turret hatches. (RAC Tank Museum)

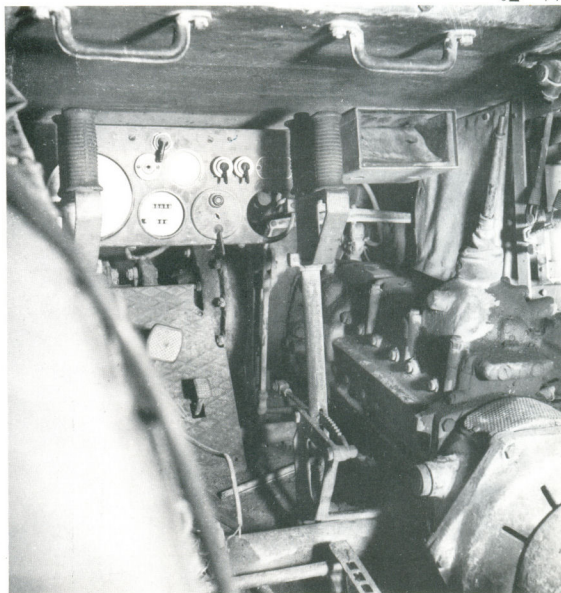
5. Closed-down Pz Kpfw I Ausf As advance at speed during a prewar exercise. The vehicle's armament consisted of two 7.92mm MG 13 machine guns mounted in tandem but capable of independent fire. (RAC Tank Museum)

6. The Pz Kpfw I Ausf A chassis was also used by the NSKK (National Socialist Motor Corps) for driver training. The NSKK operated under the guise of a sporting organization in much the same way as the *Luftwaffe*-sponsored gliding clubs. This chassis continued to be used for preliminary driver training throughout the war and was latterly powered by wood gas. (IWM)

7. The driving compartment of a Pz Kpfw I Ausf A. The steering levers also acted as parking brakes. (RAC Tank Museum)



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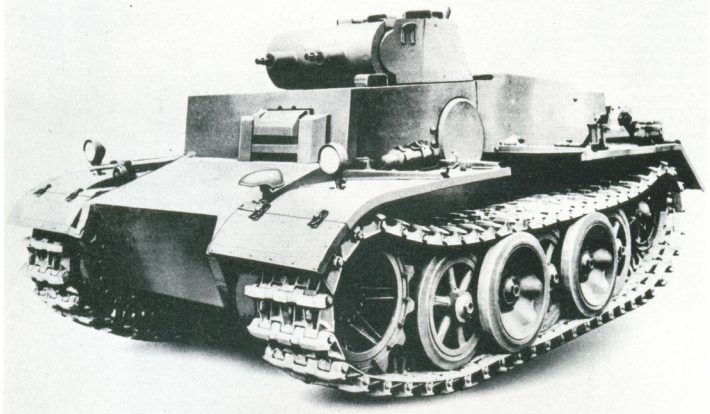
8. The Pz Kpfw I Ausf B was fitted with an improved transmission and a more powerful engine, to accommodate which it was necessary to extend the engine compartment to the rear. In turn, this meant a longer, five-wheel suspension, while the idler was raised to ease steering (Charles K. Kliment)

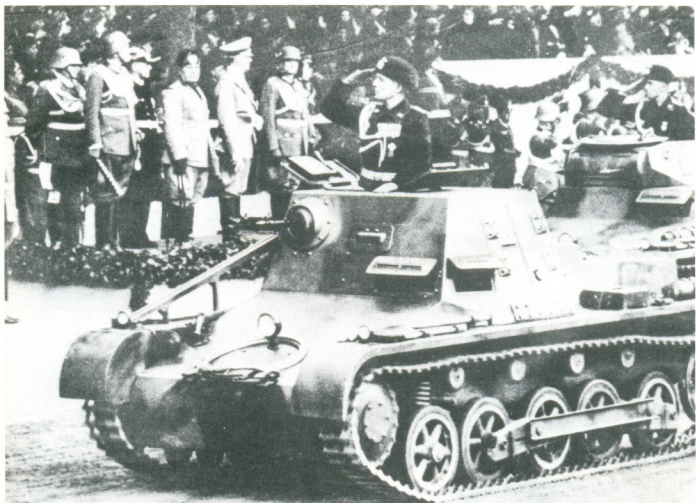
9. Designed for infantry support, the Pz Kpfw I *nA verst* employed the same interleaved suspension and 150hp engine as a cancelled reconnaissance version of the Pz Kpfw I, designated Ausf C. The description *nA verst* stands for *neue Ausführung, verstärkt* (new model, up-armoured), the vehicle being protected by 80mm frontal armour. The Pz Kpfw I *nA verst* entered service in June 1940 and is of some interest in that it lies outside the mainstream of German tank development, but only thirty were produced. (IWM)

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10. The best-known derivative of the Pz Kpfw I series was the *Kleiner Panzerbefehlswagen* (small armoured command vehicle), which was fitted with a fixed superstructure in place of a turret and armed with a single, ball-mounted machine-gun. Hitler seems completely satisfied with the performance of his armoured troops during this full-dress parade, but Mussolini's expression is understandably a little wistful. (IWM)

11. The *Kleiner Panzerbefehlswagen* employed the chassis of both the Pz Kpfw I Ausf A and B and many, like this example, were fitted with a small, square cupola. The adequate provision of armoured command vehicles gave the *Panzerwaffe* an edge over the majority of its opponents during the early years of the war. (Charles C. Kliment)





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12. A *Kleiner Panzerbefehlswagen* of the Luftwaffe's Panzer Regiment 'Hermann Göring', formed in France during the autumn of 1940. The tactical markings indicate that the vehicle is serving with the headquarters of the regiment's 1st Battalion. (US National Archives)

13. Despite the fact that the Pz Kpfw I's limited firepower and protection had never been considered adequate for the modern battlefield, large numbers were employed in every German offensive until late 1941. This platoon has halted on the outskirts of a burning Polish village in September 1939. During this campaign the *Panzerwaffe* marked its vehicles with solid white crosses but these proved too prominent and were either painted out, as on the leading vehicle, or smeared with mud, as on the second. (Charles K. Kliment)

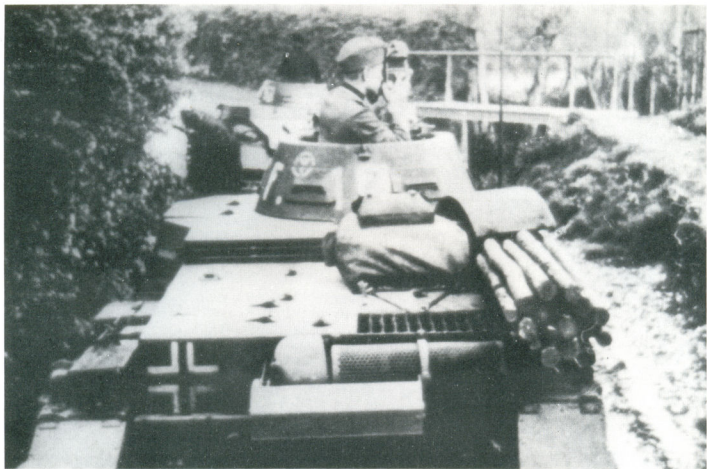
14. On radio-equipped Pz Kpfw Is a cam acting on the turret ring automatically lowered the antenna when the turret was traversed to the right, so preventing fouling by the guns. A cursory attempt has been made here to smear the turret cross with mud. Poland, September 1939. (US National Archives)

15. An independent tank battalion designated *PzAbt zBv 40* took part in the 1940 fighting in Norway. The battalion insignia, a 'V' enclosed in a circle, together with the company number 3, has been painted in yellow beside the national cross of this Pz Kpfw I Ausf A. (US National Archives)



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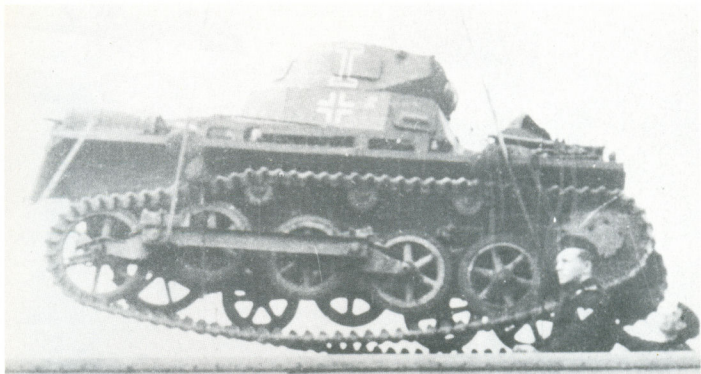
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16. A pair of Pz Kpfw Is cross a ford during the 1940 campaign in France. The nearest turret shows the insignia used by the 4th Panzer Division at the time; the letter F indicates the vehicle's use by a newsreel photographer. A small fascine to assist unditching is carried on the rear deck. (US National Archives)

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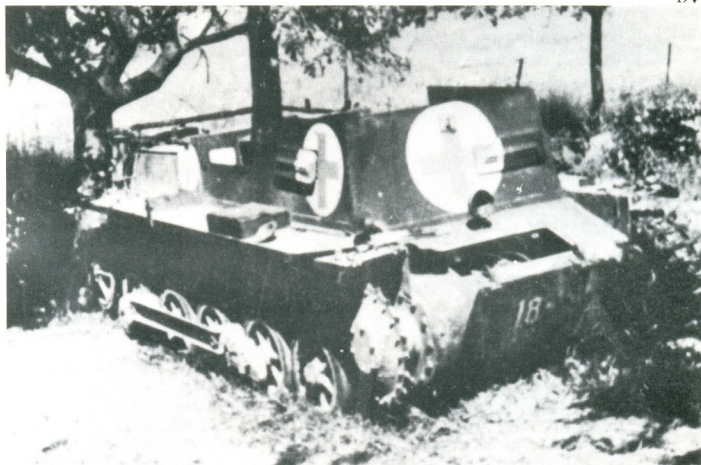
17. Many Pz Kpfw Is were stripped of their turrets and employed as armoured recovery vehicles. This example, belonging to the 9th Panzer Division, is passing crowds of recently surrendered Dutch soldiers, May 1940. (Charles K. Kliment)

