John Ziska was not in league with the devil.
He was nothing more—nor less—than a medieval Patton,
spawning the tactical ancestor of today's tank
and dishing out an advance portion of Hell on Wheels.

The Tanks of the Middle Ages

by LYNN MONTROSS

SEVENTY years before Columbus discovered America, the tactical ancestor of today's tank made its appearance on the battlefield. It is hardly needful to add that this product of the Middle Ages could only seem quaint and primitive to a modern generation. But the concept of an armored vehicle with firepower was terrific in the year 1422, and even a present-day M46 might envy the Hussite wagon-fort its long string of victories.

Throughout military history, of course, the wagon has played a persistent part in defensive tactics. The Goths of the ancient world fought behind a barricade of wagons, just as American pioneers saved their front hair from the redskins sixteen centuries later by forming their prairie schooners into a tight perimeter. But the wagon-fort of the Hussites was something different and special. It was actually a horse-drawn armored car, co-ordinated with other arms and used for offense as well as defense. It was trying to be a tank to the best of its ability, and it raised so much hell with opposing forces that its battlefield victims accused the Hussites of being in league with the devil.

LYNN MONTROSS, author of *War Through the Ages*, *The Reluctant Rebels*, and *Rag Tag and Bobtail*, is historian with the United States Marine Corps.

The Armor of Antiquity

Even in the Middle Ages the idea of armor was not new. For the chariot of the ancient world may be dated back to the beginnings of recorded history in Mesopotamia. A two-wheeled cart, low in the stern and rising to a curved prow covered with bronze plates, this horse-drawn vehicle provided both protection and mobility. The bone-crushing tactics of Assyria depended to a large extent on the armor of antiquity, and it was likewise a reliance of Persia when that empire fought it out with Greece for supremacy.

Chariots being better suited to plains than mountainous peninsulas, it is not remarkable that they had a very minor part in Greek and Roman tactics. And in the decisive battle between East and West, chariots failed to save Darius III from a fatal defeat at the hands of Alexander the Great.

The Persian potentate had already taken a beating from the Greek invaders in a preliminary test of strength along the eastern Mediterranean littoral. After placing a force in Alexander's rear, compelling him to fight to regain his line of communications, Darius allowed himself to be drawn into a narrow coastal plain between the hills and the sea. There his chariots and cavalry were too cramped for space to be effective, and the Persians bowed to defeat on the field of Issus in 333 B.C.

Two years later Darius tried to avoid the basic error of that reverse by awaiting his adversary on a broad plain near the river Tigris that offered unlimited elbowroom. After clearing away all obstructions until the terrain was as level as a parade ground, the king of kings drew up a host estimated with the usual Oriental hyperbole at half a million men. He placed his cavalry on both wings and his masses of foot in the center, according to standard procedure. But at the battle of Arbela he wooed victory with an advance line of chariots armed with stout scythes protruding from both sides. These armored vehicles were to charge, covered by a "barrage" of arrows, while the Persian cavalry closed in for a double envelopment.

The 7,000 horse and 40,000 foot of Alexander's army were probably outweighed at least four to one. But he did not hesitate to seize the initiative after placing his phalanx of spearmen in the center and the cavalry on both wings, with hinges of light infantry between the two arms. His right, followed in echelon by the rest of the force, struck a surprise blow at the enemy's left before Darius could set his ponderous machine in motion. The Persians made a corresponding shift to meet this oblique attack, but the invaders were already

in position to pour arrows and javelins into the flank of the chariots when they advanced. Enough drivers were killed and horses wounded so that the charge got out of control, with the scythes doing more hurt to friend than foe in the melee.

Alexander took advantage of the confusion to drive a wedge with his cavalry between the opposing left and center, cutting the Persian army in two. The flight of Darius and his nobles led to a general panic, ending in the collapse of an army still retaining a great numerical superiority. The victors sacked the Persian Empire from end to end after making a captive of a ruler who had learned, belatedly, that badly handled armor may be worse than no armor at all.

A Neat Perimeter

Six centuries later, wheeled vehicles were to affect the outcome of another decisive battle resulting in the downfall of a greater empire. The grandeur that was Rome had become sadly tarnished by 378 A. D., when waves of land-hungry barbarians beat against the northern and eastern frontiers. The legion of the glorious past had been largely replaced by mercenary cavalry, and long-distance attack by war engines had more appeal to Roman warriors than the shock of infantry attack. Even so, the Emperor Valens anticipated an easy victory when he set out to subdue the Visigoths who had found lodgment across the Danube in Roman territory. He attacked on a plain near Adrianople when the cavalry of the barbarians was absent on a foraging expedition. The Gothic foot took refuge behind a barricade of wagons, which sheltered them from the Roman missile "preparation" as Valens advanced with his infantry in the center and his horse on both wings.

