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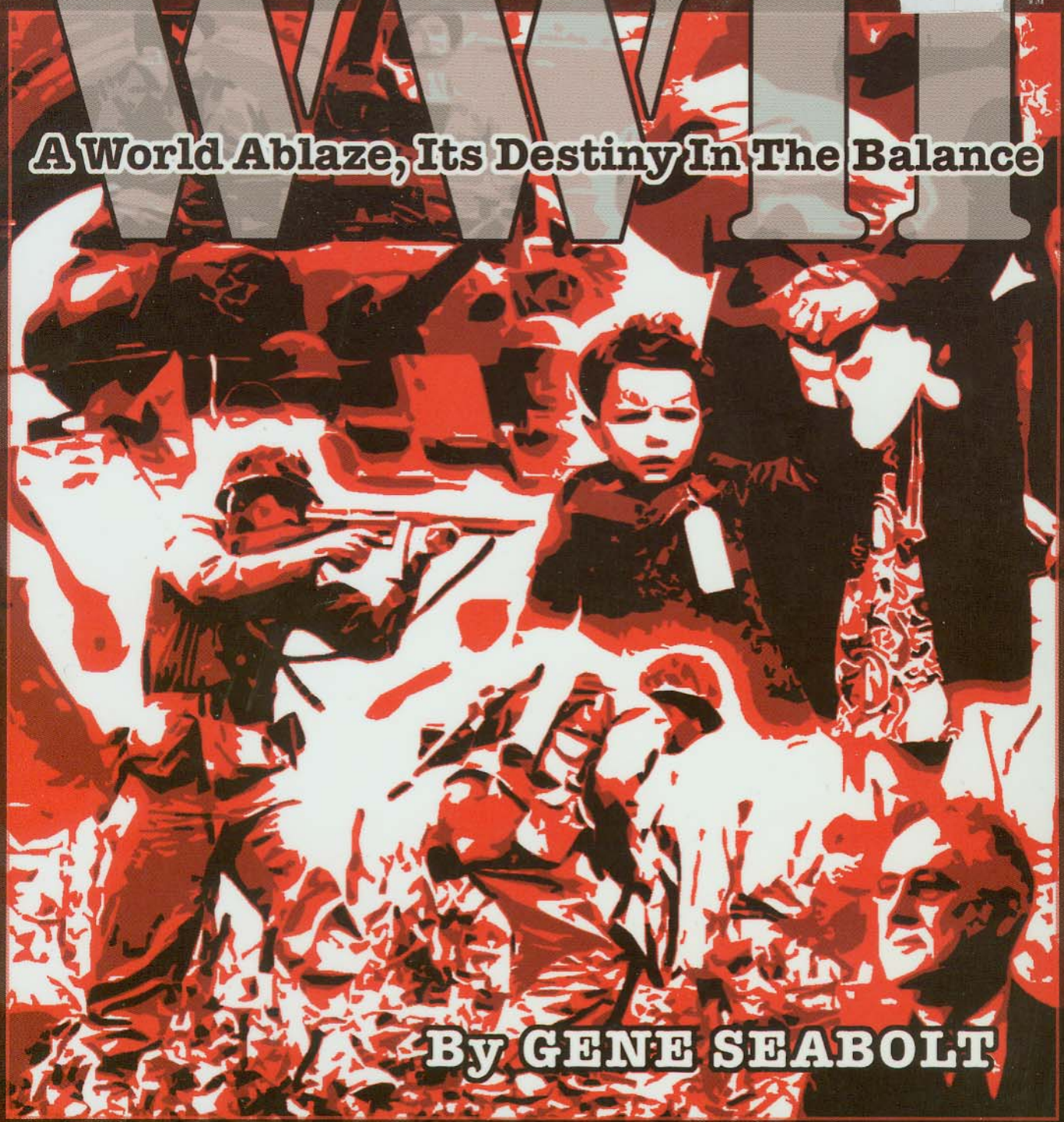
WWII™

A World Ablaze, Its Destiny In The Balance



By GENE SEABOLT

STEVE JACKSON GAMES

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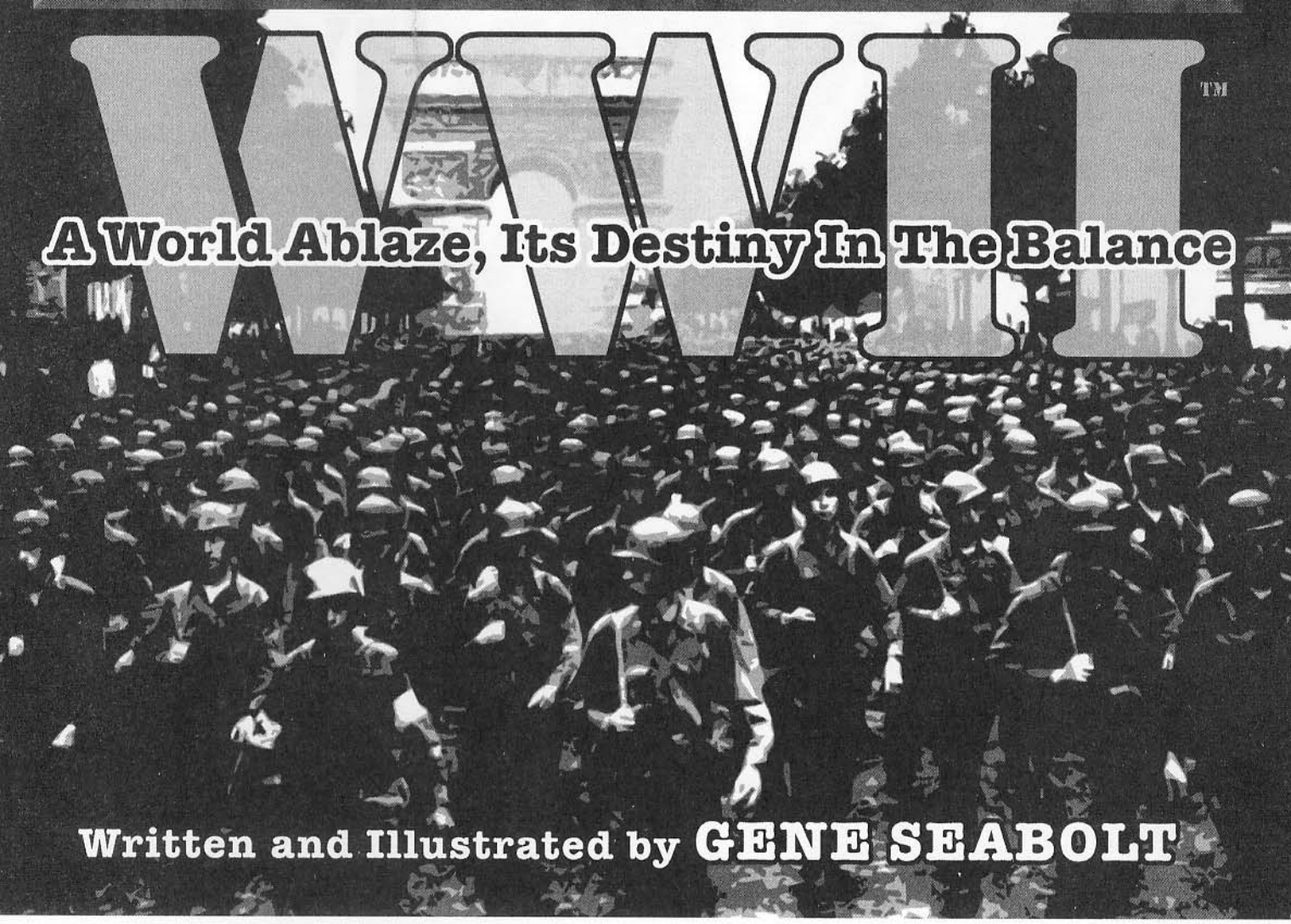

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A World Ablaze, Its Destiny In The Balance

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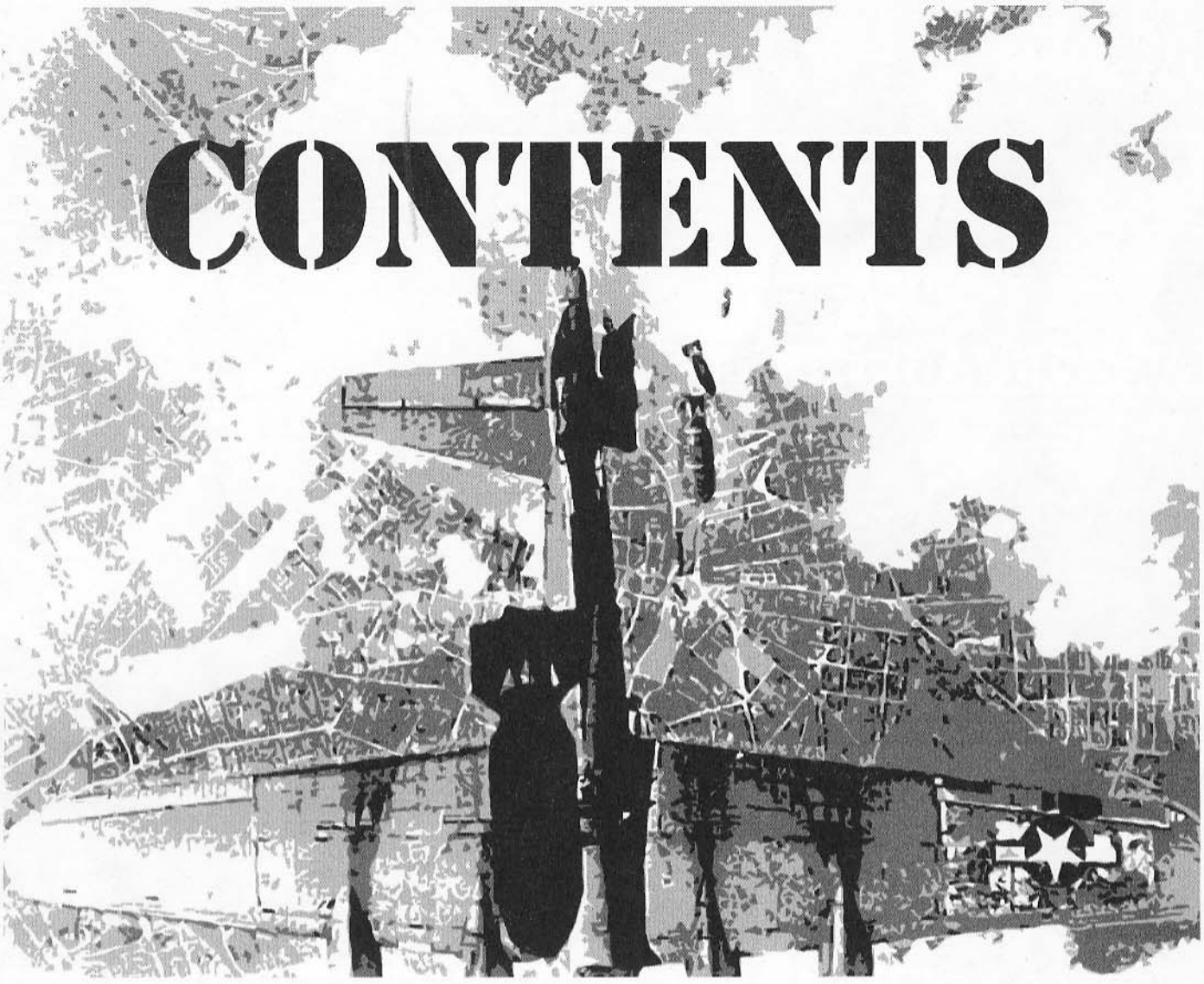

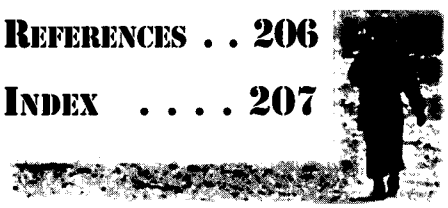

About GURPS

Steve Jackson Games is committed to full support of the *GURPS* system. Our address is SJ Games, Box 18957, Austin, TX 78760. Please include a self-addressed, stamped envelope (SASE) any time you write us! Resources include:

Pyramid (**www.sjgames.com/pyramid/**). Our online magazine includes new *GURPS* rules and articles. It also covers ***Dungeons and Dragons, Traveller, World of Darkness, Call of Cthulhu***, and many more top games – and other Steve Jackson Games releases like ***Illuminati, In Nomine, Car Wars, Toon, Ogre Miniatures***, and more. *Pyramid* subscribers also have access to playtest files online!

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Errata. Everyone makes mistakes, including us – but we do our best to fix our errors. Up-to-date errata sheets for all *GURPS* releases, including this book, are available from SJ Games; be sure to include an SASE. Or download them from the Web – see below.

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Internet. Visit us on the World Wide Web at **www.sjgames.com** for an online catalog, errata, updates, Q&A, and much more.

GURPS has its own Usenet group, too: rec.games.frp.gurps.

GURPSnet. This e-mail list hosts much of the online discussion of *GURPS*. To join, e-mail majordomo@io.com with "subscribe GURPSnet-L" in the body, or point your web browser to **gurpsnet.sjgames.com**.

The ***GURPS WWII*** web page is at **www.sjgames.com/gurps/books/ww2/**.

Page References

Rules and statistics in this book are specifically for the ***GURPS Basic Set, Third Edition.*** Any page reference that begins with a B refers to the ***GURPS Basic Set*** – e.g., p. B102 means p. 102 of the ***GURPS Basic Set, Third Edition.*** Page references that begin with CI indicate ***GURPS Compendium I***, CII to ***Compendium II***, VE to ***Vehicles***, or HT to ***High-Tech***.

For a full list of *GURPS* abbreviations, see p. CI181 or the updated web list at **www.sjgames.com/gurps/abbrevs.html**.

INTRODUCTION

This book begins a series of *GURPS* titles on World War II. It attempts to present the facts, balanced between the poles of perspective when necessary, but without ignoring the often immense passions of the moment. It provides a terse overview of humanity's single greatest conflict as it played out, the nations who took its stage, and the people who fueled those efforts with their lives or their souls.

It also provides the rules and design systems for modeling the war with *GURPS* mechanics. All of the information essential to this book's purpose is within its covers.

Future titles will add color, and detail, and often stray from matters military, but for now we are dealing with the war at its most fundamental – men and their tools in organized, armed conflict. Despite that relatively limited scope, we don't think that we have ignored *GURPS*' strength at providing portable game concepts for cross-genre and high-weirdness campaigns. The descriptions herein will provide you with suitable villains for Golden Age superheroes to tumble by the score, proper defenders of Earth for a Wellsian alien invasion, the ancestors to modern intrigues rooted in the ashes of the Third Reich, exotic adversaries for late-era pulp heroes to pummel, the baseline for any of 1,001 alternate-history scenarios . . . or even a straightforward military campaign.

This book may not agree with every personal vision of the Second World War. Partly, this stems from the compact, iconic image that most of us have for that war – even the initials "WWII" suggest a tidy and monolithic affair, the stuff of "The Good War" or "The Great Patriotic War."