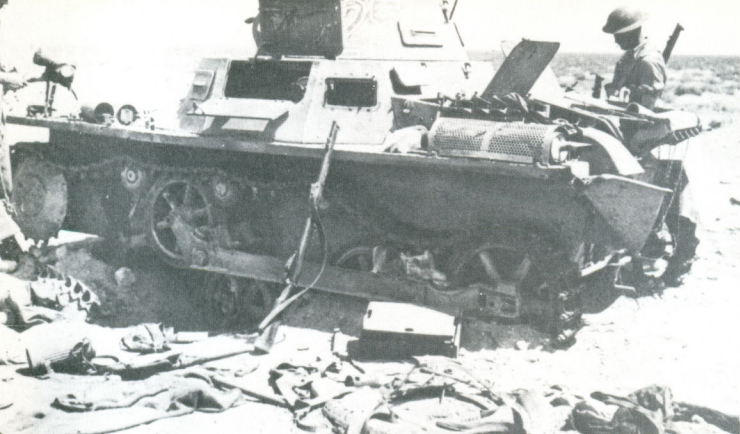


18. A Pz Kpfw I Ausf A of the 5th Light Division is swung ashore at Tripoli in March 1941. The 5th Light became the 21st Panzer Division later that year and was itself raised from a cadre supplied by the 3rd Panzer Division, whose insignia can be seen to the right of the national cross. The Roman 'I' on the turret signifies that the vehicle belonged to the command group of its regiment's 1st Battalion. The

speed with which the Afrika Korps' advance units were despatched to Libya is revealed by the crew's black panzer uniforms and the tank's grey European colour scheme. (US National Archives)

19. Despite its prominent markings this armoured ambulance based on the Pz Kpfw I chassis was severely damaged during the fighting in France. (US National Archives)





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20. An anti-tank mine has inflicted crippling damage to the suspension of this Pz Kpfw I. At the rear of the vehicle can be seen the rack of smoke bombs carried by most German tanks; the bombs were released by pull-chains from inside the vehicle. In North Africa the Pz Kpfw I had a comparatively short career. (RAC Tank Museum)

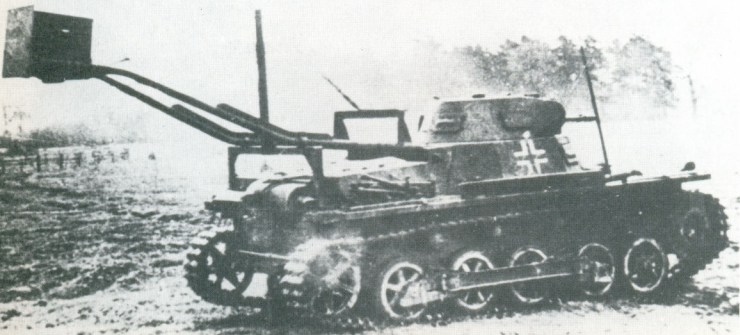
21. The *Ladungsleger I* (Explosive Charge Layer I) was equipped with telescopic arms which could be extended to the rear to deposit a 75kg charge in top of a pillbox or similar fortification; the charge would then be detonated by remote control when the tank had moved outside the danger radius. In 1940 a few of these vehicles were issued to the Armoured Engineer battalions of the ten Panzer divisions but

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the system proved to be too vulnerable under active service conditions and was abandoned. (RAC Tank Museum)

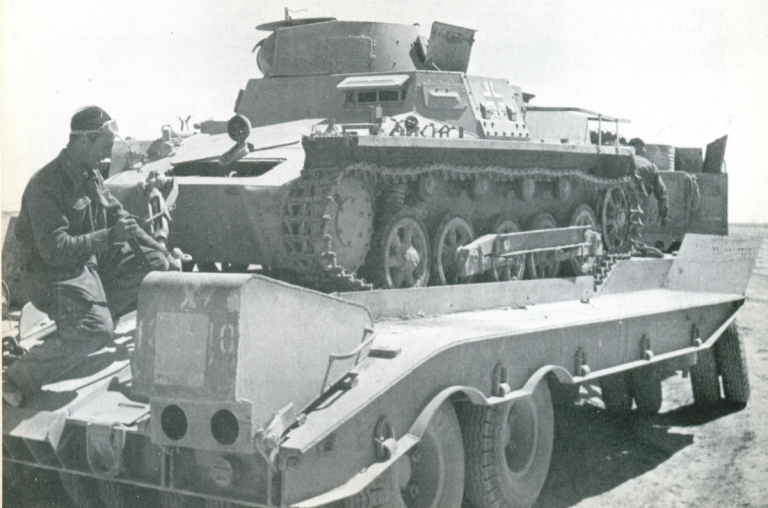
22. A platoon of *Ladungsleger Is* advances through the Ardennes, May 1940. The French, like the Poles, mistakenly believed that their frontier forests were tank-proof. (RAC Tank Museum)

23. An abandoned Pz Kpfw I Ausf B in almost mint condition is shackled down aboard a British transporter for subsequent examination at base workshops. German tank engines had been designed for use in temperate climates and the most common cause of breakdown in North Africa was clogged air filters. (RAC Tank Museum)





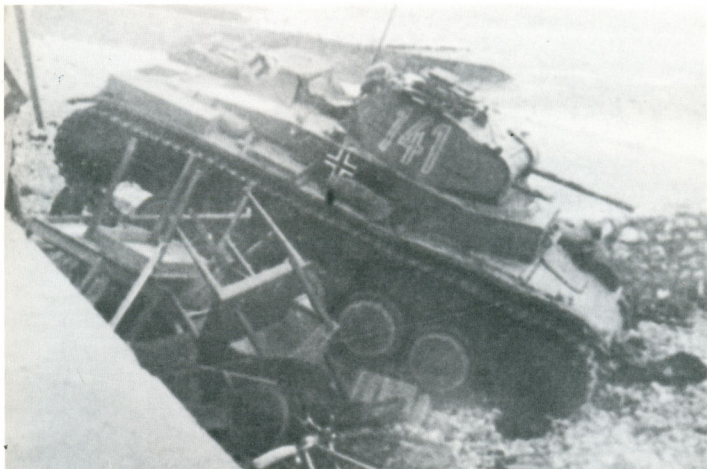
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24. Because of delays in the Pz Kpfw III and IV production programme the Army ordered the Pz Kpfw II as a stop-gap light tank which could also perform the reconnaissance role. This early Pz Kpfw II Ausf B of the 12th Panzer Division was photographed in Russia during the opening stages of Operation 'Barbarossa' and the 'A' number indicates that it is serving in the divisional reconnaissance (*Aufklärung*) battalion. Other points of interest include the air-recognition flag, the use of tracks and roadwheels as additional frontal protection, the rear-mounted battery of smoke grenade dischargers and the towed trailer with additional fuel. (US National Archives)

25. Of the 2,439 gun tanks with which the German Army launched its

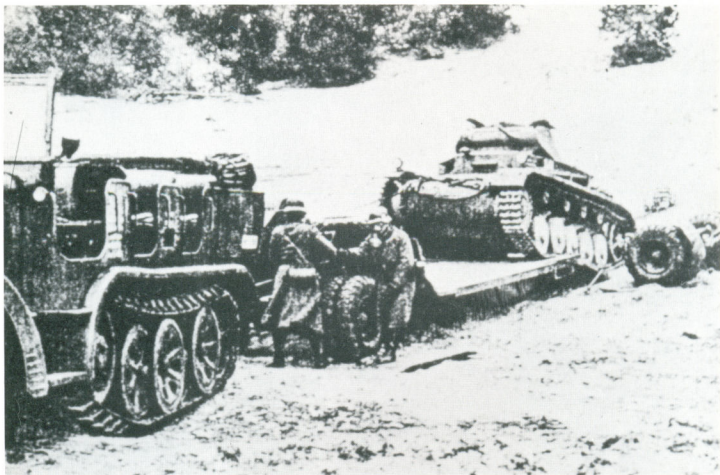
offensive against France, Belgium and Holland in May 1940, no fewer than 523 were Pz Kpfw Is and 955 Pz Kpfw IIs, giving a total of 1,478 light tanks armed with nothing heavier than machine guns. (Charles K. Kliment)

26. A Pz Kpfw II Ausf C of the 3rd Panzer Division smashes its way through a makeshift barricade, France 1940. The Pz Kpfw II was armed with a 20mm cannon and a co-axial 7.29mm machine gun. (US National Archives)

27. Once the French front had been broken the Panzer divisions were frequently able to cover long distances over sunlit, deserted roads. (Charles K. Kliment)

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28. A damaged Pz Kpfw II is winched aboard a recovery trailer. Vehicles requiring heavy repairs were back-loaded to workshops in Germany during the 1939 and 1940 campaigns. (Charles K. Kliment)

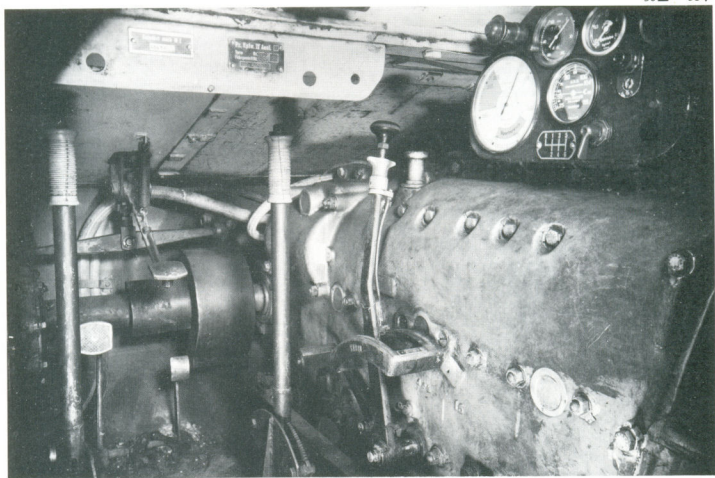
29. A rear view of a Pz Kpfw II Ausf C photographed in the Maastricht Appendix, Holland, 1940. The 'IN3' on the rear wall of the turret indicates the headquarters company 1st Battalion, Signals/Intelligence (*Nachrichten*) Platoon, third vehicle. The divisional insignia is just visible to the left of these markings. (US National Archives)