Victory was far from the thoughts of barbarians who hoped only to gain time until their own cavalry could return. But the wagon barricade proved to be the decisive factor when it stopped the Roman cavalry and threw it into disorder. The Gothic foot took heart and came out fighting just as their own horse appeared "like a thunderbolt" on the Roman left flank. A flight of the cavalry on the Roman right left the rest of the army huddled into a mass too dense for the infantry to use their weapons. And in the ensuing massacre, Valens perished along with two-thirds of his army.

Rome never recovered from the disaster. Emperor Theodosius, the successor of Valens, managed to postpone the death agony for a generation by hiring defenders from among the hosts of the barbarian invaders themselves. But this desperate expedient could not save an empire that had already dashed itself to pieces against the wagon barricade of Adrianople.

The lessons of this battle and Arbela were known in the Middle Ages, when educated men groped back to the classical past for guidance. But it is not likely that such precepts had any influence on the Bohemian peasants who developed the armored vehicle with the best historical claim to the ancestry of today's tank. For the fanatical followers of John Huss sought their inspiration from the Old Testament rather than the classics, and they found their earliest weapons among such familiar agricultural tools as forks and flails.

The first premature blows of the Reformation were struck in 1419, four years after Huss died at the stake. His Bohemian disciples not only rejected most of the doctrines of the Roman Church; they also revolted against the large landowners at a time when the clergy owned two-thirds of the soil. A powerful ferment was brewing in the ancient land of Bohemia, and the germs of civil war were present in the political and religious differences of the Hussites themselves.

A Military Genius

In 1420 a crusade of all Christendom was proclaimed against the heretics by Pope Martin V. The first army of invasion was led by Sigismund, king of Bohemia and Hungary as well as Holy Roman Emperor. Meanwhile, the moderately radical faction of Hussites, made up chiefly of peasants, had found a leader in John Zizka. A petty noble of Prague, he had distinguished himself so little that not much is known about his past save that he had lost an eye in a civil war battle and participated in the Polish victory over the Teutonic Knights on the field of Tannenberg in 1410. Even Zizka's age is in question, but he was probably 44 at the outset of his Hussite career in 1420, though some accounts represent him as being a sexagenarian. At any rate, the first great military genius of the Age of Gunpowder had emerged.

The effects were not immediately evident. Zizka held Prague in the summer of 1420 against an inarticulate feudal host led by Sigismund, but the successful defense did not owe to unusual tactics. The 9,000 Hussite warriors, entrenched outside the city on a palisaded height known to this day as Zizka's Hill, beat off all attacks by dint of courage and hard fighting. Even the women took part as ammmunition carriers, and weapons of gunpowder played little part as compared to pikes, arrows and crossbow bolts. Dissension among the crusaders aided the Hussites, for the invading army fell apart without making a united effort.

Tactics Department

Some of Zizka's men still had no better arms than forks and flails when he withdrew to a stronghold given the Biblical name of Tabor and located about five days' march south of Prague. In this remote hill town Zizka founded the arsenal and tactical laboratory of the Hussite Wars, and his followers were soon known as Taborites to distinguish them from opposing Hussite factions.

Bombards, handguns and other weapons of gunpowder had been known in Europe for a century, but their effect on tactics had not been spectacular. The Feudal Age had taken some hard knocks, it is true, but these blows had been dealt by weapons or formations reminiscent of the classical past—the arrows of the English longbowmen which cut down the French knights at Crècy, and the hedge of spears wielded by the Swiss phalanx which defeated the Austrian men-at-arms at Laupen.

Only in siegecraft had the crude cannon of the day spoken with some authority. Europe was dotted with the stone castles of ironclad lords preying upon commerce. Ransom and robbery were a flourishing business for these feudal barons until gunpowder provided the means of battering down their walls. Even so, the armies of the age proved more than ordinarily resistant to change, and the early cannoneers considered themselves craftsmen of a secret guild rather than soldiers. These specialists

and their bombards could be hired by anyone willing to pay the fee, and sieges offered more profits and fewer risks than battle. Foundries sprang up for the manufacture of cannon, and every large town soon had its ammunition quarry for the production of stone balls. But mechanical progress lagged to such an extent that the bombards of 1420 were still mounted on clumsy wooden sledges, their muzzles being elevated or depressed for range. The handgun was merely an iron tube clamped to a straight stock and fired by applying a smoldering cord to the touchhole.