A more intense inquiry reveals more dichotomy than dictators. The black-and-white affair of one man is a worms' nest of slithering, gray motives for another. Revisionist and/or conspiratorial counterexplanations challenge many an "established" fact about the war. An act of sacrifice that leaves one audience with eyes brimming in tears leaves another with mouths twisting in sneers.

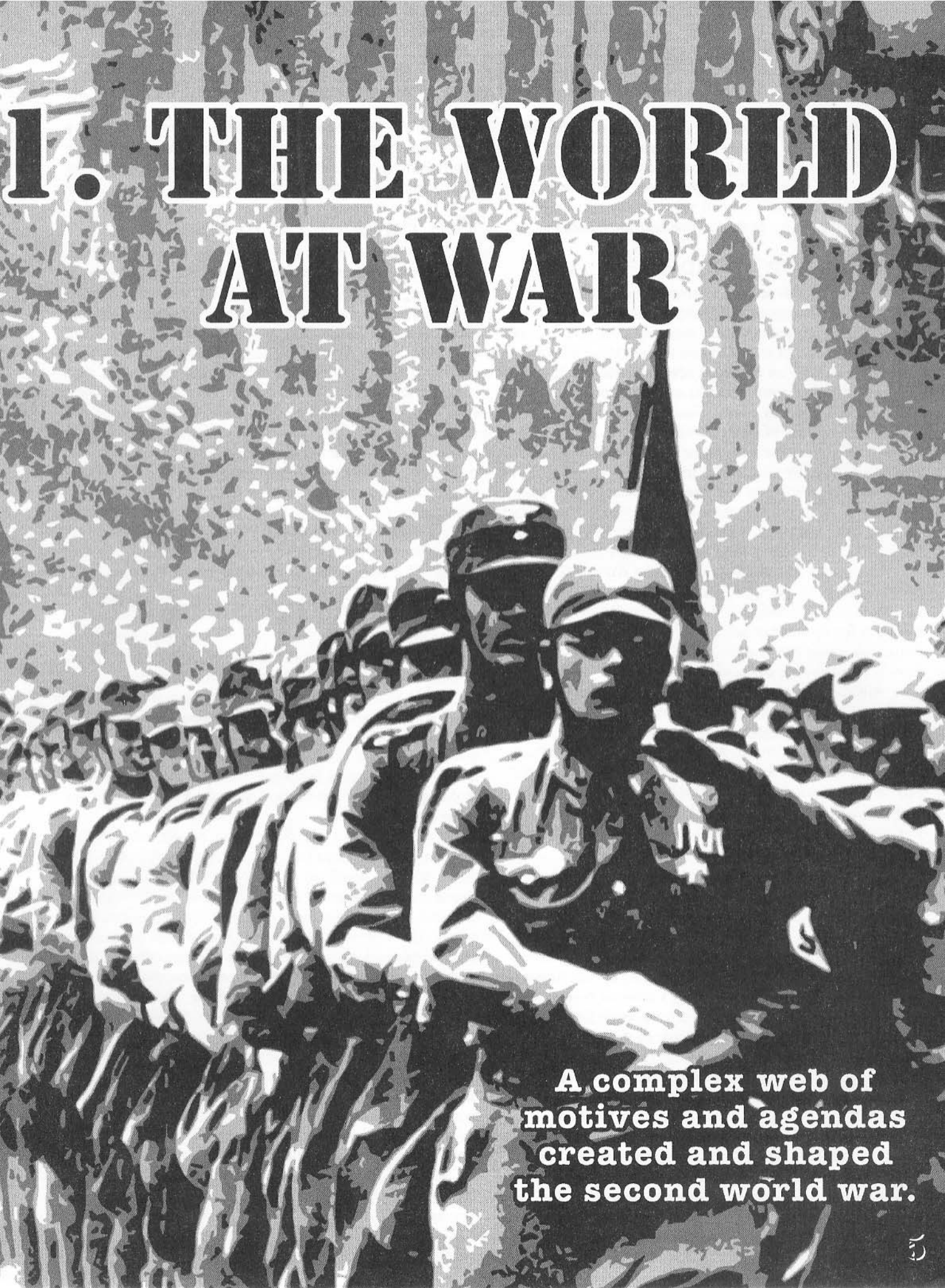
In the end, the billions of human currents that made up that flood tide of violence defy accurate charting. One can only build the largest possible body of knowledge, then find out where it leads. This book illustrates acts of the highest nobility without placing a halo upon them. It also describes the cruelest atrocities without underlining the outrage any moral observer would feel. Those exercises are left to the individual reader.

A subject so massive would have resisted our editorial efforts without a similarly massive amount of assistance. The contributors to this book may not have given blood, but they assuredly shed their share of sweat, and possibly a few tears. The editor invested money, effort, and trust in equally high measures. Those things that impress you – those things with which we hope to delight even the most serious student of WWII – are to their credit. Given an average level of subjectivity, some readers with previous interest in WWII will feel that this book contains errors of omission or misrepresentation, or even of the factual variety depending upon the source at hand. Those should all be attributed to the author.

About the Author

Gene Seabolt joined Steve Jackson Games in 1997 after more than a decade of newspaper reporting and editing. He has since served in a variety of roles, including his current portfolios of ***GURPS WWII*** line editor and production manager. He lives in Austin with his wife, Lee; son, Shane; and a player to be named later. He enjoys being fat, dumb, and happy, and hopes that his sons will possess the same luxury.

1. THE WORLD AT WAR



A complex web of motives and agendas created and shaped the second world war.

THE WAR TO END ALL WARS

Roughly speaking, World War II began where World War I left off. Known prior to 1939 as the Great War, or *the* World War, WWI left some of its survivors proclaiming that its end would introduce lasting peace. A generation later, its own child would eclipse "the war to end all wars." In any analysis of the second war, the origins of the first one bear some attention.

Looking for Trouble

In the early 20th century, Germany could, and often did, boast of being the greatest of Europe's Great Powers. It had the most industry, more citizens than any rival save Russia, and a Prussian-model army that kept the neighbors mindful of their manners. This all remained new and heady stuff to the Germans, who had spent centuries as a hodgepodge of bickering duchies and city-states, often trampled over by real nations in the course of their real wars.

By 1871, the Prussian Prime Minister Bismarck had changed all that, by means of a few short, decisive military campaigns. The Prussians had drubbed France, taken Alsace and Lorraine as their prize, unified Germany under their King William, and promoted William to Kaiser of the Second Reich. (The Holy Roman Empire had been the first.)

William's successor, Kaiser William (or Wilhelm) II, wanted to emulate Bismarck's dash, but possessed only a fraction of his good sense. Blustering and heavyhanded, Wilhelm II shaped a fervid German patriotism, and worried the rest of Europe by spoiling to further cement Germany's place on the world stage, this time under *his* banner.

Allied to Germany, Austria felt confident in doing some shoving of its own in 1914 after Bosnian terrorists killed the heir to the Austro-Hungarian throne, Archduke Franz Ferdinand. Austria demanded that Serbia let it investigate the assassination in Belgrade. Serbia refused, so Austria declared war July 28. Russia declared war on Austria to protect Serbia. Germany declared war on Russia, and assuming that France also was spoiling for a fight, ensured as much through haughty demands. Armies across Europe began mobilizing.

The Schlieffen Plan

The German army staff had foreseen fighting France and Russia at once. In 1905, the chief of staff, Count Schlieffen, developed a daring plan to knock out France in one blow, then turn east for the more tedious task of chewing up vast Russia.

His plan placed most of Germany's army on its right wing facing France. These troops would drive through Belgium and Holland, sweeping down toward Paris. In the meantime, the German left wing would give way to the French. As the French pushed east, the German right's sweep would cut off, encircle, then help destroy the pointed part of the French spearhead. Its fighting troops lost, France would have to sue for peace.

Schlieffen had retired in 1906. His successor watered down the plan that he inherited, eliminating routes through neutral Holland, weakening the right wing, and failing to understand the need to retreat on his left. Thus, when the Germans launched their gambit Aug. 17, the right wing had too far to go. The jackbooted, *Pickelhaubed* troops still made it a near thing – pushing to within 40 miles east of Paris – but the timely French use of railroads to redeploy troops solidified the lines that they now shared with the British.

The Butcher Shop Opens

Those lines stretched 400 miles from the English Channel to Switzerland, with troops digging in and stretching razor wire along their length. With no room to maneuver, the remainder of the war on the Western Front degenerated into sheer carnage. Entrenched machine guns mowed down assaulting troops. Whole battalions disappeared in massive artillery barges. The battered earth transformed into a thin, stinking mud that could swallow up an errant soldier. Dead comrades rotted among the logs in trenchworks. Tens of thousands of men routinely died for gains measured in yards.

In the east, with fewer troops fighting in more space, Germany was winning a more traditional war of movement against Russia, despite Austria's bumbling aid to the Central Powers' cause. In the west, everyone was losing, and being bled dry in the process. Still, the British held the trump card, because their navy kept industrial Germany blockaded. Each passing day narrowed the odds for the increasingly hungry Germans.

U-Boats and Doughboys

Aware of their peril, in early 1917 the Germans began unlimited submarine warfare, hoping to counterstarve Great Britain. The Kaiser's generals realized that this would propel the United States – a populous industrial giant dwarfing even Germany – to join the Entente Powers opposing them.

They had reason to hope that the war would be over before the United States could mobilize. The Russians were reeling; in March, riots broke out, and by November the Soviets had taken over from the czar and sued for peace. The war in the east was won.

If not collapsing, the French and British were at least wobbling. The Germans had been dishing out a bit more than they took in the west, and now they were beginning to find a means to make real gains through their new stormtrooper tactics. Instead of sending hordes of men forward in headlong rushes, the Germans were training their best soldiers to advance in small groups, using cover and concealment, thorough reconnaissance, and decentralized command.

The new tactics were too little, too late. The Germans did not have enough reserves behind their assault divisions to capitalize on their gains, and in June 1918 the stormtroopers ran up against fresh American doughboys. Many more were shipping over from where those came from, and the German public knew it. On Nov. 3, German sailors mutinied when ordered to steam forth on a Wagnerian do-or-die sortie. On Nov. 9, Kaiser Wilhelm conceded that the war was lost, and stepped down. The fighting ended two days later.

More than 8 million died in World War I's meat grinder. The millions who survived it returned to civilian or public life permanently scarred.

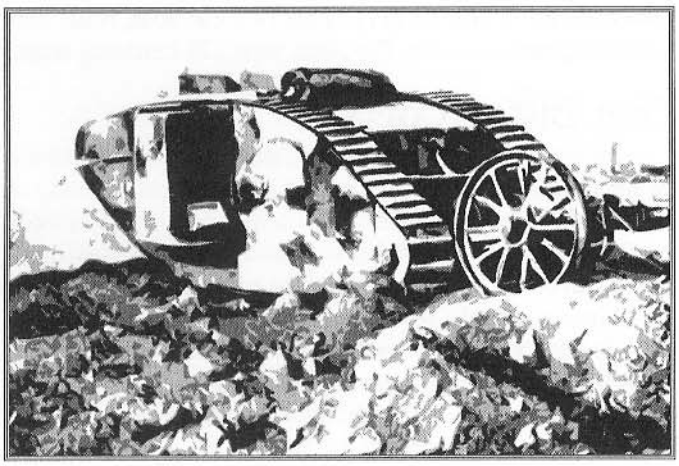
RISE OF TOTALITARIANISM

The chaos in the Great War's wake opened the door for a variety of repressive, and usually aggressive, regimes to seize and consolidate power across the globe.

Forge of the Soviets

Germany's terms of surrender returned the vast tracts that the Soviets had ceded in exchange for peace, but the new Bolshevik regime was not yet done fighting. An army had formed in the home of the Don Cossacks, and in 1918 began a civil war between the Whites (imperialists of one stripe or another) and the Reds (Communists).

The Entente Powers were even less fond of Communist revolutions than they were of German imperialism, so they aided what had grown to be a variety of White forces. This assistance included small naval, infantry, armor, and air forces, as well as war-surplus tanks, which had made a lackluster debut crossing the western trenches late in the Great War. The Bolsheviks countered this threat with armored cars that the British had given Russia during the Great War, and a few captured French and Polish tanks.



In 1919, the main White army spread north from the Black Sea, a sister army drove east from the Baltic, and the Poles rapidly advanced between them. In Siberia, a White force made no progress despite U.S., French, and Japanese aid, but a 100,000-man Czech ex-POW army was fighting its way back home.

Despite their gains, the Whites failed to coordinate their efforts, then fell prey to a Red army making all it could of its interior lines, transferring armies from one front to another. In an ill-run war, even a little strategic execution went a long way. By 1922, the Whites and Poles had been repulsed, and the last Entente troops left the Soviet Union. The Czechs had also made it home, after fighting both Russian armies.

Blood and Tractors

Forswearing any foreign adventures, the Soviet leader Lenin set to work rebuilding Russia's shattered economy. This required easing back on his own hard-edged Communism. His New Economic Policy legalizing small capitalistic ventures kickstarted the Russian economy by the time of his death in 1924. A host of Soviet officials, including one Josef Stalin (see pp. WWii104-105), inherited the reins of power.

Stalin held no interest in sharing. In order to both consolidate his own power and force-feed industrialization to his country, he revitalized the Soviet secret police that Lenin had reduced in power after the Civil War. By 1937, Stalin and his NKVD ruled a country dotted with countless new factories. All of Stalin's serious rivals had been slain, along with millions of peasants, in a reign of terror spanning the 1930s.

The New Samurai

Those last Entente troops to leave Russia in 1922 had been Japanese, a people with a recent history of lingering past their welcome on the east Asian mainland.

Realizing that global competitiveness required a true nation-state, the Japanese had modernized almost overnight in the 1860s-70s, toppling their shogun and replacing him with a strong emperor and a Prussian-style constitution. Seeking to emulate Bismarck on the battlefield as well, they invaded China in 1894, then suffered deep shame when Western powers conspired to bully them into giving up their gains. Regardless, in 1905 the Japanese navy inflicted on the Russian navy the first modern military defeat of a Western power by an Eastern rival. They then entered China to stay.

When the Great War broke out, Japan weighed its German stylings against its long, friendly relationship with Britain, then joined the Entente Powers. Probably no other country profited so much for so little in that war, as the Japanese took over German colonies and concessions in exchange for relatively light fighting that cost some 2,000 dead.

The Second Reich's collapse left Japan questioning the model for its own society. When the 1920s opened with economic collapse and natural disaster, political upheaval resulted. The military solidified its hold, with the emperor as something of an influential figurehead and the country's small group of industrialists usually bowing to the military's wishes. A civilian government existed, but if it got out of hand a dutiful officer could be found to assassinate any offending officeholders.

The Other Master Race

A deepening racism accompanied Japan's rapid social evolution. This partly stemmed from the modified *bushido* code developed in the 1870s to infuse the nation's first conscript army with a high esprit de corps. By the 1930s, racism had perverted the code to a merciless savagery, leading to the policy of "the Three Alls – Burn All, Seize All, and Kill All."

The Japanese also were reacting in kind to Western bias. The 1894 snubbing in China had created deep resentment, even more so when Russia immediately claimed similar Chinese gains without European protest. For the most part, Western powers treated Japan in accordance with the Kaiser's nickname for the race: "The Yellow Peril." The Japanese did not overlook these offenses.