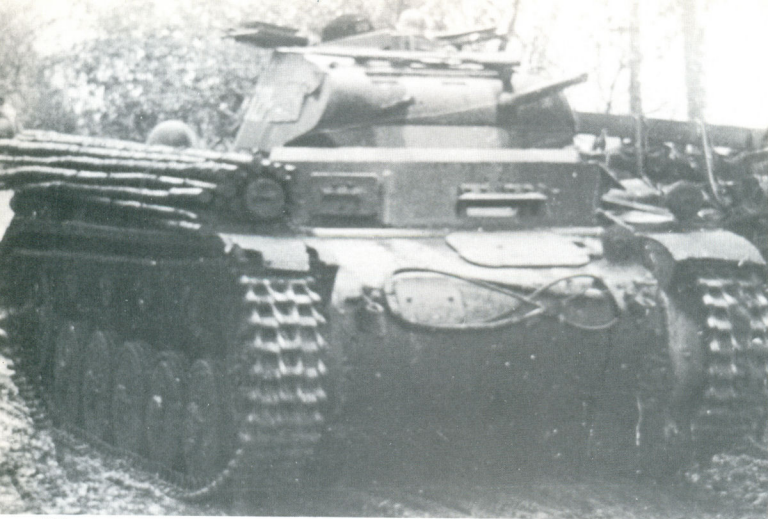
30. After Dunkirk the *Panzerwaffe* re-deployed for the second phase of the Battle of France. Whenever possible tank transporters were used to reduce track mileage. (US National Archives)

31. The driver's controls and instrument panel of a Pz Kpfw II. (IWM)



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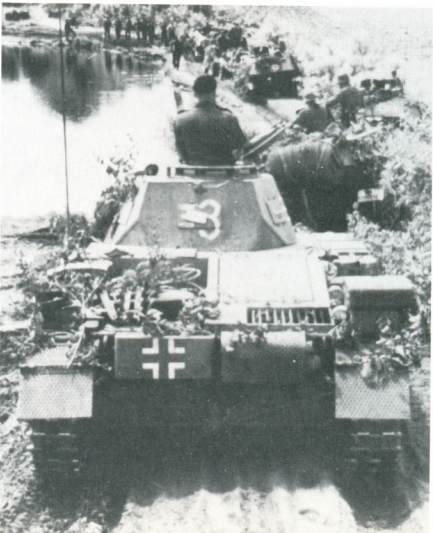
32. During the 1941 German invasion of Russia the light tanks still accounted for approximately one-third of the *Panzerwaffe's* strength, there being 410 Pz Kpfw Is and 746 Pz Kpfw IIs present out of a grand total of 3,332 tanks employed. (Charles K. Kliment)

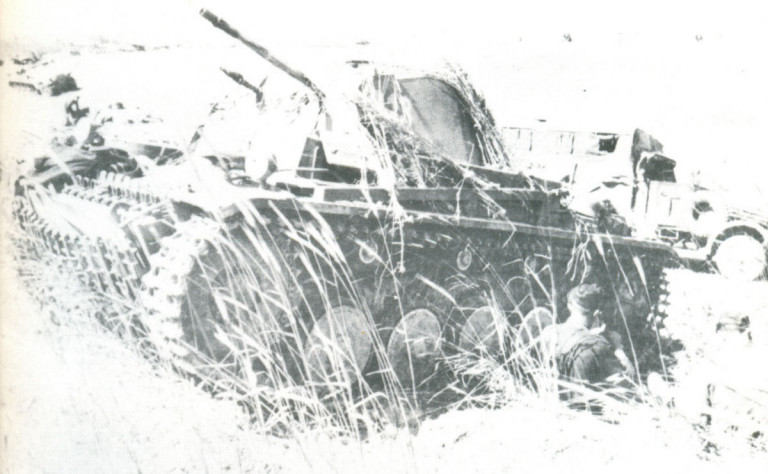
33. SdKfz 251 armoured half-tracks of a motor rifle regiment and a Pz Kpfw II edge their way through a bottleneck. Outside the cities there were few surfaced roads in Russia and after a few hours' rain sandy tracks such as this would degenerate into mud-wallows. (US National Archives)

34. Crewmen enjoy a halt during the long advance across Russia. Although partially obscured by the temporary camouflage, this Pz Kpfw II carries the markings of the reconnaissance platoon, HQ Company, Panzer Regiment 4, 13th Panzer Division. (US National Archives)

35. A captured Pz Kpfw II shares a bivouac area with a British Matilda, North Africa 1941. The fact that the German vehicle is still in its overall grey colour scheme suggests that it was one of the first batch supplied to the 5th Light Division. (RAC Tank Museum)

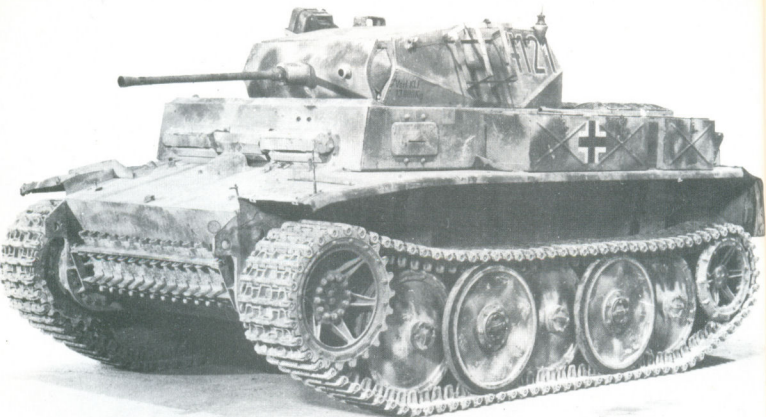
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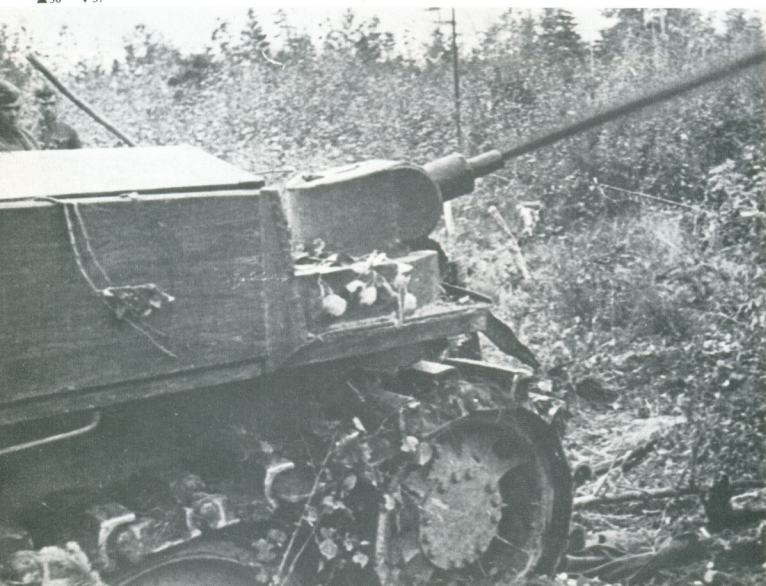


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36. The Pz Kpfw II Ausf L employed an interleaved suspension and was developed specifically for the reconnaissance role. The vehicle carried short- and medium-wave radio sets and its crew included an extra radio operator, the result being an extremely cramped interior. Although under development since 1938, it did not enter service until 1943, by which time its designation had been changed to *Panzerspauwagen II Luchs* (Lynx). (RAC Tank Museum)

37. The *Flammpanzer II*, otherwise known as the 'Flemingo', was based on the chassis of the Pz Kpfw II Ausf D or E. Two flame guns with a range of 35m were mounted well forward. This example is being evaluated by Soviet troops following its capture on the Leningrad sector. (RAC Tank Museum)

38. It was intended that the Pz Kpfw III should equip three of the four companies in each Panzer battalion, but the design was plagued by suspension problems and the six-wheel torsion-bar system was not standardized until the Ausf E, which entered service in 1939. Here Pz Kpfw IIIs of the 2nd Panzer Division cross a pontoon bridge in succession during the fighting in Poland. (Charles K. Kliment)

39. In predominantly German frontier districts of Poland the Panzer divisions were welcomed as liberators by the inhabitants. (Charles K. Kliment)



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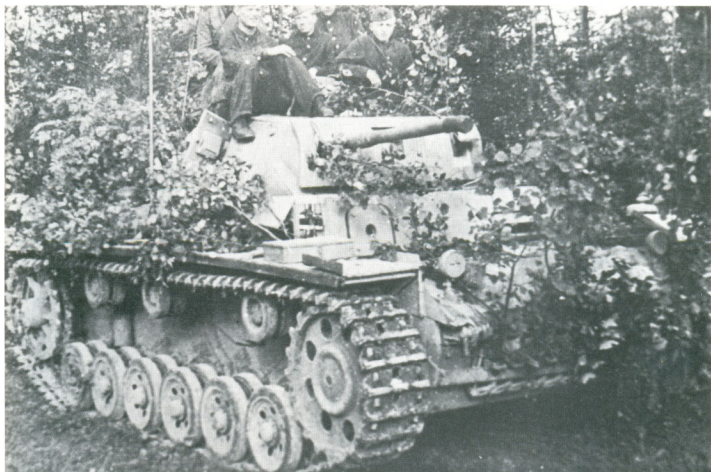
40. The Pz Kpfw III Ausf E was armed with a 37mm gun, two coaxial machine guns and a ball-mounted machine gun in the hull. A total of 349 Pz Kpfw IIIs took part in the campaign in the West. (Charles K. Kliment)