These limitations explain why tactics had been so little influenced by a century of gunpowder, even though a few handguns had appeared at Crècy as early as 1346. The defensive was still all-powerful, allowing for rule-proving exceptions, and there was no infantry worthy of the name. Medieval armies went into action with the heavy cavalry on both wings and a center composed of the masses of untrained serfs fighting on foot. The ironclad men-at-arms came together in splintering collision, then slugged it out with lance and sword in hundreds of single combats. Unhorsing an opponent and holding him for ransom was the prime object, and battles sometimes ended with a wing of each army prevailing. Nobody troubled to count the casualties of the miserable drudges fighting on foot, though the losers often perished by the thousands in a happy massacre.

Human Dreadnaughts

Knightly cerebral processes were not notably keen, and little had been learned from the lessons taught by the Swiss spearmen and English longbowmen. As for gunpowder, the only reaction of Europe's masters had been to build thicker stone walls and encase themselves in heavier armor. By the early fifteenth century this trend had gone so far that a fully-armed knight in plate-armor panoply weighed between 300 and 400 pounds. Special breeds of horses were reared in Flanders to carry the human dreadnaughts, their descendants having come down to us as Belgian or Percheron draft animals.

These were the adversaries with whom John Zizka had to deal when he withdrew to Tabor to organize, arm and train the first coherent army of the Age of Gunpowder. It did not require a man of genius to perceive that the armored knight on the barded horse had become an anachronism. But Zizka must also have recognized that the thundering charge of the men-at-arms was still a fearful and unnerving thing for the unmounted serfs awaiting the impact. Even if you armed some of your serfs with handguns, they could only hope to put a ball through a plate-armor cuirass at very close range. Besides, there was the psychology of the age to be considered, even though that term was not a glib catchword of the year 1420. For generations the serfs of Europe had acknowledged as masters the arrogant lords who held their bodies in bondage. It was difficult to transform this cringing attitude into the confidence of soldiers bidding for victory on the battlefield.

Promotion by Merit

Zizka began the task by imposing a Roman discipline at Tabor without regard to social rank. Battle drill went on tirelessly, and drastic punishments were prescribed for such ancient military vices as tippling, gaming and wenching. Promotion was based upon merit, with Zizka setting the example by declining title, honors or rewards.

Such a stern military system could not tolerate the hordes of camp followers encumbering other medieval armies, and Hussite women, old men and children were trained to dig field fortifications and bring up ammunition. Theory was combined with practice as Zizka sent his troops out on expeditions against the castles and walled monasteries of Bohemia. These forays not only provided combat experience but also gold for the war chest and such much-needed weapons as bombards, handguns and crossbows.

Seventeen months elapsed between the defense of Prague and Sigismund's second crusade late in 1421. The invading force, estimated at 200,000 and probably numbering half as many, was made up of Austrian, German and Hungarian contingents. Plunder and conquest were doubtless greater incentives than religious zeal, since war-wracked Bohemia appeared to be ripe for the plucking. But there was little cohesion and less discipline among men-at-arms from a hundred petty states of the Holy Roman Empire—that vague political structure described as being "neither holy nor Roman nor yet an empire." About all that Sigismund's polyglot host had to recommend it was human tonnage and the muscular tactics of knighthood; and its chances for victory might have been likened to those of an over-inflated balloon challenging a blowtorch.

John Zizka had only 15,000 men at most, but he had an army—an army made up of infantry, cavalry, artillery and primitive tanks. Displaying his preference for the strategic offensive combined with the tactical defensive, he marched northward from Tabor in December and took a position calculated to compel an attack.

Sigismund obliged with a headlong advance from the northern frontier and the first clash took place on January 6, 1422, near the town of Kutna Hora, some 40 miles east of Prague. The Taborites were drawn up in a formation that must have puzzled the unsuspecting crusaders. Across the field stretched a line of wagons armored with sheet iron and joined to one another by chains. Each vehicle sheltered several marksmen with handguns or crossbows, and pikemen were posted in the intervals. As a further innovation, Zizka had mounted medium bombards on wheels instead of the usual sledges and placed them along the center, protected by the wagon-forts and pikemen. The Taborite cavalry was on both wings, and a small reserve waited in the rear.

Tactics, Not Sorcery

Unhappily, there are no satisfactory detailed accounts of the ensuing battle. The Hussites, like the Carthaginians of old, left military chronicles pretty much to their enemies, some of whom earnestly believed that Zizka won his victories by sorcery. It is a consolation, however, that all reputable sources dealing with these campaigns have been made the basis of chapters in two of the world's most scholarly works of military history.*

*Sir Charles W. C. Oman: *History of the Art of War in the Middle Ages* (Vol. II), London, 1924. Hans Delbrück: *Geschichte der Kriegkunst im Rahmen der Politischen Geschichte* (Vol. III), Berlin, 1900-1920. The mysterious career of John Zizka has also inspired less authoritative books, including a popular history by George Sand, the French novelist.