Rome Revived

When the Great War began, Italy unabashedly bid itself out to the rival blocs, landing on the side of the Entente. Italy's army muddled along to little effect in the Alps, but afterward the nation profited with a handsome scattering of new territories.

During the war, an outspoken socialist war protester named Benito Mussolini decided nationalism and war were the right course after all. He lost his party membership, but gained a uniform and some new political backers.

Italy suffered the postwar unrest seen elsewhere. By then an ex-corporal in his mid-thirties, Mussolini proved an effective organizer, his flamboyance and oratorical skills outweighing a serious attention deficit disorder. Dressing his mostly war-veteran followers in black shirts, he formed the first Fascist party, dedicated to aggressive nationalism and combating socialists. In 1921, he won a seat in Parliament. The next year, his National Fascists marched into Rome in a gesture far more symbolic than military. A weak King Victor Emmanuel III invited Mussolini to form a cabinet.

Mussolini set about turning his position into a dictatorship. Suspending parliament in 1928 and mollifying the Catholic church by 1929, *Il Duce* (the Leader) enjoyed a solid grip on power and popularity by 1930. Given time, not all Italians would admire their erratic, boisterous Duce with a penchant for buffoonery and dreams of Imperial Roman glory, but they had to admit that things had quieted down and, at least on the surface, gotten back to business.

The Nature of Fascism

Mussolini would not be the last former socialist to become a Fascist, and at first glance it can be hard to find differences between right-wing Fascists and the leftist Communists they so vigorously opposed. Both desired totalitarian regimes with the will to spread their rule; both desired a centralized state with little room for entrepreneurial capitalism; both disregarded human rights.

The difference could be summed up as opportunism. While Communist movements sprang from sincere political principles, the Fascist movements adapted to whatever got them power quickest. Thus, they picked bloody fights with the much-feared Communists in the street, campaigned on the promise to keep the Communists from spreading more violence, and once in office took credit when they themselves quit starting fights. Communists openly preached the (often bloody) end to nobility and wealthy capitalists; the Fascists courted these factions, intending to usurp their power at the point of a gun once in control. Communists sought to abolish national and racial identities; the Fascists realized that it was far easier to rally people to an existing flag or ethnic identity than some intellectual's political-science thesis.

The Communists could be ruthless, too, a fact the Fascists didn't overlook. Once in power, they continued to hound the hard-core socialists . . . to the point of war.

The Nazis Seize Power

In 1871, the victorious Germans had made France pay a stiff war indemnity. In 1919, the French returned the gesture. The French bill was no smaller, perhaps 15 times larger, than the original. Regardless, Germany couldn't pay it. Overwhelmed with these reparations, the newly installed liberal democratic Weimar government chose to hyperinflate away its internal debt. This turned into paupers almost all Germans except the real-estate rich.

Even before the Nazis took power, the German people had no intention of giving up their martial prowess.

The Germans persevered, regaining their prewar industrial output in the late 1920s. Then the U.S. stock market collapsed in 1929. The global ripples drowned the German recovery. This was more than the nation could bear. As elsewhere, extremists had been agitating – one such group, the National Socialist or Nazi party, had attempted a 1923 Bavarian coup that earned a jail term for one of its leaders, Adolph Hitler (see pp. WWii110-111). In the 1932 elections, Hitler took a more legitimate course. The Nazis won 230 Reichstag seats.

One Bitter Corporal

As with Mussolini, Hitler enthralled a significant portion of his countrymen, while repulsing a substantial minority. A brave and combat-tested Great War corporal, Hitler appealed to his fellow veterans' belief that less sturdy elements back home had betrayed the soldiers winning the war. He hurled new levels of invective at the Jews, a group that much of his audience already felt comfortable abusing, and one that many perceived as well worth robbing. He preached the racial superiority of the blue-eyed and blonde "Nordic race," and promised to make room to expand by expelling the Slavs to the east.

It wasn't pretty, but it did strike a nerve with a people villainized for a war that they felt they had fought in self-defense. President Hindenburg wanted nothing to do with the little Austrian import, but the army persuaded him to name Hitler chancellor in 1933. By 1935, no one (except Hitler himself) doubted the near-absolute authority wielded by *der Führer* (the Leader).

Shadow Rearmament

Even before the Nazis took power, the German people had no intention of giving up their martial prowess. France had imposed severe restrictions on the size of the German military, for fear it would be left alone to counter a German revival.

This proved a great, inadvertent boon. The German army spent the money saved on non-existent regimental messes for secret research on cutting-edge weaponry. Unhampered by making existing equipment fit, the secret general staff developed a grand vision for the future of war.

When Hitler took power, he found a thriving military machine. He happily accelerated its efforts.

Gambits Across the Globe

As the world's nations struggled through their recoveries from the Great War, the liberal democracies and totalitarian regimes moved in opposite directions.

Recognizing the supreme importance of self-determination in keeping the peace, the democracies moved further toward self-rule. From 1919-22, a series of peace conferences beginning at Versailles took stern measures against Germany – but bestowed their first self-rule on many other cultures. The Entente delegates dismantled the polyglot Austro-Hungarian and Ottoman empires. The White rebels might not have recaptured Russia, but they opened the door for self-rule in the Baltic states. The British allowed the Irish Catholics to form their own nation, Eire.

This far-sightedness did not entirely apply to non-Europeans. France had no intention of giving up her colonies, but Britain began to speak of colonial administration as a temporary affair, with former colonies graduating to "dominion" status. Neither empire realistically expected to acquire new colonies in the face of U.S. and Soviet criticism.

Meanwhile, the totalitarian regimes cast a glittering eye over this state of affairs, and realized that the world had been left filled with small nations, none too powerful in and of itself . . . The liberal powers could expect to profit by trade, in what had become a fully knitted global economy. The old methods of military conquest and subjugation did more to stir the blood of men who had come to power preaching of duty and death and honor.

The Road to Manchuria

The Japanese home islands never had offered an abundance of natural resources, and as the Japanese struggled to reach world-power status, they acutely felt this limitation. Furthermore, increasing trade in a depressed global market meant acquiring extremely cheap labor.

China could provide both. Having spent most of the century with authority split among squabbling warlords, China had come under the relatively far-reaching rule of Chiang Kai-shek's Nationalists by 1928. Acting without orders, Japan's Kwantung Army, which had been guarding its interests in China since 1905, attacked northeast of the Nationalists, taking Manchuria in 1931 and spreading southwest for the next four years. They turned Manchuria, renamed Manchukuo, into a Japanese industrial park.

The Chinese Nationalists and Japanese controlled the cities; out in the countryside Communists were springing up everywhere. Chiang would rather have cleaned up the Communists and remaining rambunctious warlords first, but in 1936 the Japanese forced them to make common cause. The combined Chinese still fell. The Japanese expanded through most of populous China by 1938, and the Nationalists joined their Communist rivals hiding in the hills.

In these conquests, the Japanese treated the subjugated Chinese and Koreans with incredible brutality. Though they had yet to announce it, the Japanese government already had begun to envision its Greater East Asia Co-Prosperity Sphere, in which a Japanese-led consortium of Asian peoples would free itself of all Western influence. The idea did not sell well, mostly because the army's blood-soaked actions spoke far louder than the civilian government's unifying words.

Adventurism in Africa

Not only did Mussolini dream of a new Roman Empire, he sincerely believed that the occasional war improved the moral fiber. Abyssinia (now Ethiopia), which lay between two Italian colonies in the horn of Africa, seemed to offer a promising candidate for both purposes.

The 1935 job should have been simple – most of the opposing force carried spears – but the harsh terrain overwhelmed the Italian troops. Trying to avoid embarrassment, the Italian army resorted to bombing campaigns and poison gas to speed up the work. They did, indeed, wrap up the main fighting in 1936, but at huge cost to Mussolini's image. Previously, Western observers had been inclined to admire the opera star-like Fascist. The dispatches and photographs from Abyssinia caused many of Mussolini's fans to recoil in shock.

Into the Rhineland

Hitler made lemonade of Mussolini's lemons. Growing ever more confident, Hitler had told the world that Germany would no longer honor the Versailles restrictions on its military, reintroducing compulsory service in 1935. The rest of Europe could rationalize these moves; the Versailles limits *were* draconian, and the whole world was struggling with how to feed its legions of unemployed young men.

A year later, Hitler was watching Mussolini distract international attention, and noticing how futile were the League of Nations' efforts to impose economic sanctions on Italy. In March 1936, he made a bolder move by moving German troops back into the Rhineland, the strip of Germany adjoining France.

At this point, the French would have been within their rights to make an armed response to the latest breach of Versailles, by marching into northwest Germany. They'd done it before, when the Weimar government missed an indemnity payment. Hitler's still-fledgling army would have had to perform an embarrassing about-face, a fact of which Hitler was well aware.

The French didn't move, leaving Hitler to congratulate himself on his well-timed bluff. He would go back to that tactic often in the following years, until the Third Reich's growing military power transformed bluffs into real threats.

The Spanish Civil War

In 1931, a popular uprising had dethroned King Alfonso XIII and established a republic in Spain. The 1936 elections placed into power a loose, leftist coalition. These Communists, socialists, and anarchists immediately began "reforms" mostly consisting of terrorizing their traditional enemies, the nobility and the clergy, while ordering the army to look the other way.

In July, Gen. Francisco Franco led a Fascist revolt and immediately asked Germany and Italy for aid. Mussolini and Hitler both happily agreed, over the objections of subordinates. The German air force, the Luftwaffe, dispatched fighters, bombers, and transports. The Italians sent a smaller, more outdated force. Meanwhile, the Soviets were backing the Republicans with their own air units, including the world's first modern fighter with a single pair of wings and enclosed cockpit.

The Spanish Civil War became nothing less than the testing bed for modern warfare. The Luftwaffe troops – a supposedly all-volunteer unit named the Condor Legion – learned to coordinate their aerial assaults in support of ground troops. The state-of-the-art 88mm antiaircraft cannon, developed in secret, proved excellent at its intended role, and was tried out against ground targets. The loose German pairings of fighters proved superior to the tighter Soviet-style aerial formations. The Luftwaffe learned that aiming bombs was trickier than it looked.

By its end, the Spanish Civil War saw Germany invest in most air and land arms. The Condor Legion even took to rapidly rotating personnel, so as to spread the valuable experience as widely as possible. Contributions to the Republican side were decidedly more mixed. Though the Soviets sent some quality aircraft and crews, they weren't learning from their mistakes as rapidly as the Germans. The Soviets had even less idea how to use the light tanks that they dispatched.

In addition, thousands of foreign volunteers joined the Republican cause. Some were answering the call of the Soviet Comintern, or Communist International, which openly planned world domination. Others simply hated Fascists, including many expatriate Germans and Italians. Quite a few Allied soldiers would enter WWII as veterans of these International Brigades.

While the outside help was gathering all this experience, a truly nasty war was taking place. Franco was methodically winning campaigns in which the actual battles produced few casualties, but behind-the-lines mass executions afterward made up the difference. On April 26, 1937, the Condor Legion bombed the town of Guernica, shocking the world with its direct attack on civilians and introducing the realities of total war. In early 1939, the war ended in a Franco victory.

The Anti-Comintern Pact

The aid to Franco had been in line with the goals of the Anti-Comintern Pact of November 1936, in which Germany, Italy, and Japan signed a treaty ostensibly to fight Communism. Mussolini dubbed the members the "Axis," predicting that the world would soon be revolving around them.

Hitler Quickens the Pace

Hitler had not been in any hurry to *win* the Spanish Civil War. In addition to serving as a live-fire testing ground, it kept the rest of the world preoccupied while he continued his high-stakes diplomatic aggression.

Austria

In March 1938, Germany marched into Austria. It wasn't exactly an invasion. Hitler had pressured the Austrian government into allowing the move prior to a vote on *Anschluss* (union) of the two nations.

The plebiscite proved something of a mockery when the Nazis reported that almost 99% of voters approved, but the outside consensus was that a clear majority desired *Anschluss*. Britain and France overlooked the voting fraud, arguing the Nazis would have won a fair contest, anyway.

Czechoslovakia

In a major exception to their fit-borders-around-cultures principle, the Versailles-era planners drew the border of Czechoslovakia around the mountain flange of Bohemia, separating some 2 million Germans in Sudetenland from Germany. In September 1938, Hitler declared that these Germans were being mistreated – they weren't – and he would tolerate it no longer.

War appeared inevitable. The Czechs would fight if invaded, Russia and France had promised their support, and Britain would feel compelled to join the cause.

British Prime Minister Neville Chamberlain found the inevitable intolerable. He devised a plan to avoid war, by getting the Czechs to willingly give up the Sudetenland. Hitler was talked around, France relieved, and Russia silent. Realizing France and Russia had found a way out of their commitment, the Czechs bit their tongues and agreed. Piling insult upon injury, the Czechs also had to give a Pole-filled town to Poland and a Magyar-populated area to Hungary in an attempt to make it appear that the British and French weren't just kowtowing to Hitler.

They were, and Hitler knew it. He persuaded ethnic groups in the remainder of Czechoslovakia to start talking of civil war, then browbeat the Czech government into requesting his assistance to prevent said war. The Czechs already had handed Germany all of their fixed fortifications and defensible terrain; little choice remained. Hitler legally took over the rest of Czechoslovakia in March 1939, but it cost him the last of his credibility.

The Soviet Pact

Hitler next set sights on Poland, though he knew the Soviets wouldn't sit by and let him take it. Half would be better than nothing, so he offered Stalin the other half to sign a non-aggression pact. Stalin wanted to ally with someone, somewhere. Finding Britain and France evasive, he took the German offer. Amazing the world, the longtime antagonists announced their pact in August 1939.

The Unknown War

All but hidden from Westerners at the time, on the other side of the globe a brief, undeclared war was taking place that would have sweeping ramifications for the upcoming conflict in Europe.

In the mid-1930s, the Japanese felt that they had the measure of the Soviets' eastern army. Furthermore, they were investing in an industrial center, Manchukuo, that was flanked by Soviet-controlled territory, from Mongolia on the west to the Vladivostok spur on the east.

With the intent of both testing their mettle and improving their defensive position, the Kwantung Army instigated a series of border clashes. These escalated into a full-scale battle for some hills commanding Vladivostok in 1938. The Soviets pushed the Japanese back with heavy casualties on both sides, but the Japanese rationalized that they'd won 40% of a victory in difficult terrain and resolved to try again.

In May 1939, the Kwantung Army struck once more, on a larger scale, forcibly attempting to redraw the border with Mongolia by advancing to the Khalkhin Gol river in Nomonhan. The Russians threw them back.

In July, the Japanese returned with a larger force, including tanks, confident that the Soviets couldn't reinforce much because their nearest railhead lay 500 miles away. They were wrong; the Soviets brought in far more tanks and artillery than the Japanese, and a superiority in aircraft. The Red Army blocked the assault while inflicting heavy losses.