41. A Pz Kpfw III *Tauchpanzer* (diving tank) undergoes trials for Operation 'Sea Lion', the cancelled invasion of the United Kingdom. The vehicle was to have been launched from a lighter and then driven ashore along the sea bed, air being supplied to the engine by an 18m flexible hose while exhaust gases were vented through vertical pipes fitted with non-return valves. The design was used successfully to cross the River Bug during Operation 'Barbarossa'. (US National Archives)

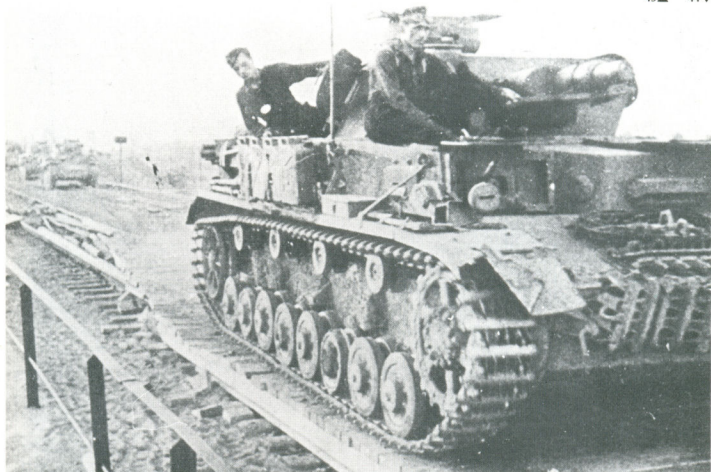
42. The 30mm armour basis of the Pz Kpfw III was found to be inadequate, and extra plating was fitted to compensate for this. Spare track also provided additional protection, as in the case of this command tank, identified by the frame antenna above its engine deck. (Charles K. Kliment)

43. The *Panzerbeobachtungswagen* (armoured observation vehicle) III was used by the Panzer divisions' Artillery Forward Observation Officers to direct the fire of their guns. It could be recognized by its dummy gun offset to the right and the ball-mounted machine gun in the centre of the mantlet. (Charles K. Kliment)

44. During the 1941 campaign in the Balkans the road system in the mountains was often inadequate, but railways frequently provided a suitable substitute. (Charles K. Kliment)

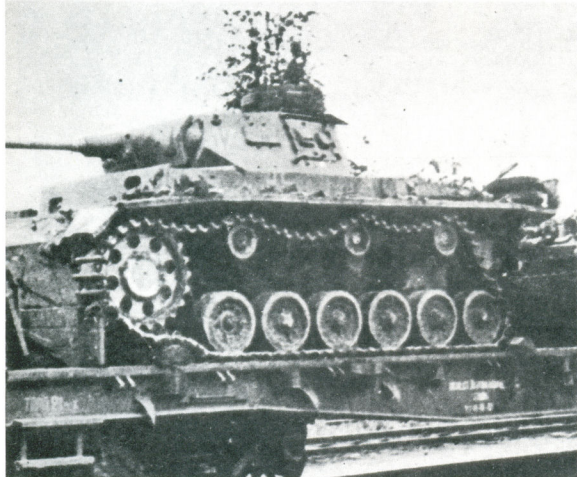


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45. Paratroopers hitch a lift forward aboard a platoon of Pz Kpfw IIIs in the final stages of the campaign in Greece. (Charles K. Kliment)

46. An interesting photograph of a battle-damaged Pz Kpfw III being back-loaded to Germany by rail. The rear idler has been shot away and the track has been taken round the sixth roadwheel as a temporary expedient. (Charles K. Kliment)

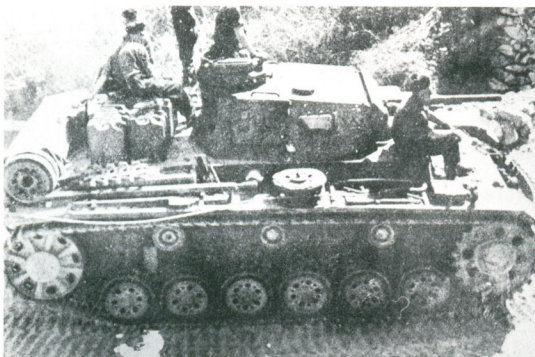
47. Tanks and supporting motorized infantry deploy for action during the advance into the Russian hinterland, summer 1941. A total of 1,440 Pz Kpfw IIIs were available for Operation 'Barbarossa'. (Charles K. Kliment)

48. A Panzer regiment's headquarters halts for an orders group, Ukraine, 1941. The frame antenna above the engine deck identifies the vehicle on the right as a command tank. (US Army)



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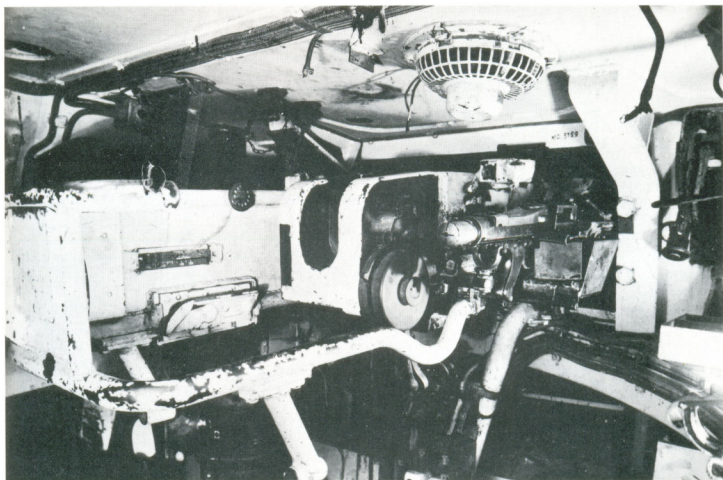


49. During the long marches undertaken in the early stages of 'Barbarossa' many vehicles carried additional jerricans stowed on their engine decks. This Pz Kpfw III Ausf F probably belongs to the 2nd Panzer Division, which is known to have fitted its tanks with large, rear-mounted, wooden stowage boxes for the campaign. Contact with the enemy is clearly unlikely and those crewmen who can be riding outside the vehicle to avoid the claustrophobic heat of midsummer. (Charles K. Kliment)

50. The dappled effect of sunlight through leaves provides a measure of camouflage for a Pz Kpfw III of the 11th Panzer Division, whose official insignia of a circle enclosing a vertical bar can be seen on the front plate. The division also had a second emblem, a skeletal figure waving a sword, which earned it the nickname of 'Ghost', and part of this can be seen on the hull side. (Charles K. Kliment)

51. The Pz Kpfw III's 37mm gun had proved inadequate against the more heavily armoured British and French tanks, and Hitler gave orders that it was to be replaced by a 50mm L/60 weapon. To his fury, a large number of conversions were made using the less powerful 50mm L/42 gun before the mistake was rectified. This loader's view shows the breech of the L/42 and details of the co-axial machine gun mounting. Both the L/42 and L/60 were muzzle-heavy; in the case of the L/42 this was corrected by attaching an ingot to the spent case deflector shield (as shown), but the longer L/60 required a compression spring housed in a cylinder to restore balance. (JWM)

52. An early Pz Kpfw III Ausf J armed with a 50mm L/42 gun rolls across the featureless steppe. The vehicle is marked with the inverted 'Y' and two bars of the 3rd Panzer Division beside the driver's visor, and it also carries the formation's distinctive bear emblem on the turret side, next to the company tactical number. (Charles K. Kliment)

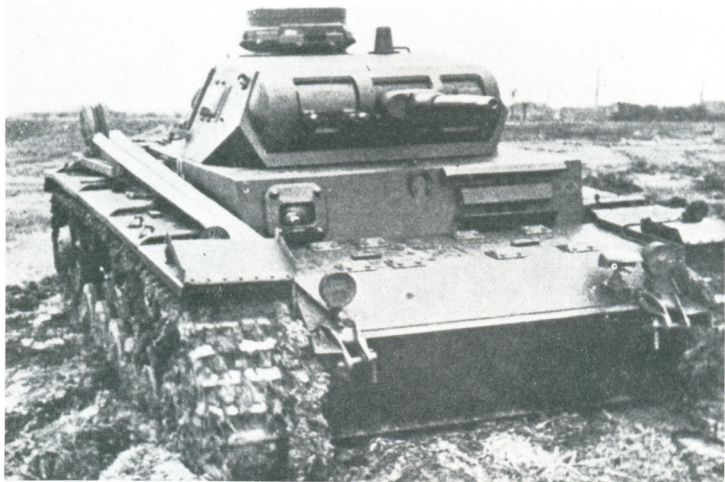


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53. With the coming of the autumn rains the Russian road system collapsed and the progress of the Panzer divisions slowed to a crawl. Here a pair of *Panzerbefehlswagen III*s negotiate a swollen ford. The detail of the smoke bomb rack on the stern plate is of interest, as is the method of stowing spare roadwheels. (Charles K. Kliment)

54. Often the tanks were the only vehicles capable of maintaining any sort of mobility. Here a *Pz Kpfw III* of the 6th Panzer Division extricates itself from deep mud. The photograph is unusual in that, with the exception of *Panzerbefehlswagen III* command vehicles, the bulk of the division's medium tank strength consisted of *Pz Kpfw 35(t)*s. The divisional sign, two 'XX's, can be seen to the right of the driver's visor. (Charles K. Kliment)

55. Once winter came movement was restored over hard-frozen ground, but the unimaginable cold snapped track-pins and chilled lubricants to the consistency of tar. Most men were forced to endure the conditions in nothing thicker than the uniforms in which they launched the invasion, and months would pass before they were as suitably clad as the crewmen shown here. (Charles K. Kliment)

56. A *Pz Kpfw III Ausf J* with 50mm L/60 gun in winter whitewash colour scheme; the co-axial and hull machine guns are shrouded with canvas to protect their moving parts from the arctic conditions. Note the pile of kindling wood drying out in the warmth of the engine deck. (Charles K. Kliment)



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57. Another winter scene, this time beside a frozen river. The battery of smoke grenade dischargers mounted just forward of the open turret side-hatch identifies this Pz Kpfw III as an Ausf M. This model began reaching the front early in 1942, and in this case there appears to have been just sufficient whitewash available to cover the gun and turret, leaving the hull of the vehicle in its grey factory finish.