WHY NOT USE OUR BEST WAR SKILLS?

The criticism of Garrett Underhill and Ronald Schiller [in a recent article in *Look* magazine] on the shortcomings of the weapons of the American foot soldier only scratch the surface of certain basic errors of the American Army in its attitude toward the utilization of modern weapons.

The American people, accustomed to a prodigious expenditure of industrial might, are bewildered at the inability of their Army to impose a decision on soldiers of an agricultural country with a largely illiterate population. They feel there is something drastically wrong and they are right.

In Korea today two infantry armies face one another with only incidental tank support. The results are practically a duplication of the first three years of World War I, mass slaughter and insignificant gains.

We were not directly involved in the first three years of that war, and the bloody battles of the Somme, Verdun, Passchaendaele and Ypres are now largely forgotten, but they were the prototypes of the battles now raging at Bunker Hill, the Hook, Heartbreak Ridge, etc.

Despite elaborate artillery preparation, the infantry never could make any significant advances in the face of machine-gun fire. What they did accomplish were massacres and a stalemate exactly as we have in Korea. So ended the infantry as an offensive arm. This was in 1916.

In that war, however, for the first time a spectacular application of the machine age was applied directly to the battlefield in the form of the fighting machine or tank. Despite its crudeness, it was a machine. It was power driven, it had greater firepower, mobility. Above all else it could advance in the face of machine-gun fire, something the infantry never could do. Gen. Ludendorff in his memoirs pays tribute to the decisive role which the tank played in the closing days of World War I.

Unfortunately, the tank appears to have made a far greater impact on the Germans than it did on the former allied countries. The results were demonstrated in World War II. The tank had now come of age. Its firepower had been increased, the armor thickened, the speed improved. Its qualities, as befits a machine, were constantly improved as technological knowledge increased. The infantry still moved on foot, carried a rifle, bayonet and hand grenade.

These two basic forms of military organization, the armored division and the infantry, met for the first time on a large scale in World War II. The results were classic. The mechanized Panzer divisions of the Germans tore the infantry divisions of Poland, France, Belgium, Holland and Yugoslavia to shreds.

Doctrine was esteemed so much more than tactics in an age of fanaticism that we know all the shades of Hussite religious and political opinion. But we do not know much about the battle of Kutna Hora except that the crusaders shattered in disorder against the Taborite line. Heavy cavalry had no chance against four integrated arms composed of men drilled intensively for the past seventeen months. And Zizka's bombards, handguns and crossbows had already inflicted grievous losses on the men-at-arms when his cavalry closed in on both flanks to finish the job without pity for captives.

The victor pursued his routed foes more than fifty miles and caught up with them four days later near Nemecky Brod, where they had joined a secondary invading force. There on January 10 the Taborites won another victory, completing the ruin of the crusaders. The broken remnants streamed in wild flight toward the Moravian frontier, harassed all the way by vengeful Hussite peasants.

Sorcery was suspected by the medieval mind when a situation could not be understood, and the Bohemian heretics were believed to be receiving active aid from the devil. There was no other convincing explanation for such one-sided victories against numerical odds, and John Zizka became a sinister figure when his enemies learned that he was now totally blind. An arrow having pierced his one eye during the siege of a castle in 1421, he had depended on the sight of subordinates while making dispositions for the two battles.

Moravia was the next scene of operations as Zizka marched to the aid of sympathizers who had embraced the Hussite creed. Sigismund was represented by a renowned *condottieri* captain, Pipa of Ozora, with an army of 23,000 mercenaries. The Taborites made chaff of this force in a swift campaign of aggression, but meanwhile civil war had broken out in Bohemia.

The Hussite movement was an agrarian and political as well as religious revolt, and in the spring of 1423 Zizka had it out with an army representing the kingdom's nobles and large landowners. He defeated them in April on the field of Horic and again in August at Borek. And with the Hussites temporarily united, the blind leader invaded Hungary to punish the nobles of that land for aiding Sigismund.

In this campaign the Taborite military machine was only partly successful. Although Zizka won all his combats with ease, his column was severely harassed by swarms of irregular Hungarian horsemen. Before the objects of the invasion could be accomplished, a new outbreak of civil war drew the Taborites back to Bohemia. They won two more victories over the nobles and landowners in 1424, and in September a peace was concluded between all Hussite factions.