Throughout these clashes, the priceless Soviet spy Richard Sorge had kept Moscow apprised of the exact Japanese intentions and available forces. Knowing that the Japanese had no more reinforcements at hand, the Soviet Gen. Georgy Zhukov decided to make a statement. Amassing overwhelming force, he counterattacked in August with 500 tanks in the first true armored assault in history. Within four days, the Japanese were retreating in disorder. The Soviets stopped at the original border, knowing that the balloon was about to go up in Europe and not desiring to risk a two-front war.

Estimates of the casualties vary, but the consensus is that the Japanese suffered much larger losses. The Soviets took light to medium casualties, but made a point of concealing their battle damage, because their main purpose had been to convince the Japanese that an inexhaustible, unstoppable Soviet juggernaut awaited any invasion.

The Japanese came away with exactly that impression. Their Anti-Comintern Pact with Germany loosely promised mutual aid in the course of war, and Japan had planned to launch a large army against the Soviet Union in 1943 in a drive to the Urals. Conversely, in planning his own Russian campaign, Hitler had in mind a coordinated Japanese assault in the east. Learning of the German-Soviet non-aggression pact about the same time that the Khalkin Gol survivors were breaking and running, the Japanese eased away from their northern plans, eventually signed their own non-aggression pact with the Soviets, and began looking south toward the U.S. and European holdings in the Pacific . . .

GRAY WOLVES, ASHEN FACES

With the Soviets on a leash, Hitler decided to take Poland by force. This would surprise no one: Poland had soaked up large German territories at Versailles, and its Danzig corridor sliced Germany in two. But no one thought the job would be easy: Poland possessed the world's fifth-largest army and a mighty reputation in matters military.

Hitler's generals resolved to make it *look* easy. With the Führer's enthusiastic backing, they had turned warfare's future into reality, creating a half-dozen cutting-edge armored divisions. With more than 250 tanks apiece, these combined the speed of cavalry with the punch of artillery blanketed in good German steel. Granted, most of the Wehrmacht tanks mounted puny guns and thin armor, but they all had radios. What one tank commander saw, 100 tank commanders knew, an immense tactical advantage that some other nations would take years to fully comprehend.

On Sept. 1, 1939, Hitler unslipped these next-generation dogs of war and unwittingly began the greatest drama in human history.

Reluctant to yield ground, the masses of Polish infantry had dug in at the border. With their armor leading the way, the Germans bypassed this line, smashing through it to the north and south. When not providing close air support on demand, the Luftwaffe's Stukas strafed Polish civilians on the roads behind their lines, churning panic into full-blown terror and keeping the already slow Polish armies from using the refugee-choked lanes.

The German tanks drove hard and fast. The vast majority of their army – transported on boot leather and horse hoof just like their foes – scrambled to keep up. In 16 days, the Wehrmacht pincers met, having lopped off no less than one-third of Poland in the process. The encircled Polish armies would see no more supplies or orders from headquarters. They could contribute little more to defending Poland than could muscles deprived of lungs and brain. Warfare had come full swing from the static, cadaver-filled trenches of the Great War years.

A stunned world watched. Hitler didn't announce that Poland had not come cheap; the Wehrmacht suffered 43,000 casualties, 13,000 of them dead. Germany's dominance appeared total. The rest of the world began making jokes, distorting events to paint pictures of foolish Polish lancers charging German tanks, rather than face the prospect that Hitler's cohorts really were that good.

Britain and France Take Up the Gauntlet

Fuming over the Czech diplomatic debacle, the British and French had resolved to put an end to this nonsense as soon as Hitler began complaining about Poland in early 1939. Both nations vowed to fight if the Poles were invaded. Hitler didn't believe them.

On Sept. 3, two days after the Wehrmacht entered Poland, Britain and France declared war. Neither was prepared to actually wage it. Hitler remained confident that the democratic powers would vacillate and find another solution before it actually came to full-scale continental conflict.

In the meantime, on Sept. 17, the Red Army crossed Poland's eastern borders to claim their prize for non-aggression. The Polish armies left in their path were in no condition to put up a fight.

The Germans were still struggling to take tankproof Warsaw, but overall the Wehrmacht had performed too well; their massive encirclement had taken in lands promised to the Soviet Union in their pact. Stalin told Hitler he could keep them, as long as the Germans kept their hands off Lithuania.

Warsaw fell on Sept. 27, completing the triumph.

The Winter War

Stalin now tried his hand at Hitler's game. Demanding territory from the Finns, on Nov. 30 he dispatched a million-man army when they refused.

Quantity did not yet equate to quality in the Red Army. Soviet tanks found it hard going in the wintry conditions and rough terrain. The hordes of Soviet infantry were lacking proper training, equipment, and leadership as they faced crack Finn soldiers who took their marksmanship seriously. The 5-to-1 Soviet advantage on paper didn't look so good when single Finns were slaying 10, 100, 200 Russians in an outing.

The Soviets regrouped and mounted a massive offensive that succeeded through sheer numbers. The Finns sued for peace, giving up little more than Stalin's original demands in the March 12 treaty. The exercise had cost the Soviets 200,000 dead and the world's good will.

The False War

While the Red Army bled, western Europe scrambled. The German staff rushed units from Poland to the French border as quickly as it could. They had left nothing more than a shadow defense in amassing for the Polish campaign, and were immensely grateful that early French efforts amounted to nothing more than quick raids. Any real French invasion in 1939 would have poured across the German's "West Wall" virtually unchallenged.

The French had not attacked simply because they weren't up to it. Mobilization was not going very well; they were calling up reservists and conscripts who really did not want to fight, much less in a repeat of the slaughterhouse that had eviscerated their country some 20 years earlier. This reluctance reflected a shaky political consensus. Though it had not fallen to Fascism, France harbored its share of the ultraconservatives, with equally vigorous measures of Communists, socialists, liberal democrats, anarchists . . . France possessed a large arsenal of tanks and artillery, but it lacked the unified and purposeful men to wield them on offense. Instead, the French army manned its own Maginot Line and waited for the Germans to come over at their leisure.

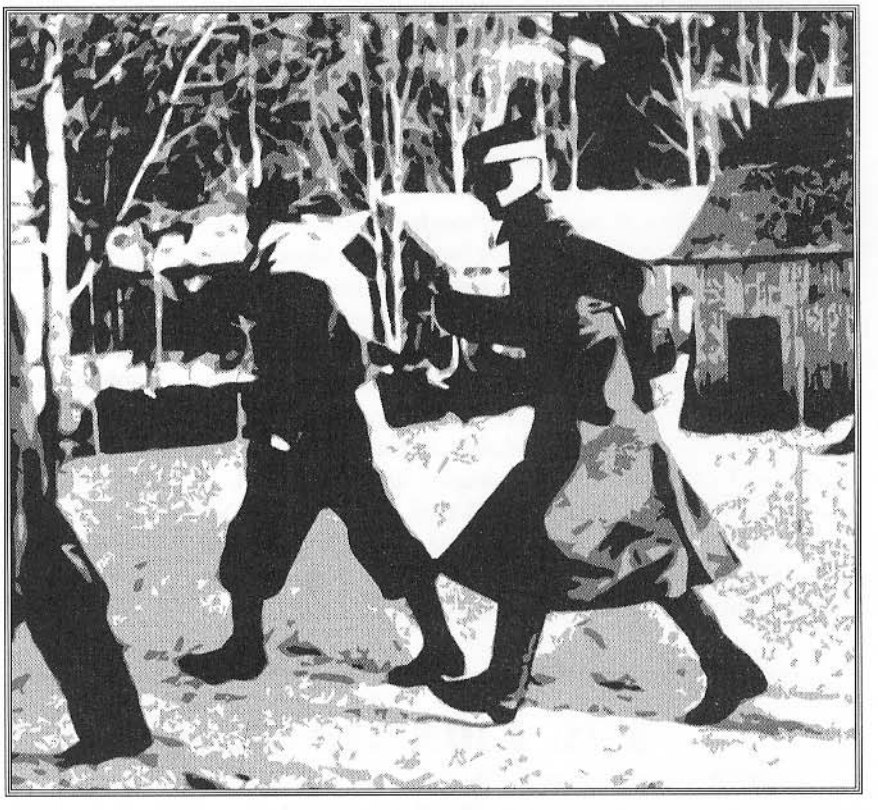
The British public, meanwhile, had pretty much conceded that what Hitler needed was a really good thrashing. Britain assembled the lion's share of its ready forces into a British Expeditionary Force and shipped them to France. These 12 divisions could boast of being the first fully mechanized army in history, though in practice the British (and everyone else) still had much to learn about the huge supply chain of spare parts and fuel that it took to maintain that distinction.

The British joined the French in waiting for the Germans, and the Germans hustled to oblige them. In the meantime, the Russo-Finnish war drew both sides' attention to Scandinavia.

Scandinavian Campaign

Germany relied upon imports of high-grade iron ore from Sweden to keep its military machine in arms. Domestic demand also remained high, because Hitler had not put Germany on a war economy (nor would he do so until late in the war). Forces stationed in Norway could cover all the trade routes with Sweden. The German navy, the Kriegsmarine, also wanted bases there to challenge the Royal Navy in the North Sea.

Hitler resolved to take Norway. Earlier, the British and French had tried to forestall him by landing forces that would just happen to cross Norway and Sweden on their way to help the Finns fight the Soviets, never mind that large, intact units would drop out of their marching order en route. Fearful of provoking Hitler, the Scandinavians had denied permission.



The German army and navy attacked on April 9, 1940. Denmark fell in a blink. The Royal Navy savaged the German warships protecting the invasion force aimed at Norway, but the German control of the air proved more decisive than British rule of the sea. The Wehrmacht mauled the Norwegian army, as well as the British, French, and Polish troops unwisely rushed over to aid them. By early June, the Allies and Norwegian government had to evacuate in a hurry, giving the Kriegsmarine a chance to even the score a little.

Fearing they would be next, the Swedes resolved to fight, then discovered they really couldn't. Their national supply of antiaircraft ammunition typified their military preparedness – if all available guns were firing, it would last about a minute. Hitler felt no need to attack, so Sweden maintained an uneasy neutrality, too weak to forbid continued trade with Germany.

The Battle of France

Even as the battle raged in Norway, the Western Front lull jokingly dubbed the *Sitzkrieg* came to an abrupt end.

Ever since the fall of Poland, Hitler had intended to beard France in its own den, but the Führer had not been overly enthusiastic about the battle plans that his general staff offered. These basically replayed the Great War's Schlieffen Plan (see p. 6) that many German generals had taken part in as lieutenants and captains.

The replay became hopelessly compromised on Jan. 9, 1940, when a plane full of German officers force-landed in Belgium, delivering a copy of the invasion plans to the Allies. Gen. Erich von Manstein, a field officer with less-than-perfect respect for his general staff's ability, offered an alternative along lines that Hitler already had been considering.

Von Manstein's plan would turn the drive through Belgium into a massive feint by an Army Group B. The real main thrust would come through the center of the French line, where Army Group A would push northwest to pin against the English Channel all Allied forces facing the feint. The chosen point of attack particularly favored the Germans, because it looped around the northern end of France's fearsome Maginot Line. The French had not spent much money on concrete and emplaced guns there, because they thought the area's Ardennes Forest would hold back any tanks. A Belgian reluctance to fully integrate its plans with the British and French further compromised the Allied defenses. Ignoring the recent lessons of Czechoslovakia and Scandinavia, the Belgians hoped to avoid Hitler's wrath by not doing anything to provoke him.

On May 10, 1940, the unprovoked Germans rolled into action. A masterful parachute assault cut out the heart of the Belgian defenses, the fortress complex at Eben Emael. In spite of this loss, the Belgians fought back to some effect. Not so the Dutch, whose country this time was included in the German route of advance. The Netherlands' army had not fought a real war in 110 years, and it showed.

The French and British performed exactly as the Germans had hoped, marching into Belgium and the Netherlands to solidify an Allied line of defense. They suspected nothing, even though Stukas hadn't appeared in anywhere near the numbers that they had feared. Meanwhile, the German armor pioneer Gen. Heinz Guderian was threading the potent Army Group A through the Ardennes on the German side. His advance troops emerged at the River Meuse near Sedan. The initial sighting did not alarm the French. They were well dug in on the other side, and had the river in front of them, after all.

They failed to realize that rivers do not dismay dive bombers. With the French defenders ducking their heads under Stuka attacks, the enterprising Germans traversed the Meuse with alarming speed, despite crossing rubber boat by rubber boat, footbridge by footbridge, pontoon by pontoon.

By May 13, the Allies realized that another German army was preparing to strike on their right. Two days later, they had a 50-mile-wide hole in their lines, with a solid stream of German tanks and panzergrenadiers (infantry carried in armored carriers or trucks) pouring through it. Though individual French units opposed this army with ferocity, they were too few and too uncoordinated. Many of the defending units simply dissolved into the general panic, exposing their braver brethren to flank attacks.

On May 20, Army Group A reached the channel, cutting off the Allied fighting forces.

The Lion Roars

Perhaps no man ever faced a more challenging first day on the job than Winston Churchill (see pp. WWii102-103).

Public outrage over the throwing away of British lives in Norway was toppling Chamberlain's conservative government. This left the political maverick Churchill in an even more uneasy situation than he normally got himself into. As a member of Chamberlain's government, he had to defend its policies, most of which he had opposed. Worse yet, he himself had made many of the decisions behind the Norway fiasco.

The public could respect Churchill placing loyalty over preference, and even forgive Norway for a man who had been the lone, passionate voice challenging Hitler in the '30s, but prime ministers are chosen within the halls of government, not by popular vote. No one really knows why the unpopular Churchill was picked. Regardless, the portly aristocrat who had "but blood, toil, tears, and sweat" to offer would be the right man at the right place . . . even at the right time, though Churchill's appointment took place May 10, the day the Germans began their French campaign.

North or South

Finally getting it into their heads that the Germans were aiming for the English Channel, not Paris, the French command recognized the obvious countermove to the Wehrmacht's stroke. It needed to launch coordinated counterattacks against this thin, feldgrau column, using both the encircled forces to its north and French reserves to the south. Slicing Army Group A into digestible chunks would turn its predatory panzers into prey.

The French tried, but simply could not coordinate fast enough to take advantage of the long, exposed German flank. Switching the Allied supreme command from Gen. Maurice Gamelin to Gen. Maxime Weygand at this point did not help their timeliness, either. Weygand took the job announcing, "I do not guarantee success," perhaps reflecting more than he realized on the entire defense effort.

The Germans, meanwhile, had to choose whether to turn Army Group A north to finish off the encircled Allied armies, or south to conquer the rest of France. Despite a British tank assault at Arras on May 21 that nearly panicked the dashing German Gen. Erwin Rommel (see pp. WWii112-113), the encircled forces did not really worry Hitler, largely because Luftwaffe chief Hermann Göring had promised that his planes would take care of them, and Army Group B still faced them. The large forces remaining in free France did concern the Führer. Their sporadic counterattacks, often led by a tenacious Col. Charles de Gaulle, would eventually congeal into something weightier given time.

Hitler ordered Army Group A to halt and regroup for the push to the south.