(Charles K. Kliment)

58. A column of Pz Kpfw IIIs passes through a gutted Russian village. The *Panzerwaffe* returned to the offensive in the spring of 1942, but few now harboured any illusions that the war which lay ahead would be anything but long and bitter. (US National Archives)

59. An interesting late model *Panzerbefehlswagen III* immobilized by

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damage to its left-hand track. The co-axial machine gun has been dispensed with in favour of an armoured observation visor, to the left of which can be seen a battery of three smoke grenade dischargers. Two further vision ports are visible in the hull wall, below the turret, and the normally prominent frame antenna has been folded flat.

(Charles K. Kliment)

60. A Pz Kpfw III in the dark sand colour scheme employed by the Afrika Korps, the palm tree emblem of which is visible above the driver's visor. Although no other insignia can be distinguished it seems probable that the vehicle belongs to Panzer Regiment 8 of the 15th Panzer Division, which usually painted company numbers only on its tank turrets – here black-outlined-white. (Charles K. Kliment)





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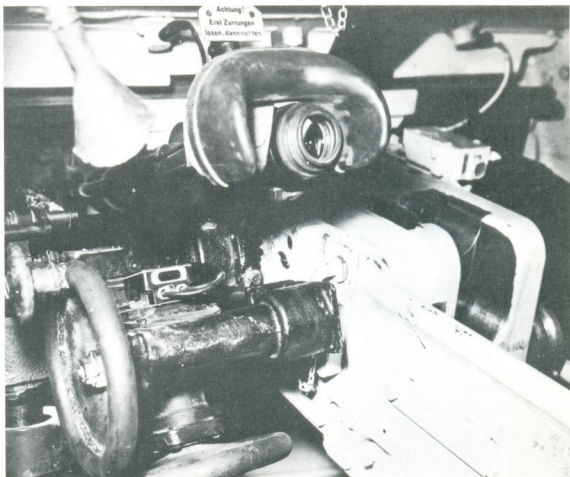


61. The Sidi Rezegh battlefield, November 1941. The impact of a 25pdr shell on this Pz Kpfw III has stripped the drive sprocket, torn out a torsion arm, blown off roadwheels and return rollers and thrown the track clear of the vehicle. In the background a British 2pdr portec anti-tank gun lies similarly wrecked and abandoned. (Col. P. W. H. Whitely)

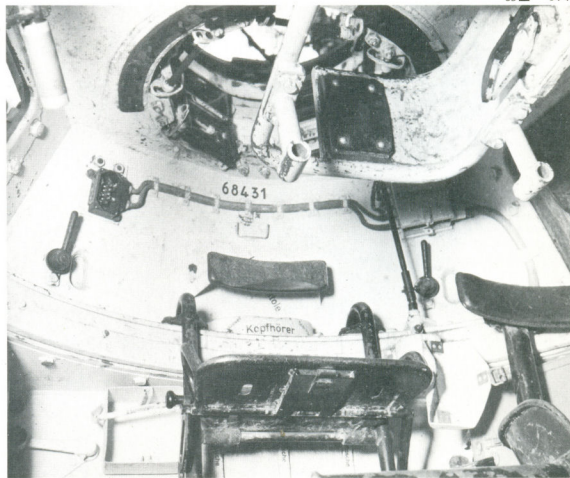
62. Senior officers attending an orders group aboard the command tank of Panzer Regiment 8 pose briefly for a photograph. Winter nights in the desert could be extremely cold and greatcoats were worn until the sun was well up. The flying of pennants from antennae in the British manner was most unusual, and these particular flags are in any event of unofficial pattern, the upper denoting the Panzer regiment's headquarters and the lower possibly the regimental emblem, although the details are unclear. (Charles K. Kliment)

63. The gun control equipment of a Pz Kpfw III showing the elevation and traverse control handwheels, sighting telescope and browpad, and the gunner's end of the voice tube linking him with the commander. (IWM)

64. A view of a Pz Kpfw III's cupola interior and commander's position at the rear of the turret, seen from under the gun. The cupola vision blocks were protected by sliding steel shutters. Closed pistol ports can be seen on either side of the commander's seat. (IWM)

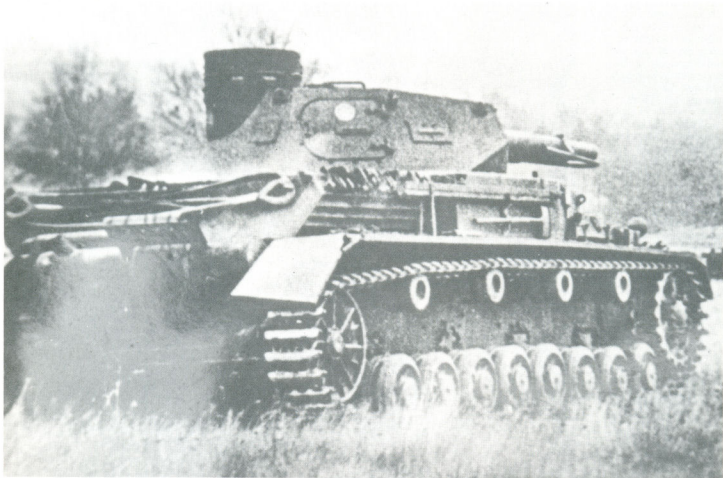


63 ▲ 64 ▼





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65. By mid-1942 the Pz Kpfw IV had become the *Panzerwaffe's* main battle tank. The last production version of the Pz Kpfw III was the Ausf. N, armed with a 75mm L/24 close-support howitzer. These examples, photographed in Tunisia during the winter of 1942-43, have evidently just arrived in Africa and are well padded with sandbags. The divisional sign of the 15th Panzer Division has been painted in red beside the driver's visor of the nearest vehicle. The Pz Kpfw III Ausf. N also formed part of the interim equipment issued to the Heavy Battalions pending the arrival of their Tigers. (US National Archives)

66. The fourth company of each tank battalion was designated a Heavy Company and was equipped with the Pz Kpfw IV, which mounted a 75mm L/24 close-support howitzer. This vehicle is an Ausf. A, which entered service in 1936 and can be identified by its rudimentary 'dustbin' cupola. The length of rod beneath the gun pushed the antenna flat when the turret was traversed to the right. (Charles K. Kliment)

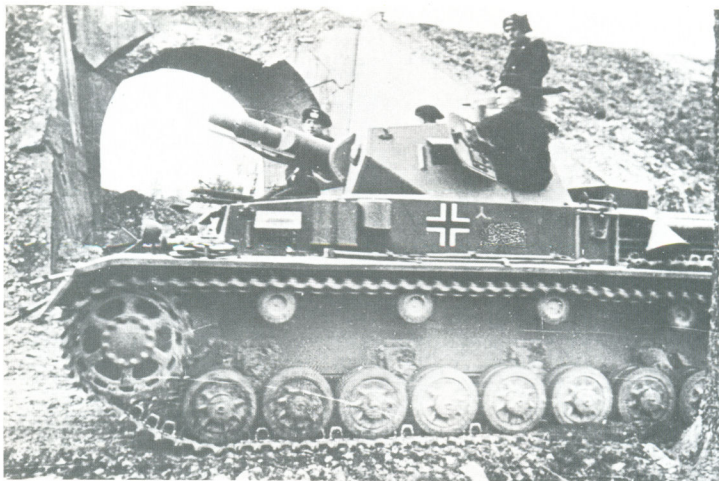
67. The Pz Kpfw IV production programme was slow to develop, and when Poland was invaded in 1939 only the 1st Panzer Division had anything like an adequate proportion, with fourteen Pz Kpfw IVs per tank battalion. The scale of issue to the remaining Panzer divisions was six Pz Kpfw IVs per tank battalion, and the Light divisions had to be content with mere handful. Here the crew of a Pz Kpfw IV Ausf. B are pelted with flowers by the German minority of a captured Polish town. (Charles K. Kliment)

68. The padded black beret worn by Panzer crews in Poland was known as the *Schutzmütze* and was phased out the following year in favour of the side cap, which could be worn with headsets more comfortably. Some units, however, retained their black berets for the 1940 campaign in the West. The crew of this Pz Kpfw IV wear the glum expressions of men whose vehicle has broken down in a swollen ford during a thunderstorm and who will be required to provide an explanation of the event! (Charles K. Kliment)

67 ▲

68 ▼





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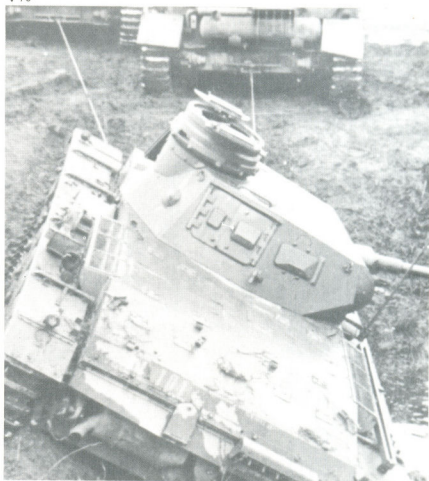
69. A Pz Kpfw IV bearing the 1940 markings of the 5th Panzer Division – an inverted 'Y' and a single dot – drives past a partially demolished railway bridge, France, 1940. (Charles K. Kliment)