The Pope had been endeavoring meanwhile to raise new crusades, but Zizka's reputation was so formidable that little came of these efforts. The blind leader's dream of Bohemian solidarity seemed realized in the early autumn of 1424, when he led another

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Even in Russia where the German armies conquered vast areas, but were finally defeated, the mechanized armies of Hitler made so great an impression, that the Soviets built the greatest tank army in the world.

The debacles of the infantry in World War II completely ended its role as a significant factor in modern war. It now had neither offensive nor defensive abilities. It was now completely obsolete.

Unfortunately, this was obviously not the conclusion of the American high command, for it continued to put its faith in the foot soldier. When the Korean war began and only an armor-tipped North Korean army attacked South Korea, Gen. Bradley assured the American people that the South Korean army would give a good account of itself. He thought it was a good army, and it was a good army as infantry armies go.

Unfortunately, it was hit by an armored force, and it did what all good infantry armies do when hit by a mechanized offensive. It fell apart, and this despite the air superiority which we provided.

Belatedly a tank program has been inaugurated, but it is apparent that there is little faith in mechanized warfare among the top brass of the Army. Why this should be is almost incomprehensible. If ever there was a nation that was suited for machine warfare, it is this country which has outstripped the world in mechanical achievement.

Gen. Patton demonstrated what Americans could do with even inferior tanks. The superiority of the tank stems from the fact that it is a machine tool. As such it is susceptible to constant improvement. Its firepower can be increased, new metals can be employed in its manufacture, automatic controls can be installed. Possibilities are limitless.

Conversely the inferiority of the infantry lies in the fact that it is really a collection of laborers using hand tools. Hand grenades, rifles, bayonets, rifle butts and fists are pathetic weapons to use in a mortal struggle with the most populous nation on earth.

It is significant that the Chinese cannot dream of fighting our Navy, which is largely technological, or of competing successfully with the Air Force, but find no special difficulty in stopping infantry assaults.

The army must be completely reorganized with the active assistance of scientists, engineers and production executives. It must be brought to the same technological level as the most advanced branches of American industry.

Such an armored technological Army could bring the war to a close against the hordes of Chinese infantry. The time is short and unfortunately the technical gap is closing.

J. MARGOLIN

invasion of Moravia, parts of which were still held by Sigismund. But Zizka died of the plague in October before reaching the frontier, and the Hussites were soon at one another's throats again.

The chronicle of the next decade is a dreary record of Hussite civil war actions varied with successful raids on Sigismund's cities. Legend had it that after Zizka's death, his followers made his skin into a drum to frighten his foes. But this result was accomplished by the tactical system he founded. For Zizka's affliction had resulted in his officers thoroughly learning his methods while he used their eyesight.

A married priest named Prokop the Great succeeded to the Hussite leadership. And though his talents were political rather than military, he won victories which enabled him to wring concessions from the Pope and Emperor. Plunder and conquest soon became the main objects of Hussite warfare as loot-lured Polish and Hungarian mercenaries filled the ranks thinned by Bohemian deaths. Eastern Europe was helpless as the cities of Austria, Silesia, Saxony, Bavaria and Thuringia were sacked by Hussite forces which met little resistance. Several more crusades were preached against the heretics, but each time the feudal host dissolved without striking a blow.

The end came in 1434 when the bloody civil war battle of Lipany virtually amounted to Bohemian national suicide. Prokop's main army was defeated by a large Hussite force led by one of Zizka's former generals, with both sides bringing wagon-forts and wheeled bombards into action. The kingdom having already been bled white by fourteen years of cruel and incessant warfare, the 18,000 slain of Lipany weakened it beyond recovery. The Hussites themselves had accomplished what their enemies were unable to do, and soon the Pope and Emperor established their domination again.

Military history is the poorer because we do not know more about this tactical system which accounted for victories in fifty battles or combats as well as the capture of some five hundred walled towns, castles and monasteries. Contemporary accounts credit the wagon-forts with complex offensive movements executed at a gallop, but it is doubtful if the heavy armored cars were capable of such maneuvers. Certain it is, however, that they were mobile enough for offense as well as defense, and more than a third of Zizka's foot was eventually armed with handguns.

* * *

His opponents never understood his methods well enough to describe or imitate them intelligently. This is not astonishing when it is considered that a century would pass before another army of the Age of Gunpowder combined infantry, cavalry and artillery on the battlefield, but without reviving the wagon-forts which are the ancestors of today's tanks. Thus the tactical system created by blind John Zizka flamed like a meteor across the sky, spreading terror and confusion, and then vanished into the medieval darkness.