The Dunkirk Miracle

Meanwhile, in the north, the British Expeditionary Force had come early to the idea of getting off the Continent. The BEF commander, Gen. Lord Gort, placed his evacuation plans into motion May 19. He started withdrawing his troops toward Dunkirk on May 21, the same day that the BEF launched its only offensive of the campaign. The French insisted that Lord Gort stay put – the departing BEF left a hole in their lines that they couldn't fill – but the British commanders told their troops to keep retreating.

By this time, the Belgian defenders were providing the key to security for all of the encircled Allies. If they fell, the lines would collapse. Army Group B kept hammering at them to prove the Germans realized it, too. Troops promised for the French coordinated assault on Army Group A were diverted by Gort to reinforce the Belgians, a move which almost assuredly averted a rout, but also may have ensured defeat.

By May 25, the BEF was unabashedly leaving. The Belgians had no idea; even the French did not realize that their allies' backward movement now had Dover as its destination. Whatever the quality of their communications, the British timing was good. As their King Leopold had warned, the Belgians were crumbling. With the Germans pouring toward Dunkirk, the orderly BEF retreat turned rapid and ragged, but with a few exceptions the sturdy British soldiers maintained discipline. They took the time to destroy their brand-new equipment so that the Wehrmacht would not seize it, often with the Germans due to show up at any moment.

In the skies, the Royal Air Force was going to all lengths to ward off German bombers. Though their Hurricanes and Spitfires could not loiter long after crossing the channel, the RAF gave the Luftwaffe its first taste of air combat on roughly equal terms. The harried, worried BEF troopers on the ground cursed the RAF for rarely appearing over Dunkirk, not realizing that for every German bomber harassing them the RAF fighters had fended off another en route.

The British still faced a massive problem in how to quickly move all these men across the channel. By May 28, the Germans had taken Calais to the south and Nieuport to the north; the BEF and their French covering force defended only a tiny pocket centered on Dunkirk. German tanks could park on nearby bluffs and shell the sea approaches. Despite the RAF, the Luftwaffe was leaving men dead in the sand. The Allies had little time before German troops killed or captured them all.

By any measurement, what took place next set a lasting standard for national pride and will to resist. Asked to lend a hand, fishermen, pleasure boaters, tug-boat captains from all walks of British life launched their motley fleet around a massive minefield and into the teeth of the world's most terrifying army. Chugging and putting and sailing their way into German shellfire, they transferred exhausted soldiers to waiting transports, then crammed a last batch onto their decks for the hazardous trip home. By June 4, these impromptu rescuers had retrieved 338,226 men, including the heart of the British Army, and possibly the very future of Great Britain itself.

The End of France

On May 28, 1940, the exhausted Belgians surrendered, reducing the western battlefield to France facing Germany alone.

On June 5, the Germans launched the next phase of their attack. The French had formed a front north of Paris, the Weygand Line. Pockets resisted valiantly, but it takes only one weak spot to destroy a line, and the German probes soon found one. The French were retreating to the Seine by June 8. On June 10, the French government fled Paris.

The same day, Mussolini thrust Italy into the war against Britain and France. His advisers warned that the country was woefully unprepared. The Duce liked to boast of "8 million bayonets," but in reality his country could scarcely afford the rifles to mount that many, much less a comparable armory of tanks, planes, and other modern equipment.

None of this really mattered; Mussolini saw the war winding down. "I only need a few thousand dead so that I can sit at the peace conference as a man who has fought," one minister quoted him as saying.

On June 14, the Germans marched into Paris, a hard symbol for the French and the world to swallow. The Germans had most of the remaining French forces pinned against the back of their own Maginot Line, the guns of which could not swivel around to fire back into France. The French had to keep their mountain troops in the Alps to face the coming Italian assault. German spearheads had reached Spain. Any further fighting would play out a foregone conclusion.

Germany Triumphant

On June 16, the French WWI hero Marshal Pétain sued for peace. Hitler treated the French with arrogance and vindictiveness, demanding that the June 21 armistice signing take place in the same railroad car in which Germany had signed the terms ending the Great War.

The Germans actually kept less of France than the Wehrmacht had taken, roughly the northern half including all of the northern coast. The unoccupied southern rump, under the new Vichy government, was called the *zone libre*, though in truth German influence left the Vichy regime with less than perfect freedom to manage its affairs. Its major assets consisted of the French fleet and overseas colonies. Eventually, the Vichy would have to fight to keep those colonies, not against the Germans, but against Free French factions who had fled their country to fight again. Col. de Gaulle, now promoted to general and based in England, would be labeled a traitor by the Vichy for his energetic efforts to rally the colonies.

Given that nothing succeeds like success, Hitler now enjoyed his moment in the sun. He toured Paris and received accolades from people across the globe who, in other circumstances, might have shown more reserve – including the Mahatma Gandhi.

More importantly for the Führer's future plans, many British factions were exploring the possibility of ending their war with Germany. The influential Lord Halifax, whom many had believed would replace Chamberlain as prime minister, feared Hitler far less than Stalin. The former king, the Duke of Windsor, also supported coming to terms with the Nazis.

These efforts underestimated the defiant Churchill's hold upon mass opinion. On June 18, he stood before the House of Commons and delivered his "finest hour" speech. Whether it was Britain's remained to be seen, but it was certainly his.

Lightning War

At the fall of France, Hitler's Third Reich stood near the height of its power. What the Germans did not know was that their military concept popularly called blitzkrieg, or lightning war, also had reached its zenith.

In lightning war, reconnaissance identifies weak points in a defensive line. Armored spearheads punch holes in these weak spots, rapidly driving into the enemy rear while following infantry defends and widens the breach. Destroying enemy support and artillery as they go, the spearheads eventually loop around and meet, cutting part of the enemy front away from all support. Usually, soldiers so encircled yield quickly.

Blitzkrieg is high-risk, high-yield warfare. To an aggressive defender, the armored spearheads form nothing but one long, vulnerable flank. A defense in depth also could blunt the armored thrusts; by replacing the traditional long, solid defensive line with a much wider zone of isolated but mutually supporting strongpoints, defenders could turn themselves into a pinball machine and invading panzers into the pinballs. Blitzkrieg worked, spectacularly, in the early years because it was new and no one else had practiced mechanized warfare nearly as much as those secret German staffs of the 1930s.

BROKEN CHARGES

The Nazis also attempted to talk peace with the English. Their efforts shattered against the same Churchillian dynamic as had the British initiatives. Without great enthusiasm, the Germans concluded that they would have to invade Great Britain to close down their European war. On July 16, 1940, they began the preliminary phases of Operation Seelowe (Sea Lion). Its main phase – a cross-channel landing – would never take place. The seemingly invincible Axis powers soon suffered their first setbacks of the war that some believed they already had won.

The Battle of Britain

Any invasion would begin with control of the English Channel, which meant that an invader would need a large advantage in warships, or, failing that, an overwhelming advantage in combat aircraft with which to sink the Royal Navy.

The Kriegsmarine certainly could not claim to have bettered the Royal Navy, particularly after its losses off Norway. Having failed to live up to his boast at Dunkirk, Göring now tried to make amends. The German strategy for achieving air supremacy was simple. They would bomb English airfields and support sites, shooting down any fighters that rose to challenge them.

Both countries had made admirable progress in evolving their air forces between wars. Both mounted modern, single-winged fighters of comparable quality, and both had trained a small core of well-qualified pilots. Both also had made mistakes, turning up their noses at early jet-engine research. The Germans also had forgone the expense of a heavy-bomber arm, a decision that would cost them dearly now.

The most important air-war innovation had no wings, however. In the late 1930s, Britain had begun installing a chain of primitive, early-warning radars around its coast. These would prove decisive in the battles to come.

So Many, So Few

The Luftwaffe's July attacks highlighted serious weaknesses. The Stuka dive bomber, so effective in German-owned skies, fell easy prey to British fighters. The short range of German fighters meant that unescorted medium and dive bombers often took dreadful losses. Overall, though, the Luftwaffe felt that they had nearly finished the job by mid-August.

In truth, the Royal Air Force was hanging on by a slim margin. Using its radar warnings to synchronize fighters with a precision never before known, the RAF was wringing unprecedented results out of a few machines and fewer pilots. By picking its fights, the RAF preserved both assets, so that continuing production and training actually outpaced losses.

Meanwhile, the Luftwaffe was losing many veterans of Spain, Poland, and France. After 2-to-1 losses in planes, 5-to-1 in men, the depleted Luftwaffe halted daylight raids in mid-September. Night raids on cities and ports would continue for six months, sending Londoners and others hustling off to air-raid shelters, but doing no severe damage to war production or morale. Any possibility of a German amphibious assault overwhelming the disorganized Dunkirk survivors fell before the blazing guns of a few exhausted RAF fighter pilots.

Bomber Command

The British had not been holding back their heavy bombers. The war's first night, Bomber Command had begun raids into Germany, though the early expeditions often dropped leaflets. These didn't erode German morale, but did prove that the unescorted British heavies would take dreadful losses flying by day. Sticking to night missions, Bomber Command at first tried to pinpoint strategic targets, an impossible task in the dark. The British switched to "area" or "saturation" bombing of urban centers, setting the stage for great raids to come.

Sleeping Giant

The United States held a long, proud history of ignoring Europe's feuds. Only a fraction of its public wanted to intervene before the war, and some of them favored the efficient, anti-Communist German regime.

After Hitler's initial conquests, sentiment shifted. With Britain alone resisting his aggression, aid seemed acceptable, even prudent. The timing was none too soon. Great Britain was broke, and soon would need to borrow massively from the credit-wary United States.

Actually fighting was another issue, but the Americans had to admit the possibility existed. The ill-prepared Army began transforming itself. A peacetime draft began in September 1940, and the pro-Allies President Franklin D. Roosevelt won his third term Nov. 5. On March 11, 1941, he signed a law authorizing substantial war aid, the Lend-Lease Act. The sleeping giant was rousing itself.

Desert Legions

Mussolini felt he had some catching up to do. The Wehrmacht was gobbling up Europe, and their partner-on-paper the Red Army had seized Estonia, Latvia, and Lithuania on July 23. The Italians, meanwhile, had won modest Alpine gains for their even more modest efforts in the French fighting.

With the fall of France, Mussolini possessed the largest navy in the Mediterranean and the largest fighting force in Africa. It seemed a shame not to use them. Again ignoring his advisers, in August 1940 the Duce launched his ill-equipped forces against the British holdings in the horn of Africa, securing a quick victory. On Sept. 13, his armies drove eastward into British Egypt, advancing 60 miles in five days before stopping to build a base.

The British had been busy antagonizing the Vichy. Bringing along their Free French guests, they had attacked the Vichy fleet in port after their demand to scuttle it was refused. Other Vichy ships were surrendered or seized. After the Italian aggression, the British mounted a surprise raid with Swordfish torpedo planes on the Italian fleet in harbor Nov. 11-12; the Japanese studied this smashing success with keen interest. On Dec. 9, the British began a counteroffensive in Egypt.

The Italians crumbled, so the British kept rolling west into Italian-held Libya. Sneaking a holding force through horrible terrain into the Italian rear, the British shattered the routed Italians between two attacks at Beda Fomm beginning Feb. 5, 1941. The British had recovered their 60 miles and an additional 440, destroyed 10 divisions, taken more than 130,000 prisoners, and captured a large arsenal.

In January they had counterattacked in the horn of Africa, a fight which would be won by April and wrapped up by July. Italian losses there, including African auxiliaries, would amount to another 420,000 men.

Balkan Reverses

In tandem with his African adventures, Mussolini had invaded Greece on Oct. 28, 1940. Because the Führer had irritated the Duce by failing to notify him before invading Poland or France, Mussolini did not let Hitler know of his Greek plans.

This greatly vexed Hitler, who had been trying to straighten out the Balkans through diplomacy. In June, he had stood by and bit his lip while Stalin had taken a part of Romania promised him in their non-aggression pact, and a bit more. Hitler pulled Hungary and the remainder of Romania into a new Axis treaty, the Tripartite Pact of September, and kept wooing Bulgaria away from the Soviets. He quietly slipped a division into the region to guard access to Romanian oilfields, but overall he wanted things peaceful. Even as the Luftwaffe was losing the Battle of Britain, he was shrugging off the loss and turning his thoughts back toward an invasion of Russia. The last thing he wanted was Soviet attention stirred up.

The Italians ruined all that, and even worse, were losing this campaign, too. The Greeks dug in and, reinforced by British air units, counterattacked toward Italian-held Albania in November. In late December, the Italian invasions were losing their own ground on two continents.

Now awakened, the Soviets insisted that, come what may, Bulgaria would remain in their sphere. Hitler resolved that he would, indeed, have to invade Russia to secure his goals.

In the meantime, these Italian messes needed cleaning up.

Making Things Right

The Wehrmacht went into action straightaway. By the time that the German forces had finished turning around the Italian theaters, Mussolini would be left with no doubt as to who ran things in the Axis bloc.

Greek Debacle

In the Balkans, Hitler planned to push the British out of the region by invading Greece and securing Mussolini's prize for him. When a March 27 military coup took Yugoslavia from the Axis – the old regime had joined the Tripartite Pact two days earlier – that country got thrown into the invasion plans, too.

The Germans began their Balkan campaign on April 6, 1941. Yugoslavia fell quickly, as Croat military units revolted and switched to the German side. The Serbians lost no time in moving to the mountains and beginning a resistance movement. On April 10, the Wehrmacht moved into Greece from Yugoslavia, catching both the local forces and British reinforcements in the wrong defensive lines. The locals fought hard, but to no avail. The British, once again, mainly retreated under deadly German pressure. By April 30, the survivors had left for Crete.

This latest failure at arms deepened existing grievances around the British empire, now largely called the Dominion. The reinforcements largely consisted of Australians and New Zealanders, but they had suffered through a costly defeat following a British battle plan poorly executed by British officers. The mostly independent nations felt they had already lost enough sons to British decisions. Eventually, the British would have to delicately manage similar fears from an even more essential ex-colony, the United States.

African Adventurer

On Feb. 12, the spirited Gen. Rommel took charge of a new armored corp en route to North Africa, the Deutsches Afrika Korps, or DAK.

Wasting no time, Rommel drove his small army east, and in March began proper attacks against a British force largely depleted by transferring troops to Greece. Blatantly overextending his orders, Rommel followed his victories with further advances, capturing several towns and two top British generals, and pushing the Australian 9th Division into the town of Tobruk by early April.

The DAK could advance no further until it took Tobruk. In the meantime, Berlin had grown concerned about Rommel's habits of leading from the front, where his staff often could not find him to make decisions, and ignoring supplies in this most supply-intensive theater. The general staff had dispatched Gen. Friedrich von Paulus to supervise Rommel.

On the night of April 30, von Paulus stood by as the DAK assaulted Tobruk and the Australians inflicted grievous losses. Von Paulus refused to authorize further assaults. The DAK dug in west of Tobruk and awaited badly needed supplies.

Thanks in large part to Ultra intercepts of the top German military code Enigma, the British edge in gathering intelligence was beginning to become decisive. Never an optimist, von Paulus had reported to Berlin that the DAK was exhausted, hungry, and overextended.

Reading this dispatch, Churchill took von Paulus at his word. Knowing that reinforcements were preparing to join the DAK, and feeling the British public desperately needed a victory by land, Churchill gambled a precious consignment of tanks and aircraft in a convoy to Africa. In the meantime, he ordered his Gen. Archibald Wavell to launch a small offensive.