▼ 70

70. A double pull from two of its own kind extracts a bogged-down Pz Kpfw IV from the flooded shell crater into which it has slid. Two hundred and seventy-nine Pz Kpfw IVs were available for the campaign in the West. (Charles K. Kliment)

71. A Pz Kpfw IV aboard its transporter trailer shows all the signs of hard usage, including the slack top run of the track. (Charles K. Kliment)

72. Clear divisional markings identify this Pz Kpfw IV Ausf F as belonging to the 12th Panzer Division. Note the additional plates bolted to the front of the driving compartment and the hull sides, the use of spare track as extra frontal armour and the fascine carried on the glacis. Russia, 1941. (Charles K. Kliment)





71▲ 72▼





▲ 73

73. The going along this secondary Russian track bordered by a ditch has proved to be deceptively soft. The crew are trying to introduce timber under the tracks to prevent them spinning and so digging themselves deeper into the earth. (Charles K. Kliment)

74. A Pz Kpfw IV Ausf F1 smoulders sullenly as Russian infantrymen sprint past during a counter-attack. (Charles K. Kliment)

▼ 74



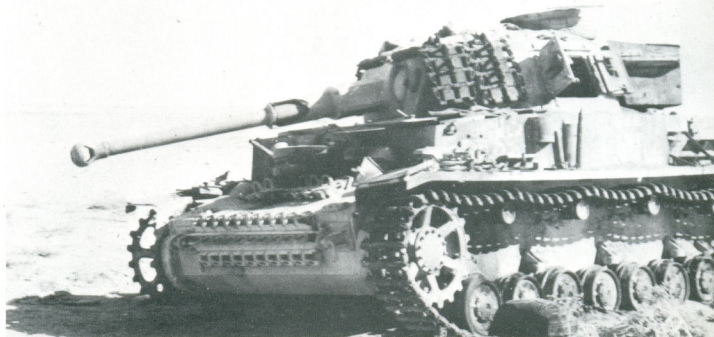


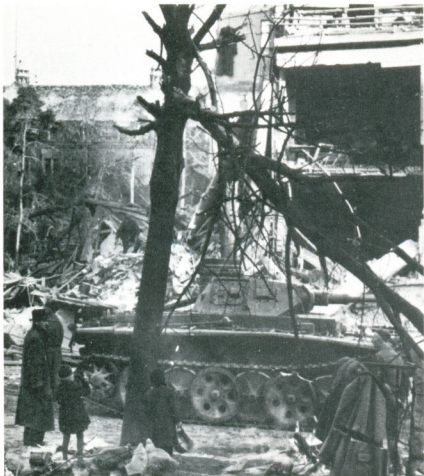
75. The first encounters with the well-armed and heavily armoured Russian T-34s and KVs made the up-gunning of the Pz Kpfw IV a matter of urgent necessity as the Pz Kpfw III had already reached the limit of its design potential. The Pz Kpfw IV Ausf F2 was fitted with the 75mm L/43 gun, and subsequent models were armed with the improved 75mm L/48. Here crewmen pose beside a recently delivered Ausf G with one of the older L/24 howitzer models in the background. (Charles K. Kliment)

75 ▲

76. In North Africa the long-barrelled Pz Kpfw IV Ausf F2 was known to the British as the Mark IV Special. Twenty-seven of these vehicles were present at Alam Halfa in August 1942 and 30 at Second Alamein in October that year, but thereafter insufficient were delivered to affect the outcome of the campaign, although the Ausf F2 remained the most powerful tank to fight on either side until the Tiger arrived in Tunisia. (IWM)

76 ▼





▲ 77 ▼ 78

77. An attempt to achieve a degree of standardization by combining the best features of the Pz Kpfw III and IV designs resulted in the Pz Kpfw III/IV, which employed an interleaved suspension. The concept was several years too late and became a casualty of the accelerating spiral in gun/armour technology, but a few prototypes were built and one is seen here working as a dozer in a bomb-damaged German city. (IWM)

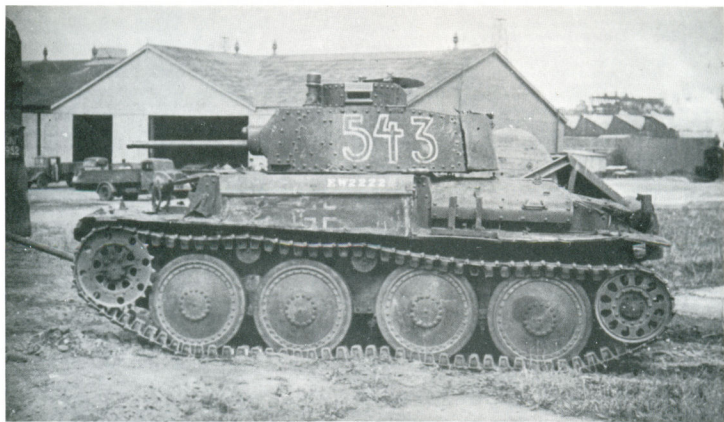
78. Without the acquisition of the Czech tank fleet it is unlikely that the *Panzerwaffe* would have possessed the capacity for offensive operations in 1939. The Czech tanks did not meet German specifications but were armed with a 37mm gun and could be substituted for the Pz Kpfw III. In German service the Pz Kpfw 35(t) equipped the 1st Light Division and its successor the 6th Panzer Division until the winter of 1941–42, but the tank was also used by Germany's allies and this example, photographed near Stalingrad in November 1942, carries the markings of the 1st Tank Regiment, Rumanian 1st Armoured Division 'Greater Rumania'. (US National Archives)

79. A Pz Kpfw 38(t) in the prewar Czech colour scheme of green, brown and yellow. The design attracted much favourable comment and the British Army was sufficiently interested for a trials vehicle to be delivered to the Royal Armoured Corps ranges at Lulworth in March 1939. The vehicle was exported to Iran, Rumania, Bulgaria, Hungary, Sweden, Switzerland and Peru. (RAC Tank Museum)

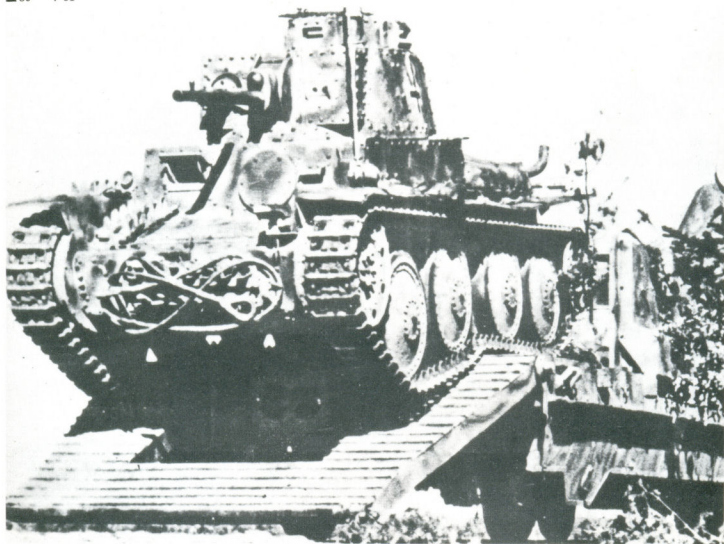
79▶







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80. In German service the Pz Kpfw 38(t) equipped first the 3rd Light Division and then the 7th, 8th, 12th, 19th and 20th Panzer Divisions. By the end of 1941, however, it was clear that it could not compete against the newer Russian tank designs and the majority of chassis were converted to other uses. (RAC Tank Museum)

81. German communications in Russia were subject to constant attack by partisans, and a number of Pz Kpfw 38(t)s were mounted on armoured trains for use in the counter-attack role. (RAC Tank Museum)

82. The German Army made little use of captured tanks as such, although their chassis were utilized for self-propelled mountings. However, a number of French R-35s were issued to occupation troops. (RAC Tank Museum)

83. The armoured cars of the Panzer divisions' reconnaissance battalions would sometimes operate up to 30 miles ahead of their main body and acted as the eyes of the divisional commander, much emphasis being placed on good radio communications. This rare view taken in Poland shows an Sd Kfz 262 *Panzerfunkwagen (8 rad)*, a turretless command and radio vehicle which served in battalion headquarters. A fixed frame antenna was carried, and a senior officer's empty command pennant frame can be seen on the rear mudguard. (Charles K. Kliment)



82▲ 83▼





▲ 84 ▼ 85

84. The Sd Kfz 231 *Panzerspähwagen* (8 rad) heavy armoured car began entering service with the armoured reconnaissance battalions in 1938 and was armed with a 20mm cannon and a co-axial 7.92mm machine gun. (Charles K. Kliment)

85. Another unusual view showing a German reconnaissance unit taking part in the occupation of Denmark, 9 April 1940. The leading vehicle is an Sd Kfz 223 *Panzerspähwagen* (Fu) – armoured scout car (radio) – fitted with a collapsible frame antenna, and behind it is an Sd Kfz 221 light armoured car. (Charles K. Kliment)

86. The armoured reconnaissance battalion was a miniature battle group which included heavy weapons and motor-cycle machine-gun squadrons, the function of which was to ease the passage of the cars through the enemy's defences. This interesting photograph was taken during the campaign in France and shows an Sd Kfz 231 *Schwere Panzerspähwagen* (6 rad) – heavy armoured car (6-wheeled) – and two Sd Kfz 221 light armoured cars driving past their halted motor-cycle machine-gun squadron. The motor-cycles themselves are numbered in sequence and marked with the circular reconnaissance symbol and the 'G' painted on vehicles of Guderian's XIX Panzer Corps. (Charles K. Kliment)

86▶



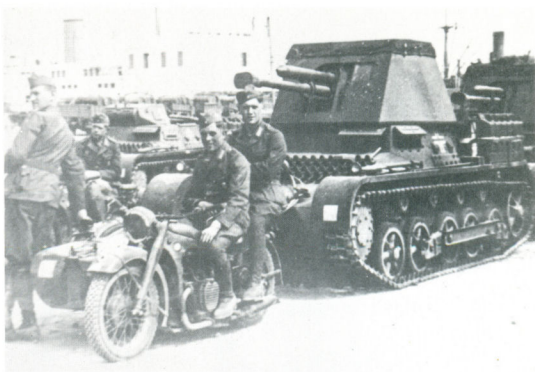




▲ 87 ▼ 88



87. In this photograph, the Sd Kfz 221 in the foreground is marked with the twin dots of the 2nd Panzer Division and the tactical symbol of an armoured reconnaissance squadron, above which is an empty command pennant holder. The larger vehicle to the right is an Sd Kfz 232 *Schwere Panzerspahwagen (6 rad)* (*Fu*) fitted with an overhead frame antenna. (Charles K. Kliment)



88. The turret of the Sd Kfz 222 light armoured car was larger than that of the Sd Kfz 221 and was fitted with hinged wire grilles as a defence against grenades; the vehicle was armed with a 20mm cannon and a coaxial 7.92mm machine gun.