The DAK veterans did not do Churchill the favor of living down to von Paulus' opinions, quickly reclaiming the modest British gains. When four of the five British transports got through, Churchill ordered a larger offensive called Battleaxe, which began June 15. By this time, the German reinforcements had arrived, too. The enlarged DAK lured British tanks onto their 88mm guns and ended up chasing the British all the way to Egypt.

Crete

Again thanks to Ultra, the British knew that the Germans also intended to attack at Crete. Regardless, they did not prepare their defenses well. On May 20, German paratroopers floated out of the sky and began invading the island.

The defending British, Australians, New Zealanders, and Greeks were missing a good deal of equipment, left behind in Greece, but the rough terrain favored them. They exacted a bloody toll from the German paratroops, or *Fallschirmjägers*, and might have repelled them had their commanders realized the importance of the airfields and defended them vigorously. A Ju-52 transport plane could deliver an intact unit ready to deploy, whereas paratroops end up inefficiently scattered. While grim fighting raged on Crete, the Royal Navy rampaged through German reinforcement convoys, killing more than 5,000 troopers and offsetting some of its own losses off Greece.

By May 31, the remaining British troops were fleeing to Egypt. Germany had secured important victories: Taking Greece had pushed the British completely off the continent, and Crete would threaten the Middle East and pressure Turkey to join the Axis. The cost had not been trivial: More than 5,000 highly trained and expensive paratroopers became casualties on Crete. Never again would Hitler order a parachute assault of that magnitude.

THE BISMARCK

Often enough, the various combatant navies were fighting more vigorously during the early war years than the armies. As costly as they were, the naval battles supporting the invasions of Norway (see p. 13), Greece (see p. 19), and Crete (see p. 19) amounted to sideshows. The real contest was for control of the North Atlantic trade lanes, through which thousands of merchant ships kept Great Britain alive.

During the first world war, Germany had tried to sink British shipping using submarines, or U-boats. These hunters had tallied up impressive kills at first, but Entente countermeasures (notably, grouping merchant ships together into convoys protected by a screen of destroyers) eventually had magnified the number of U-boats needed to win the war to a quantity that the Kaiser's dockyards simply could not produce.

The Führer started his world war with but 57 U-boats, so the Kriegsmarine began its work with no doubt that mines, aircraft, and surface ships would have to supplement the undersea predators. Britain quickly developed countermeasures to the German magnetic and acoustic mines. German aircraft, operating from newly captured French airfields, could control the southern approaches to Great Britain, but could not intercept all the shipping now using the northern approaches. Ships would prove essential for actually killing, rather than simply rerouting, this commerce.

Most of these German surface raiders were auxiliary vessels, made to appear like an ordinary merchantman, with concealed guns and perhaps improved damage control. Some proved quite effective – the *Atlantis*, for instance, sank 22 ships amounting to more than 145,000 tons of shipping while prowling the Atlantic, Pacific, and Indian oceans – but the Germans kept holding onto the idea that a real warship or task force could descend upon the Allied convoys and quickly tally up horrendous losses.

This was never to prove entirely true, because the British took the prospect as seriously as the Germans. The early German raider *Graf Spee*, a pocket battleship, sank 50,000 tons of shipping before a British task force cornered it off South America in December 1939. In the next three months, the battlecruisers *Scharnhorst* and *Gneisenau* would set the standard for German capital ships as merchant raiders, sinking more than 115,000 tons before returning safely to port.

The Unsinkable Pride of Germany

Thus, the British rightfully became alarmed in May 1941 when they heard that a Swedish cruiser had spotted two capital ships sneaking into the North Sea. To British relief, a flurry of aerial reconnaissance missions finally uncovered the ships. To their consternation, one of them turned out to be the *Bismarck*.

The finest ship in the war at the time, the *KMS Bismarck* boasted eight 15" guns, good speed and armor, and excellent radar. Its only weakness was its old-fashioned hull, which failed to incorporate the latest innovations in shaping "blisters" to minimize damage from torpedoes.

The original plan included *Bismarck* and its cruiser escort *Prinz Eugen* breaking out from the east in tandem with *Scharnhorst* and *Gneisenau* breaking out from their French port in the west. As it was, neither *Scharnhorst* nor *Gneisenau* was ready, so the *Bismarck* contingent deployed on its own.

Now alerted, the British had the cruiser *HMS Suffolk* waiting to intercept the German raiders. *Suffolk* spotted them on May 23, but the Germans also saw *Suffolk*. When the cruiser *HMS Norfolk* also arrived, the Germans opened fire, forcing the British back. Meanwhile, the Admiralty dispatched the battleships *HMS Hood* and *Prince of Wales*.

When the British battleships arrived the next day, they had to close on the Germans while exposed to their dangerous broadsides. *Prinz Eugen* scored a direct hit on *Hood*, which blew up after absorbing another salvo from the *Bismarck*. Of *Hood*'s crew, 1,413 died and three survived.

Both sides withdrew. The *Bismarck*'s crew discovered that their fuel stores had been contaminated by one of three hits that the ship absorbed. *Bismarck* turned toward France.

Joining the British hunt, the carrier *Victorious* launched Swordfish torpedo planes in perilous seas. The *Bismarck* dodged seven of their eight torpedoes, with the one hit doing little real damage. *Prinz Eugen* separated from *Bismarck* to keep prowling. Both ships evaded their pursuers, but the *Bismarck*'s signals staff failed to deduce as much, so an unwise lengthy radio communique helped the British track down the battleship again.

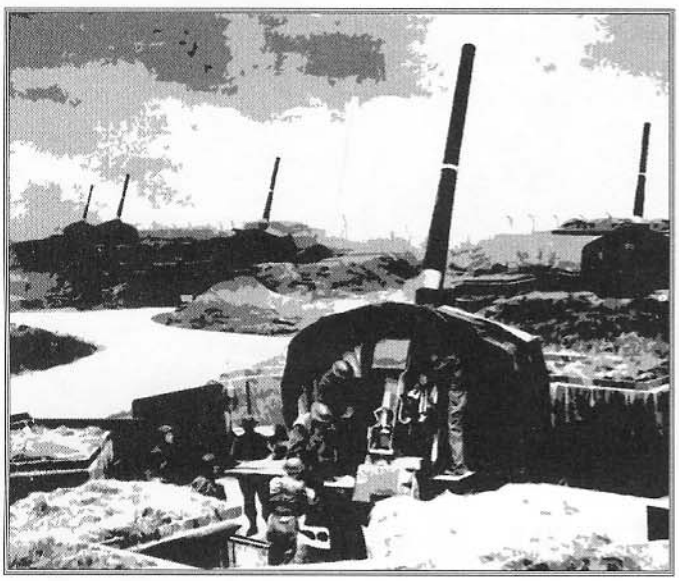
On May 26, the carrier *HMS Ark Royal* launched another Swordfish attack, again in death-defying weather. The first strike force torpedoed the *HMS Sheffield* by mistake; fortunately, the torpedoes' balky magnetic detonators failed to do their jobs. Trying again, with contact detonators, a second flight of Swordfish found *Bismarck* and endured its withering antiaircraft fire to deliver two torpedoes on target. These mangled its steering gear, leaving the battleship turning circles at 5 knots.

Destroyers hounded the *Bismarck* all night, and the next morning *HMS King George V* and *Rodney* steamed to point-blank range and opened fire. This failed to sink *Bismarck*, even though *Rodney* rattled itself half to death firing all nine of its 16-inchers at once. Every British ship received orders to fire torpedoes at the stubborn battlewagon.

Finally, the *Bismarck*'s crew scuttled the hulk that had been their proud ship. A German U-boat and ship rescued five of these men, the Royal Navy 107. The remainder of the crew of 2,192 died with *Bismarck*.

Since Napoleon's day, a successful invasion of Russia had stood as an unreached benchmark of military perseverance. Now, Hitler believed he had the army to match his hatred-hardened will. In his international dealings, the Nazi leader stressed that his was a preemptive aggression, meant to defang the universally feared Soviets before they came roaring into western Europe on their own terms and timing.

In other speeches and writings, he painted an even grimmer picture of race hatred toward Slavs, and the desire to usurp their lands for *lebensraum*, or living space, for the Germanic subjects of his Reich. This time, Hitler did not plan a war of conquest. He planned one of annihilation.



The Wehrmacht Turns East

During early 1941, the German army planned for a massive offensive, often moving supplies to their jump-off points near Soviet border stations while wearing civilian clothes.

The Soviets noticed this activity, and the frequent German reconnaissance planes flying over the border, but Stalin himself blocked most efforts to increase preparedness. For reasons that probably will remain forever unclear, he had not been convinced that the Germans really were taking on their colossal neighbor. Stalin's advisers had long consisted of either yes men or dead men; they could go only so far with their warnings before falling silent and nodding along with his decisions, no matter how foolish.

Meanwhile, the Wehrmacht had amassed an immense force of some 140 divisions spearheaded by 17 panzer and 13 motorized units – some 3 million men, 3,300 tanks, and 7,100 guns. The majority of the ground force would still travel on foot, aided by some 625,000 horses. Their air cover amounted to about 2,770 fighters and bombers, roughly the same number as in France, but spread much more thinly.

The Germans launched their attack, Operation Barbarossa, on June 22, 1941. This gave them a late start, but in addition to Yugoslavian and African diversions (see p. 19), they had to wait for the ground to dry.

The initial impact devastated the Soviets. Though they had 134 divisions facing the Germans, 32 of them armored, their armies suffered from poor defensive positions, awful troop quality, and a huge percentage of unready equipment. Advancing in three columns, the Germans bowled over their border units and bypassed huge concentrations of men and tanks.

The German's Army Group North found the going toughest, in forested terrain that proved difficult on tanks. The Soviets managed to retreat toward Leningrad in good order in front of the Germans and their Finnish allies. The Army Group South faced similarly difficult terrain, yet its panzer commander, Gen. Paul Ewald von Kleist, managed to sweep behind the Soviets and pin them against the Bug River, eventually destroying 20 divisions of roughly 15,000 men each.

Between these two columns awaited prime panzer country. Army Group Center advanced rapidly toward Moscow with two panzer groups. The tanks bypassed the main Soviet defenses toward the north and south, then met behind them at Minsk. Five days into the invasion, they had snared 30 divisions, which they left behind for the infantry to pulverize. The panzer commanders, Gens. Guderian and Hermann Hoth, repeated their encirclement tactics against the Soviet reserve lines. On July 16, they closed at Smolensk with another 12 divisions in their jaws. Four days earlier, Moscow had suffered its first bombing of the war.

So far, the invaders' primary challenge was keeping up with their unprecedented success. Already straining to supply this huge force, the German support services also had to contend with Soviet railroad lines in a different gauge than western Europe. Having shut himself away in shock after the invasion, Stalin finally had roused himself July 3 to call for a scorched-earth policy, so the Soviets weren't leaving any rail cars behind as they fled. This meant the tracks had to be painstakingly converted before German rolling stock could use them.

With German industry busy making tanks, supply commanders had solved their shortage of trucks by pirating them from conquered nations. This wild assortment of makes and models was proving difficult to keep running, causing the rear-support units to fall farther behind. Soon, they would find themselves also contending with hundreds of thousands of Soviet prisoners of war. The German logistics were choking on their own operational success.

Fateful Redirection

Hitler wanted Moscow, both as a strategic goal and a political statement, but he wanted the Ukraine, too. With too few tanks operating in too much space, Kleist had not been able to keep the Soviets from reorganizing against him in the south.

In late July, Hitler ordered Guderian to turn south to aid Kleist. Guderian objected, strongly, but Hitler made it clear that he thought he knew their job better than his generals.

Driving due south in August per Hitler's orders, Guderian linked up with Kleist 150 miles east of Kiev, slicing 50 Russian divisions away from their support and securing the Ukraine. The delighted Hitler took this as further proof of his own strategic prowess. His generals remained less convinced. They were facing stiffening Soviet resistance, even the occasional spirited counterattack. The northern attack was moving slowly, just now besieging Leningrad, and any further advances would have to take place without the Finns, who intended to halt once they reclaimed the territories they'd lost.

The German generals still saw Moscow as the prize that would make the campaign a victory. Having had things his way, Hitler heartily agreed. Plans to resume the Moscow push filled September. On the 12th, the first snow fell.

Japan Decides

On July 19, 1941, Japan demanded that the Vichy give up their bases in southern Indochina. Nine days later, Japanese troops moved into these prime launching points for further conquests.

Already alarmed by the aggression in China, the United States froze Japanese assets on July 26. Britain and the Dutch also imposed an economic shutdown. Already critically short of oil, Japan had lost 90% of its supply as well as 75% of its general foreign trade.

Meeting in early August, Roosevelt and Churchill resolved to increase the pressure, with the United States all but committing to fight should the Japanese invade British or Dutch territory. They also signed the Atlantic Charter on Aug. 12, stating that all nations should have the right to hold free elections, free of foreign pressure. For many, this defined the U.S. reasons and goals should it enter the war.

Japan had to back off or invade the Pacific to seize the oil of the East Indies. The civilian government attempted the peaceful route, but on Oct. 16 gave way to the war party, led by Prime Minister Gen. Hideki Tojo. The Kwantung veteran promoted a clear agenda. With no illusions about the U.S. juggernaut awaiting them, the Japanese navy made plans to secure a brief window of time in which to realize the military's goals.

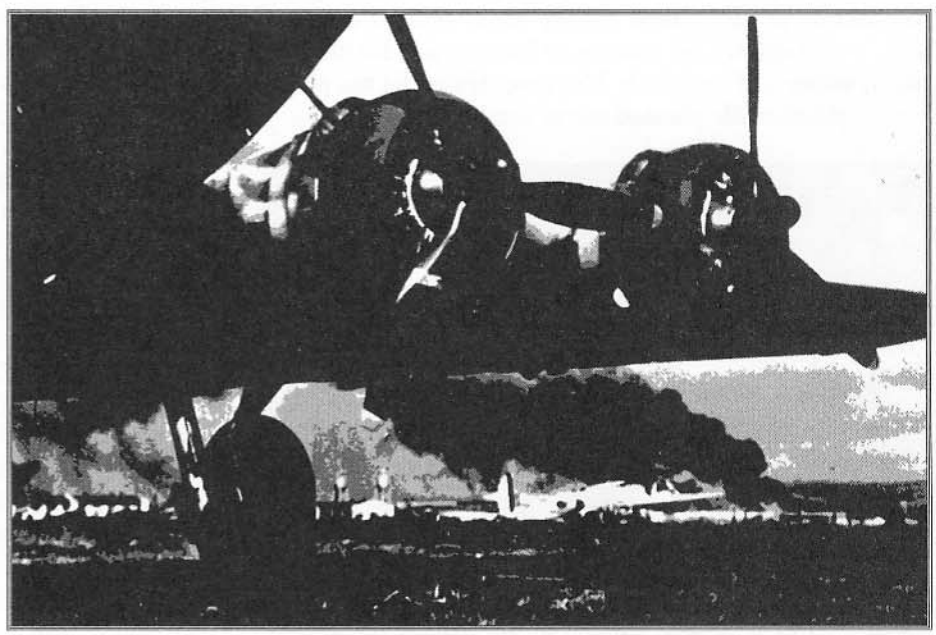
The Onslaught Slows

Army Group North's panzer arm under Gen. Erich Hoeppner replaced Guderian's tanks in Army Group Center. Hoth and Hoeppner began the drive on Moscow in early October by encircling the first line of defense, 45 divisions, taking some 600,000 Soviet troops and their equipment. Guderian rushed north to aid their offensive.