This car belongs to the reconnaissance battalion of the 1st SS Motorized Division *Leibstandarte SS Adolf Hitler*, the shield and skeleton key symbol of which is just visible towards the rear of the vehicle. The name 'Walter Schultz' has been painted below the turret, probably as a memorial to a fallen comrade. Greece, 1941. (Charles K. Kliment)

89. Guderian had stressed the need for automotive artillery weapon systems for use within the Panzer and Motorized divisions, but in 1939 no such equipment existed and towed guns remained in use for some years. By the spring of 1940, however, the chassis of obsolete tanks were being converted for use as self-propelled carriages. The *Panzerjäger I* was one of the first such conversions, and consisted of a Czech 47mm anti-tank gun and tall gunshield mounted on the chassis of a Pz Kpfw I. The dockside location of this pair suggest that the photograph may have been taken just prior to the invasion of Norway; the superstructure was open-topped and the canvas cover has been fitted for the voyage. (US National Archives)



90. The Pz Kpfw I chassis also served as a mounting for the 150mm Heavy Infantry Gun which was issued to the infantry gun companies of Motorized Infantry regiments. The arrangement was top-heavy and over-burdened the chassis. The vehicle shown here carries the markings of 704 Heavy Infantry Gun Company and was photographed during the Balkan campaign of 1941. (US National Archives)

89 ▲ 90 ▼



▲ 91

91. A better mounting for the 150mm Heavy Infantry Gun was found in the chassis of the Pz Kpfw II. Small numbers of this conversion served in North Africa and on the Russian Front. (US National Archives)

92. The fact that the *Panzerwaffe* had so many obsolete tank chassis available at the end of 1941 proved to be a blessing in disguise, for these provided an ingenious means of producing tank destroyers quickly by fitting powerful German and captured Russian anti-tank guns which were a match for the Soviet T-34s and KV's. This version, known as the Marder III, is armed with the German 75mm L/46 Pak 40-3 anti-tank gun mounted on a Pz Kpfw 38(t) chassis. The vehicle is apparently ferrying 'walking wounded' to the rear. (US National Archives)

93. The Russian Model 36 anti-tank gun was also fitted to the chassis of the Pz Kpfw II Ausf D or E, as shown here; another combination was the German 75mm L/46 Pak 40-2 anti-tank gun and the chassis of the Pz Kpfw II Ausf A, B, C or F. All tank destroyer vehicles based on Pz Kpfw II chassis were known collectively as Marder IIs. (US National Archives)

94. Early models of the Marder III were armed with a captured Russian Model 36 76.2mm anti-tank gun re-chambered to take the German 75mm round. Note here the large capacity stowage box which the crew have constructed for themselves. (US National Archives)

95. The German 75mm L/48 Pak 40-1 anti-tank gun was fitted to the chassis of a number of captured French AFVs, including those of the Hotchkiss H-39 and FCM tanks and the Lorraine tracked carrier. These conversions were known as Marder Is. (RAC Tank Museum)



▲ 92 ▼ 93





94▲ 95▼





▲ 96

96. The Pz Kpfw II chassis provided a mounting for the 105mm self-propelled howitzer *Wespe* (Wasp) which began equipping the light batteries of the Panzer divisions' artillery regiments from 1942 onwards. As the war progressed the demand for these vehicles increased and the French Hotchkiss H-39, FCM and Lorraine chassis were similarly converted. The crew of this vehicle, belonging to an unidentified SS division, have carefully rolled their camouflage net so that it can be erected quickly should their battery be deployed for static action. (US National Archives)

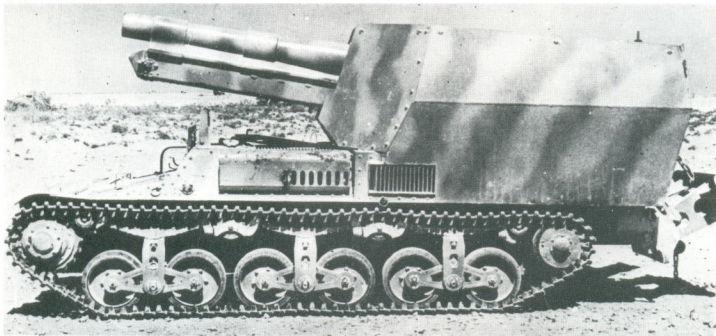
97. The *Wespe*'s running mate, the 150mm self-propelled howitzer *Hummel* (Bumblebee) based on the Pz Kpfw IV chassis, did not enter service until 1943 and in the interim a stop-gap was produced by marrying the First World War 150mm Heavy Field Howitzer 13 with the chassis of the Lorraine carrier. The vehicle was fitted with a recoil spade which was held in the raised position by a chain when travelling. (IWM)

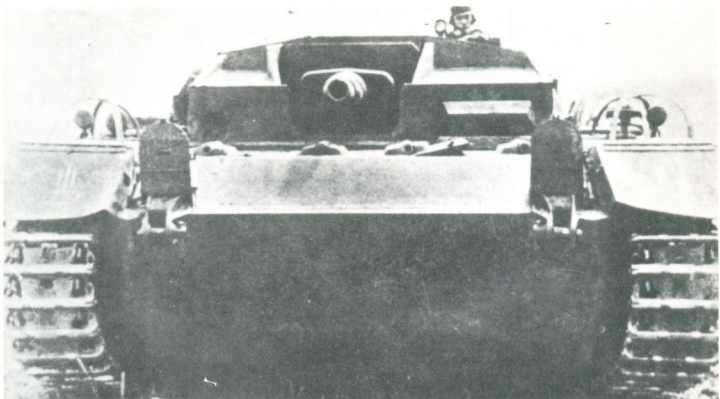
98. Designed specifically to provide direct gunfire support for

▼ 97

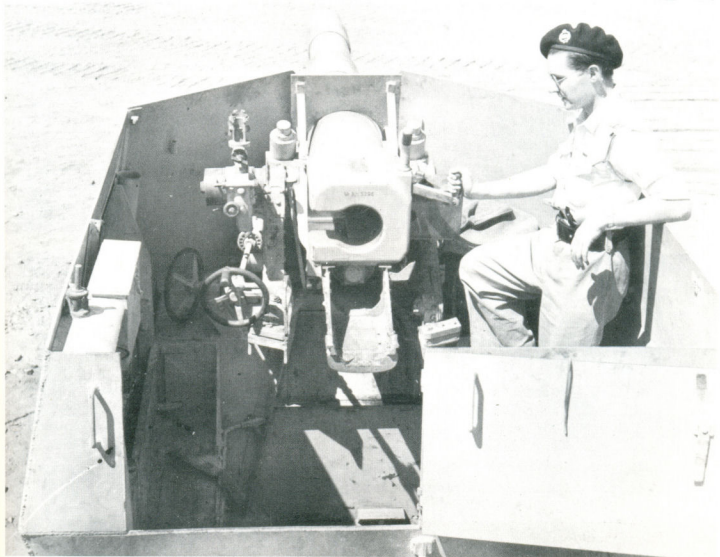
infantry operations, the *Sturmgeschütz III* (StuG III) was based on the Pz Kpfw III chassis and was armed with the same 75mm L/24 howitzer as the Pz Kpfw IV, housed in a fixed armoured superstructure. The *Sturmartilleristen* who manned these vehicles were regarded as the elite branch of the artillery. No assault gun units were available for service in Poland, but four batteries were employed during the 1940 campaign in the West. Three battalions participated in the 1941 Balkans campaign and six were available for Barbarossa; thereafter the number of Assault Artillery battalions increased steadily at the rate of three every two months. This head-on view shows the tactical symbol used by Assault Artillery units during the period 1940–41. (Charles K. Klimont)

99. The Lorraine-based 150mm self-propelled howitzer saw extensive service in North Africa and Russia. Here a technical officer of the Royal Tank Regiment examines one of a number which were abandoned in the aftermath of Second Alamein. (IWM)





98▲ 99▼





▲ 100

100. A StuG III receives ammunition replenishment from an armoured half-track. The Assault Gun battalions developed tremendous *esprit de corps* and often adopted their own insignia. The buffalo was the emblem of the crack 191 Battalion, but the stencilled marking on the front of the half-track here clearly belongs to a different unit. Assault Artillery crews wore a uniform of the same double-breasted cut as the tank and armoured car troops, but in field grey piped with artillery red. (Charles K. Kliment)

101. Over 'open going' the assault guns led the infantry assault, but in close country or built-up areas the infantry went into the lead. Here infantry overtake a battered StuG III Ausf A on the outskirts of a Russian village, autumn 1941. (Charles K. Kliment)

▼ 101

102. An Assault Gun unit serving with an SS division drives through a town on the Sea of Azov, August 1941. (Charles K. Kliment)

103. An interesting period piece showing a StuG III, a Pz Kpfw II and a Pz Kpfw III in fresh winter camouflage. The first snows have fallen but the effect of the intense cold has been to harden the ground and restore movement. (Charles K. Kliment)