Heavy rains began Oct. 8, slowing the Germans and their panzers. Their boot soles and track links were worn out, and so were they. Still, the second line defending Moscow fell. On Oct. 16, many officials fled the Soviet capital in panic.

On their way out, the refugees may have passed the blooded and better troops of the Soviet eastern army, who were on their way in. Finally convinced that Japan would not invade, months earlier Stalin had begun moving these crack units west.

They went into the line Oct. 29 and blunted the Germans' last, gasping efforts to take the capital, with assistance from the frigid nights and roads that transformed into mud. The Wehrmacht had marched hundreds of miles to Moscow, but winter would catch it just short, with advance units having just entered the city's suburbs.



Pearl Harbor

After failed negotiations, on Dec. 1 the Japanese resolved to make war. Their troop convoys moving off Malaya and the text of an intercepted ultimatum alerted U.S. officials, but nothing pointed to a formal declaration of war or any Japanese ships being anywhere near Hawaii.

On the quiet Sunday morning of Dec. 7, six Japanese carriers launched more than 350 warplanes against the U.S. Pacific fleet moored at Pearl Harbor. All eight U.S. battleships in port suffered damage, with five of them sinking. Three cruisers, three destroyers, and 188 airplanes were destroyed, with many more damaged. The Japanese lost 29 planes.

The surprise attack provided an overwhelming tactical victory, and an equally overwhelming strategic defeat. Its architect and Japan's top admiral, Isoroku Yamamoto, had predicted that the strike would provide his nation with six months to act unchecked in the Pacific. It just about did, but in not harming a single aircraft carrier or submarine, the raid also left the United States poised to come roaring back with vengeance for Pearl's 2,403 dead.

Meanwhile, the Japanese were losing no time in taking advantage of their window. Troops invaded Malaya, Hong Kong, the Philippines, and elsewhere on Dec. 7. Spread paper thin but showing excellent resolve, the Japanese army seemed to be advancing everywhere at once.

CLIMAX

The United States declared war against Japan on Dec. 8, 1941. Ignoring the obvious Japanese plans, Hitler hoped that his own Dec. 11 declaration of war against the United States would prompt them to return the favor by taking on the Soviets. The Japanese already had more fight than they cared for against the United States, so scrupulously honored their treaty with the Soviet Union. All that Hitler gained was a powerful new enemy in what may have been the single worst decision of his career.

On Dec. 12, 1941, an extremely farsighted observer might have realized that the United States stepping in meant the Axis cause was lost, but for most of those caught in the whirlwind, the situation at hand appeared far less certain.

Red Uprising

Sensing German weakness himself, Stalin ordered a massive counterattack on Dec. 6. The Germans had planned to be done with their Russian fighting by then, so had not shipped winter clothing to their troops, now freezing to death in the snow. The well-clad and fresh Soviets shattered their lines and their worn-out resolve.

The German commanders pleaded for a retreat, but Hitler insisted that the Wehrmacht stand its ground, firing many of his generals and formally taking over as commander in chief Dec. 19. Any retreat likely would have turned into a rout, but that hardly factored into the Führer's reasoning. Hitler loathed the thought of returning ground once his armies had gained it.

Stalin proved no less greedy. Striking everywhere at once, he spread his armies too thin, and they left their jobs just undone. The Germans kept the jaws of encirclements just pried open, or airlifted in supplies in the one major case where they failed.

The winter of 1941-42 would prove that the Germans had not finished off the Soviets, but the Soviets also would fail in their goal of finishing off the Germans.

Long Shadows of the Rising Sun

The complex Japanese invasion of Southeast Asia had proceeded magnificently. The Malayan invaders had inflicted embarrassing defeats on the British, the Hong Kong troops took the city by Christmas Day, and the initial air strikes on the Philippines caught U.S. Gen. Douglas MacArthur inexplicably napping. The subsequent tenacity of American and Filipino troops eroded the mystique that the Japanese army had developed in the other campaigns, but over the next five months the Philippines and "battling bastards of Bataan" would join the Alamo and its Texans as martyrs and rallying cries.

The Japanese spread the war to Burma – where they continued to astound the British like so many magicians with rifles – and dispatched garrisons to dozens of other less-defended sites. They had planned to create an Asian and island fortress complex, too formidable for other powers to enter, stretching from Burma to Manchuria, from the Solomons to Wake Island. By March, they had collected the real estate. They rapidly began fortifying it.

Battle of the Coral Sea

The Japanese would have to do more than show their concrete and steel teeth. On Jan. 1, 1942, 26 nations declared they would form the United Nations and fight the Axis to the end. The Japanese did not want to actually depend on their new defenses, simply use them to influence a rapid peace.

In April, the Japanese decided they would destroy the U.S. carrier force, then see if Americans knew how to compromise. The plan called for invading the Aleutians and Midway, obvious steps toward assaulting Hawaii, and lure the U.S. carriers into a showdown. In the meantime, two American carriers were harassing their invasion of Port Moresby, on the coast of Papua, New Guinea, just northeast of Australia. Japan dispatched two fleet carriers to counter them.

The forces took three days to find each other, but on May 8 the first carrier-vs.-carrier battle took place, with neither fleet setting eyes on the other. The Japanese won the fighting, sinking the *USS Lexington* though losing more planes and personnel, but the Americans won the battle, mauling the covering force so badly that the Japanese had to call off the invasion.

Japan suffered its first major setback of the war, and its six-month window was about to expire. Meanwhile, on April 18 the "Doolittle Raid" had dropped a few bombs on the "untouchable" Japanese home islands, thrilling the U.S. public and sending the first shivers of dread through Nippon's populace.

The Final Solution

Germany's conquests left it with millions of new Jewish subjects and Soviet prisoners of war. The Nazis did not want to feed either of these groups, nor other minorities that they officially regarded as subhuman.

In the case of the Jews, planning had begun in late July 1941 for "The Final Solution," nothing less than a state-operated genocide. Killing Jews required identifying them, so on Sept. 1 the Nazis ordered that they begin wearing the Star of David, usually in yellow. Sporadic killings escalated into mass murders throughout this period, until the wholesale fatal gassing of Jews began at Auschwitz in January 1942. The Jewish population of Poland, in particular, would nearly disappear. About 6 million died while the German public and Allied intelligence overlooked evidence of the atrocities.

Similar crimes took place behind German lines in Russia. Specially selected SS personnel targeted particular populations for extermination. Regular SS and army units often were ordered to help; a handful of units got away with refusing to take part. As for the Soviet POWs, the Germans mostly left them to starve. Millions did.

Germany Reloads

In Russia, the Wehrmacht gratefully observed the spring thaw of 1942, only to discover that the Russian mud that could mire trucks in the autumn could swallow them in the spring.

Eventually, the roads dried, freeing the panzers to prowl again. Beginning in April, the Germans emerged from their series of isolated strongpoints, or "hedgehogs," and rapidly cut off several Soviet formations bulging into their lines. The bewildered Soviets lost a division a day as the Germans reclaimed the offensive edge they had displayed in 1941.

Hitler then set a strange course for the 1942 campaign. Needing more oil nearly as badly as the Japanese, he formed an Army Group B, led by Gen. Fedor von Bock, to push the Soviets back to Stalingrad with a panzer army under Hoth. This would screen a corridor for an Army Group A, led by Gen. Wilhelm List, to conquer the Caucasus and its Baku oilfield with a panzer army under Kleist. If successful, List and Kleist would expand the front by hundreds of miles, though the Russian campaign to date had cost the Wehrmacht some 1 million men.

The Führer was perceiving the glass as half full. Despite the transport hardships, the Germans had reinforced their frostbitten survivors of the past winter. Meanwhile, the Soviets had lost anywhere up to 5 million casualties and 3 million prisoners, and enough tanks and artillery to outfit 10 armies. Hitler reasoned the Soviet reserves had to be nearing their end.

They weren't, but the Soviets still couldn't counter German blitzkriegs. They performed better, but still lost, in the Great War conditions of the Crimea, which the Wehrmacht finally controlled July 5 after a long campaign featuring immense siege guns and a rare bit of chemical warfare.

The main German thrust, launched shortly after, advanced rapidly. Army Group B made excellent progress until Hitler gave its panzer army to Group A. Even then, its infantry kept moving forward in the face of sharp resistance. Army Group A forced the Don River and by August was halfway to its objective . . . but with each passing mile the terrain grew more rugged and suited to the stubborn Soviet defenders.

The Afrika Korps Triumphant

The British remained determined to drive Rommel back, thus keeping their Mediterranean interests alive. (This also required defending the rocky little island of Malta, which the Luftwaffe had been pounding since late 1940.) Gen. Auchinlek, who had replaced the unfortunate Wavell in July 1941, launched Operation Crusader on Nov. 28, 1941, with a decisive edge in men and machines. At first the offensive failed, but at length the numbers told and the Afrika Korps spent December retreating westward.

Given the hazards faced by his German and mostly Italian supply ships, much less the haphazards of his logistics, Rommel had always faced a supply shortage, but on Jan. 5, 1942, he received a substantial shipment. Meanwhile, the British units – now called the Eighth Army – had overextended themselves in advancing 300 miles. The Germans counterattacked on Jan. 21, quickly driving the British back to Gazala, 30 miles west of Tobruk.

Both sides paused, gathering reinforcements. Rommel resumed his offensive May 26, his panzers making an end run around the massive minefields that had sprouted across the desert by that time. For a moment, the affair was touch and go, but the Afrika Korps finally broke out eastward, driving the British before them.

Tobruk fell June 21, and the Eighth Army would retreat another 300 miles to El Alamein by early July. Another such gain would place the Germans astride the Suez Canal.

Total War in the Air

The British, and later the United States, had entered the war believing that massive bombardments of a hostile country's civilians would sap their will to fight, but so far Britain had lacked its own will, and the big bombers, to put the theory to a proper test.

By February 1942, the British had large four-engine bombers coming into service, and on Feb. 22 it placed them under the command of Air Marshal Arthur Harris, one of the more controversial figures of the war. Still limited to night missions (see p. 17), Harris pooled his planes into massive raids targeted at older, often historic, cities that would burn well and leave many Germans homeless.

These raids – sometimes 1,000 bombers strong – failed to seriously dent German production. Their impact on civilian morale was mixed, at best, but they did incinerate great numbers of German dwellings and civilians, irritating Hitler into ordering reprisal raids on historic English towns.

In 1943, the U.S. Eighth Air Force, flying B-17s bristling with machine guns, insisted on trying accurate bombing of specific installations during the day. These missions worked fairly well, though from the beginning losses to antiaircraft fire and fighters were severe. By that time, the German defenses had improved and the British bombers, too, would suffer dreadful losses, but by late 1944 the sheer immensity of the bombing campaign would tell, pounding German industry and morale into rubble.

Ultimately, the bombing campaign helped win the war. It also created the term "firestorm" – a superfire so intense that it feeds itself by sucking in oxygen, first seen in Hamburg in July 1943, where up to 50,000 people died. By war's end, Bomber Command had recorded many civilian death totals of that magnitude. These led a few of his own countrymen to label "Bomber" Harris a war criminal, even while others hailed him as a visionary hero.

The U.S. Responds

After the Coral Sea setback (see p. 23), Japan reverted to plan A: draw the U.S. carriers out by advancing between Alaska and Midway toward Hawaii. The United States, in the meantime, had been quietly winning the signals-intelligence war by breaking more and more Japanese codes.

Fully informed as to the Japanese plan, the U.S. Navy also recognized its weakness, in that it spread the overwhelming Japanese forces too thinly. The carriers *Yorktown*, *Enterprise*, and *Hornet* would be ordered to turn the tables.

Battle of Midway

The Japanese assault got off to a very poor start when no one informed Adm. Chuichi Nagumo that their reconnaissance had broken down. Thus, the Japanese had no real reason to suspect the American carriers were lurking in the area.

On June 4, 1942, the Japanese force's four carriers launched 108 planes to assault Midway, the defenders of which dispatched their own planes. The Japanese swept away the U.S. fighters and the ragged Midway counterassault. Reports from the first Japanese assault wave suggested that a second strike would be required on Midway. In the meantime, the U.S. carriers began launching their planes.

Japanese reconnaissance finally confirmed that U.S. carriers were about, but by this time ordinance and fuel for the second Midway assault filled their flight decks, and the first Midway force had yet to return. Nagumo decided to recover his first planes before launching a strike against the U.S. carriers.

The U.S. carrier planes straggled into the attack, perhaps the luckiest example of bad execution in the war. First, 41 torpedo bombers attacked. They proved to be sacrificial lambs, with 35 shot down and no hits to show for it, but they lured the Japanese fighter cover down to the wavetops and scattered the Japanese ships, which diluted their antiaircraft fire.

Thus, the following wave of dive bombers faced no real defenses as it hurtled down upon flight decks full of planes ready to hunt down the U.S. carriers. Within five minutes the carriers *Akagi*, *Kaga*, and *Soryu* were sinking, and the Japanese had lost the initiative in their war. The fourth carrier, *Hiryu*, would launch a strike leading to the *Yorktown*'s sinking, before it, too, fell to American planes.

Guadalcanal

Despite losing their carriers, the Japanese remained determined to establish bases at Port Moresby and in the Solomons. The U.S. military now believed they could stop them. In early August, the Marines landed on Guadalcanal and quickly captured the airstrip, to be renamed Henderson Field. Japanese cruisers bloodied the U.S. warships covering the invasion, but they failed to sink the U.S. transports or prevent Henderson entering service Aug. 21.

The island became the linchpin of the Pacific war. The Marines ashore, usually lacking the most basic supplies, fiercely held their ground when attacked by the Japanese troops landed to uproot them. The savage sea battles around the island ended up leaving the U.S. Navy with planes but no available carriers and the Japanese with carriers but no available planes. The assault on Port Moresby dried up as both sides diverted their forces toward Guadalcanal.

By October, the Japanese had put the Allies on the ropes, but they couldn't quite shut down Henderson Field with land-based bombers at the extremes of their range. They couldn't quite push the U.S. Navy out of the surrounding waters, and they couldn't quite muster large enough infantry assaults to overwhelm the desperate U.S. troops ashore.

Deciding that the ground assault held the best chance to take Guadalcanal, the Japanese began shuttling in supplies and reinforcements via fast destroyer in "The Tokyo Express." Several naval actions from Nov. 12-16 slowed that effort down, though not without further cost to the U.S. Navy, which was still short of ships following Pearl Harbor. Japan tried floating in supplies from submarines, but its many near victories at Guadalcanal were transforming into a clear-cut defeat.

The Cauldron

On Aug. 23, 1942, Army Group B reached the Volga River north of Stalingrad, a city stretching for 30 miles along the western riverbank that represented their final objective.