104. In severe weather the lenses of the assault gun commander's periscopic binoculars could be protected by extension tubes. In this photograph the commander's expression and nose-protector epitomise the misery of a Russian winter. The light machine gun is for local defence, but just how well a weapon so casually stowed in such conditions will perform is debatable. (Charles K. Kliment)





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105. A StuG III troop with infantry aboard enters a cleared lane in a minefield during a training exercise. (Charles K. Kliment)

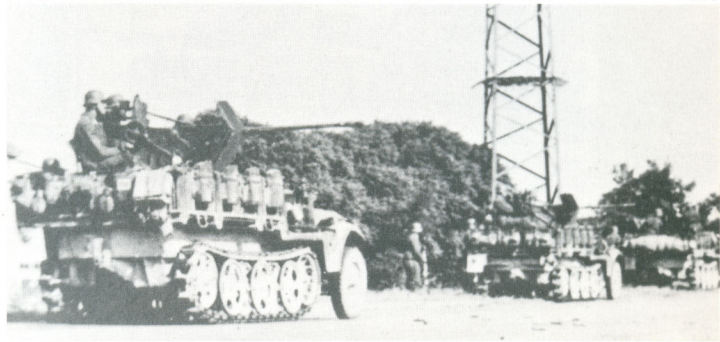
106. To meet the threat posed by the Russian T-34s and KVs the StuG III Ausf F was up-gunned by fitting, first, the 75mm L/43 gun and subsequently the 75mm L/48, the roomy interior of the vehicle accommodating the larger weapons without difficulty. When infantry were being lifted forward it was necessary to ensure that only complete tactical units rode on any one assault gun if confusion on the attack start-line were to be avoided. This photograph, taken towards the end of 1942, shows how much better the troops were prepared for

severe weather than they had been the previous year. (US National Archives) 107 ▲

107. An Sd Kfz 10 unarmoured artillery tractor photographed during the 1940 campaign in France. The windscreen has been lowered and covered with sackcloth to eliminate reflected glare and the hood – impractical on active service – has been folded back. (Charles K. Kliment)

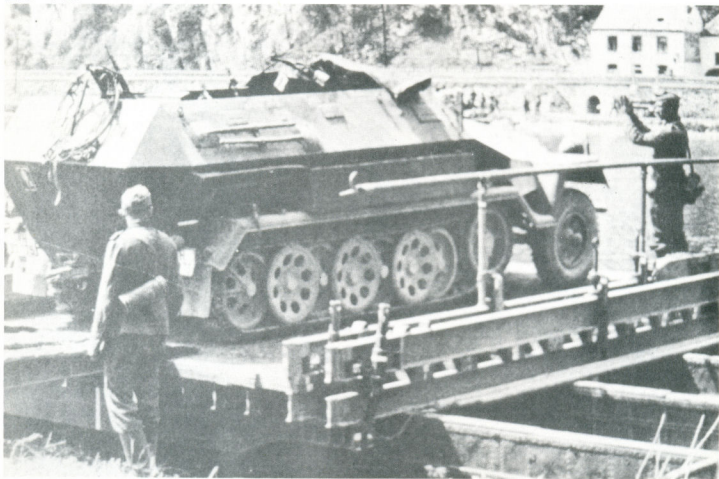
108. Sd Kfz 10/4 self-propelled 20mm Flak 30 mountings of Anti-Aircraft Battalion 290, 4th Panzer Division, going into action against ground targets in France. (US National Archives)

108 ▼

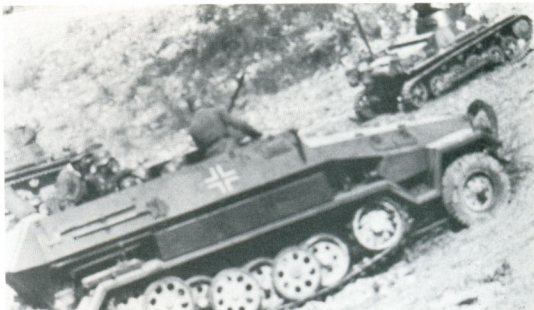




▲109 ▼110



109. In May 1940 the German Army possessed sufficient Sd Kfz 251 half-track APCs to equip only two of its eighty motor rifle battalions. The vehicle shown here is the Sd Kfz 251/18 artillery observation version with a modified superstructure incorporating space for maps and an artillery board, and is marked with the 'G' of Guderian's XIX Panzer Corps, the oak-leaf of the 1st Panzer Division and the tactical symbol of the 7th Company, Rifle Regiment 1. The unit is overtaking one of the few assault gun batteries which fought in France at this time. (US National Archives)



110. An Sd Kfz 251/4 armoured artillery tractor is guided aboard a pontoon raft for a river crossing. The vehicle normally towed a 75mm Light Infantry Gun 18. (US National Archives)

111. An Sd Kfz 251 APC overtakes a pair of labouring Pz Kpfw Is on a Greek mountainside; a coil of barbed wire is carried on the front of the vehicle to consolidate the objective once it has been secured. The leading Pz Kpfw I seems to have been converted as a *Ladungsleger* at some stage before reverting to its original role. (US National Archives)



112. These Sd Kfz 251s are distinctly marked with the tactical symbols of the 1st Company, Rifle Regiment 8, 8th Panzer Division. The soldier with the traffic control disc on the second vehicle is a sergeant in the *Feldgendarmarie*. (US National Archives)

113. A combined tank and APC battle group deployed for action on the steppe. The smaller APC nearest the camera in an Sd Kfz 250/3 command vehicle. (US National Archives)





▲ 114 ▼ 115





114. Tanks, APCs and riflemen belonging to the 9th Panzer Division pass through an abandoned Russian village, October 1941. The rifle regiments of the Panzer divisions were awarded the honorific title of *Panzergranadier* in July 1942, but the Motorized divisions had to wait until March 1943 for this distinction. (US National Archives)

115. The cost of the Panzer divisions' victories was often greater than Dr. Goebbels' propaganda ministry was prepared to admit. This Pz Kpfw IV was quite literally blown to pieces during the fighting in

Belgium. (RAC Tank Museum)

116. Bail out! The sheer urgency conveyed by the figures tells its own story. (US National Archives)

117. A pair of French Somua S-35s knocked out during the tank battles in Belgium. The S-35 was better armed and protected than the *Panzervaffe's* medium tanks but suffered from a major design defect in its one-man turret, which made it a difficult vehicle with which to fight efficiently. (US National Archives)

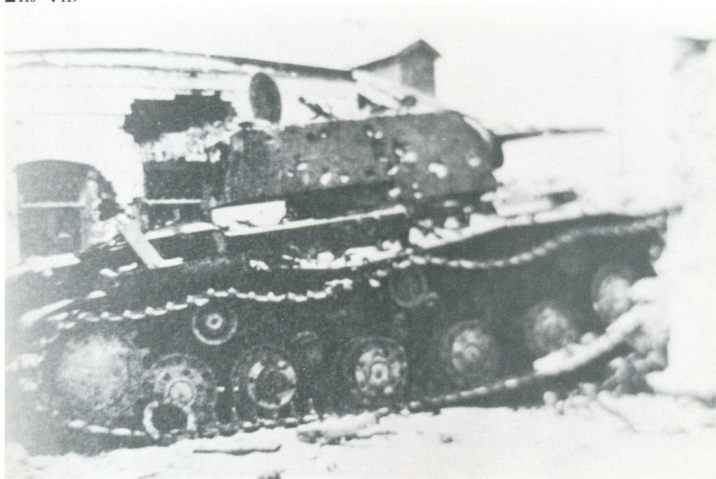
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118. Tanks of Panzer Regiment 33, 9th Panzer Division, ford a river in Yugoslavia, 1941. (US National Archives)

119. A formidable opponent. The KV-1 was quite impervious to the German 37mm armour-piercing round, witness the scars on the turret armour of this battered example. The barrel of the gun, however, has been bent by a direct hit and it is possible that the vehicle has fallen victim to a demolition charge after it failed to ram its

way to safety through the building on the right. (OCA Panzer Regiment 35)

120. A Pz Kpfw III of the 9th Panzer Division fords the River Drut in western Russia, July 1941. (US National Archives)

121. A Panzer regiment re-fuels in close leaguer on the open steppe. (US National Archives)

121 ▼

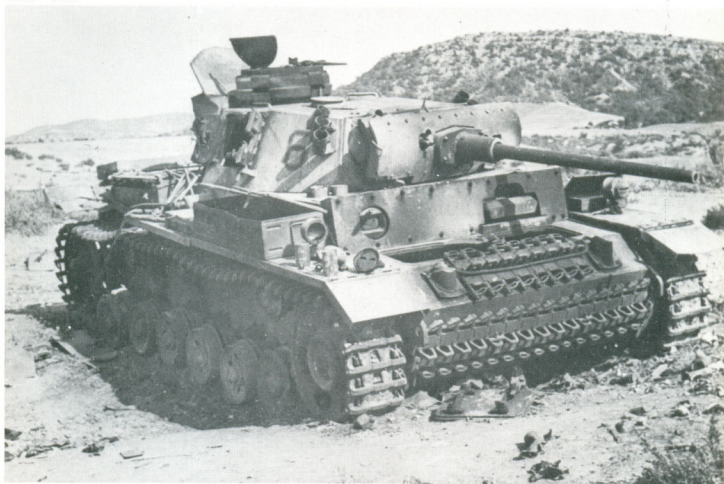




122. Heavy snow and a biting wind combine to produce a near white-out for the crew of this Pz Kpfw III. Visibility is already seriously restricted and soon the verges of the track will disappear, making orientation all but impossible. Russia, winter 1941-42. (US National Archives)

123. A Pz Kpfw III Ausf M knocked out in Tunisia. Note the clean penetration between the main and co-axial armaments. (RAC Tank Museum)

▲ 122 ▼ 123





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