Stalin had no intention of giving up without a fight the city that bore his name. He ordered his retreating troops to turn around and make their stand. Luftwaffe bombers were converting Stalingrad's suburbs into a moonscape of ash sprinkled with brick chimneys, but the central city's factories and offices didn't burn so readily. The remnants of the 62nd Army and 7,000 residents-turned-militia dug in along the west bank, under their new commander Gen. Vassili Chuikov.

Led by their Sixth Army under von Paulus, the Germans began hammering their way into the central city Sept. 13. Nothing quite like this fighting had been seen before. Illuminated by blazing buildings or shrouded in the ink-thick smoke of burning oil tanks, the armies grappled savagely amidst the rubble of factories and train stations. Each day, the dwindling Soviet troops held on as huge German assaults ignored their own dreadful casualties to tear off another piece of the Soviet bridgehead on the western bank. Each night, the Soviets would take back what they could, while their commanders trickled in a few more replacements from the east bank, often crossing the river under fire. Some key installations changed hands more than a dozen times.

By October, the Germans were winning, but only at a mounting cost in men that already had passed Pyrrhic. The abrasive and fearless Chuikov was leading his ragtag army into the Soviet infantryman's finest hour. In the meantime, the Soviets were rotating new units into the lines in front of Moscow to get them past the shock of their first combat, then hustling them to the Volga around Stalingrad.

The Germans saw what was coming. Without enough troops to defend their newly extended lines, their best course would be to clean out Stalingrad and convert it into the centerpiece of a massive hedgehog defense. So, they piled in yet more men.

The Soviets struck on Nov. 19, targeting the second-rate Romanian armies that the Sixth Army had guarding each of its flanks. Waves of T-34 tanks scattered the Romanians, then linked up, with Stalingrad encircled three days later. The Soviets thought they had bagged 85,000 Germans. They had caught 250,000 of the Third Reich's best troops, including three panzer divisions.

The Sixth Army might have been able to break out, but Hitler told them to stay put. Göring promised that the Luftwaffe could supply them by air until Hoth's panzers could punch into the Soviet ring and reestablish a supply corridor.

The Luftwaffe didn't come close to meeting this immense commitment. The Sixth Army was waiting with nearly empty bellies and ammunition magazines by the time that Hoth made his bid Dec. 12. The Red Army was waiting, too. Once the relief forces had committed themselves, they launched another, even larger set of pincer attacks on Dec. 16 and 24. The relieving German armies hustled to retreat before they, too, fell into the Stalingrad pocket.

The Sixth Army was doomed. They held on under hellish conditions until the 90,000 survivors surrendered Feb. 2. Only some 5,000 of them would live to see Germany again.

El Alamein

In August, Churchill replaced Auchinlek as his overall Middle East commander with Gen. Harold Alexander. The Eighth Army was placed under Gen. Bernard Montgomery, whose confidence reinvigorated the worn-out "Desert Rats." Finally supplied with first-class gear, they took another shot at the overextended Germans on Oct. 23.

By Nov. 2, the hard-pressing British had reduced Rommel to 35 tanks, and he retreated in defiance of Hitler's orders. Montgomery didn't press the pursuit as hard as he could have; regardless, Rommel had to keep moving for three months until his shattered Afrika Korps reached Tunisia.

The retreat provided little relief because, in the meantime, the U.S. Army had arrived. Landing behind the Afrika Korp in November, these green troops in olive drab endured a quick defeat at Kasserine Pass in February 1943. The Americans regrouped under the popular Gen. Dwight Eisenhower and the fire-eating Gen. George S. Patton, while the Eighth Army beat back Rommel's last attack to the east.

On March 6, the German high command ordered the ill Rommel to return home, even as they continued foolishly pouring reinforcements into Africa. Coordinating their attacks, the far larger Allied forces forced the Axis contingent to surrender by May 13.

Added to the quarter of a million men lost in Stalingrad, the 125,000 German and 115,000 Italian prisoners in Africa turned early 1943 into a disaster for the Axis. Shaken by these huge losses, Hitler would begin listening to his generals again, for the moment.

ALLIES SEIZE THE INITIATIVE

As 1943 unfolded, the Axis powers clearly were reeling, with the United States yet to unleash its full military potential.

In January, Roosevelt and Churchill met at Casablanca. Without considering the impact, Roosevelt announced the Allies would accept nothing less than unconditional surrender, displeasing Churchill. The ultimatum yanked the middle ground away from the German public and wavering elements in power. They would fight to the end rather than betray their country.

Clash of Titans: Kursk

Capitalizing on their Stalingrad victory, the Soviets again proved too aggressive. In February, the Germans lopped off their leading tank formations, and the lines stabilized roughly where they were before the Germans' 1942 campaign.

For the Germans, far fewer soldiers manned those lines this year. They knew that a Soviet summer offensive could punch through just about anywhere. Despite the lack of resources, they resolved to pick the time and place by striking first.

Given his 1942 fiasco, Hitler left his generals to come up with something better for 1943. Then he vetoed their first choice, which involved a voluntary retreat. Plan B called for pinching off the Kursk salient, a tumor the size of Holland bulging into the German lines. Destroying the armies there would leave the Soviets unable to pose a threat for months.

The Soviets knew the German plans, thanks in large part to Britain's ever-more-valuable Ultra intercepts. Going to extreme lengths to conceal their buildup, they turned the salient into a fortress, packed with antitank guns, infantry, entrenchments, and more than a million mines. Powerful tank armies lurked just behind it, ready to spring an ambush. Meanwhile, the Wehrmacht stripped their armies on all fronts for the offensive. Nearly half their tanks took part, including almost all of their new, powerful models.

The fighting began July 4, 1943, with massive bombardments, scores of planes dueling overhead, and hundreds of panzers lumbering toward the Soviet killing zones. Fighting nonstop at maximum intensity, the Wehrmacht made progress, but their best threat dwindled July 12 when a massive Soviet tank formation collided at point-blank range with the finest panzers Germany still had, a huge armored brawl such as the world had never witnessed. Nor has it since.

After that, Hitler called the whole thing off. He needed the surviving units in Italy. They left behind them the corpses of the Third Reich's offensive might. From then on, Germany would fight a defensive war, and all but the most loyal Hitlerites realized that the end was but a matter of time.

The Second Front

Stalin sneered at what he considered the African sideshow put on by the western Allies. Fighting 95% of the European land war, he wanted his partners to open a second front in France, to drain Germans away from the Soviet Union.

The U.S. generals, looking to end the war in one swift stroke, agreed. The British, less than impressed with their ally's performance in Africa, suggested the lesser chore of Italy, instead. The Soviets and Americans argued that Italy was a strategic dead-end – it was – but the British held the trump card, because they'd have to provide most of the troops. In the meantime, the campaign would still divert German troops from Russia, and provide the U.S. Army time to sharpen its skills and ship over more divisions.

The Original Fascists Fall

On July 10, 1943, the Anglo-American army landed on Sicily. The Germans intended to hold the island, but Italian troops held most of the beaches, and they had become thoroughly disillusioned with the war. The Allies quickly secured the countryside while the Germans expertly retreated to Italy.

The fed-up Italians tossed out Mussolini and the Fascists in late July. Waiting until Anglo-American guns could back up their proclamations, the new Italian government surrendered publicly Sept. 8, as the western Allies landed at Salerno and Taranto.

Hitler had sensed the Italians' plans, however, and had robustly reinforced Italy. The Wehrmacht quickly took over the Italian arms and countryside. Rescuing Mussolini from his mountaintop confinement in a dramatic special-operations raid, they reinstalled the exhausted and disillusioned Duce as their puppet ruler. After losing Naples on Oct. 1, the Germans formed the defensive Gustav Line across the country. With the rugged Italian terrain – and equally rugged Italian winter – greatly favoring the defenders, the offensive slowed down in December.

Depths, Despair

Despite low numbers and disappointing surface assistance (see p. 20), Germany's U-boats had been waging a costly – if not decisive – war against Allied shipping in the North Atlantic. They had things their own way through April 1941, when improved British convoys and escorts reduced the number of cargo ships lost while increasing U-boat losses. After that, initiative seesawed as Hitler sent more and more submarines to the Mediterranean, while surface raiders and aircraft disappeared from the Atlantic offensive. The U-boats' successes surged in early 1942, when the United States ignored British advice on shipping security, and subsequently provided many easy kills.

In March 1943, the U-boats enjoyed a last hurrah, sinking 108 ships of 627,000 tons. After that, Allied improvements in new ship construction, Ultra intercepts, radar, and anti-submarine techniques would transform the U-boats from hunters to hunted during the remainder of the war. Overall, the U-boats would sink less than 1% of shipping to and from Great Britain.

To the Last Man, Again and Again

On April 18, 1943, a broken code led the United States to dispatch fighters to shoot down a transport carrying Yamamoto, the only senior military official explicitly and successfully targeted during the war. For a while, the Japanese military concealed the news of the admiral's death, just as they were concealing the changing course of the war.

The fighting continued in the Southwest Pacific islands above Australia. MacArthur, and through him the U.S. Army, had taken charge of the U.S., Australian, and New Zealand forces struggling to push the Japanese off New Guinea and back to their main base at Rabaul.

The self-absorbed and publicity-obsessed MacArthur ran this campaign with a skill that few Allied generals displayed. Perceiving and seizing every Japanese weakness, he shuttled troops about and starved more garrisons into submission than he fought, making rapid gains and mostly keeping his men alive.

In November, the U.S. Navy began a separate drive through the Central Pacific, looping northeast of the Army-led thrust into more open water. While MacArthur feinted and thrusted, wielding his units like a rapier, the Navy and Marines would swing a sledgehammer in a series of frontal assaults on the small, fortified islands that aimed like stepping stones toward Japan.

Eventually, the campaign would perfect the major tactical innovation of WWII: the amphibious assault. At this stage, though, the concept had teething problems. The victor at Midway, Adm. Raymond Spruance, commanded more than 100 ships and overwhelming force as he aimed to take Makin and Tarawa in the Gilberts beginning Nov. 20.

The Marines would later cite Makin – an Army job – as justification for their tactical theory that hell-bent assault now avoids casualties later. While the methodical Army troops took their time seizing Makin, a Japanese submarine torpedoed one of the supporting carriers. Ten sailors died on that ship for every soldier who died on Makin.

At Tarawa, the Marines would pay for Navy errors. Bad planning diluted the preliminary naval bombardment meant to soften up the Japanese fortifications, and the aerial assault also fell short of plans. Worst of all, the Navy's information about the tides on the surrounding reefs bordered on fiction.

Most of the landing boats scraped to a stop 700 yards out. The Marines jumped out in chest-high water and began trudging. The Japanese let loose with a cyclone of machine-gun and high-explosive fire. Those few Marines that reached the beach huddled behind a 4' seawall and waited for their reinforcements. The second wave took even worse casualties.

As good as their word, the Marines ignored their huge losses and took the island. Afterward, the U.S. public would see their first pictures of dead American troops, shocking to them although veterans found the photos of intact bodies with hidden faces quite discreet. The 3,301 casualties at Tarawa atoll would come to be seen as a tragedy, and a grim suggestion of what assaults to come might cost against the fanatical Japanese. At Tarawa, as elsewhere, the 4,800 defenders had died almost to a man, rushing out by the hundreds in a suicidal charge once their cause became hopeless. Before too long, the U.S. Marines would witness far worse.

The Manhattan Project

Serious speculation into using atomic energy as an explosive began in 1939. Germany, France, Britain, and the United States were seeking uranium and advanced theories as the war began.

By mid-1940, the French and British were furthest along, with the French research jumping to England ahead of the Wehrmacht, but the whole project would take vast resources. Britain kept working until even the spendthrift Churchill realized his country couldn't afford it in mid-1942. That left the United States. Churchill and Roosevelt thought their countries should pool their research, and any ensuing profits, but in the end U.S. officials shut out the British.

On Sept. 17, all U.S. research became a military concern – the Manhattan Project – under Gen. Leslie Groves, who knew nothing about nuclear physics, but everything about pushing projects forward in utmost secrecy. On Dec. 2, researchers created the first artificial, self-sustaining chain reaction under the Chicago University stadium. Soon, all such work would move to the mountains of New Mexico, at Los Alamos, where billions of dollars and feverish months of development would reach its climax with a 15- to 20-kiloton bang on July 16, 1945.

Fear that Germany would build the bomb first had propelled the Allies. They didn't know that faulty theories and math plagued the German work, some of it perhaps intentional self-sabotage by the researchers. The British even targeted German atomic research for special operations, sending Norwegian saboteurs to the Norsk hydroelectric plant in February 1943 to disrupt production of "heavy water," used in atomic research, and directing Norwegian resistance fighters in sinking a boatload of the stuff in February 1944.

Red Tide

The Soviets had slipped into the offensive after Stalingrad. After Kursk, they roared.

Following Stalin's preferred strategy, they assaulted everywhere at once in the south. At first, the thinned-out Germans covered all the holes in their line. The Soviets – 2.6 million strong – simply threw forth new columns, and this time nothing would stop them.

The Germans managed an orderly retreat from the Donets to the Dnieper River, even though the Soviets were moving so fast that they had orders to attack straight off the march, rather than take the usual time to deploy in battle formations.

The Germans thought they would hold the Dnieper line, but by Sept. 30, 1943, the five Soviet army groups had established a 500-mile front along its banks. By the end of the year, the Soviets had most of the river in their rear, along with 38,000 reclaimed settlements, 160 of them of significant size. Overall, the Red Army had most of Russia back in its hands.

THE WRITING ON THE WALL

As 1944 opened, the Soviets were poised to enter Poland. They intended to keep portions of it, as Stalin made clear in his November 1943 "Big Three" Teheran meeting with Churchill and Roosevelt. Trying to appear sympathetic, Roosevelt gave ground on Poland. Stalin, though, had no intent to win friends, just influence people. He got his opposites to agree to open the long-delayed second front. He then allowed himself to be talked into entering the war against Japan once the Allies beat Germany, a move which served his interests very well.

The reformed "Uncle Joe" Stalin only left Churchill and many U.S. officials more wary than ever. Their motive for establishing a second front in France was shifting rapidly from helping out the Red Army toward racing it to Berlin.

Meanwhile, Germany still fielded a formidable army with plenty of fight left, though further and further squeezed between the increasingly unhinged Hitler's refusal to accept reality and the Allies' unyielding terms.

Destination Rome

Winter's rains had slowed, but not stopped, advances in Italy. 1944 brought a new commander, Field Marshal Sir Harold Alexander; Eisenhower had been named Supreme Commander Allied Expeditionary Force and left for England to plan Operation Overlord, the invasion of France.

Under Alexander, the Allied troops overcame heavy resistance in advancing toward Rome up the Liri Valley. An amphibious assault at Anzio on Jan. 22 got them even closer, except that Gen. Lucas stopped to build up his forces instead of advancing at once. This gave the Germans time to comb their rear areas for cooks, drivers, and troops on leave to throw into a counterattack that put grave pressure on the bridgehead.

Anzio's failure placed the initiative back at the Gustav Line, where the U.S. Fifth Army was losing a stream of units to the Overlord buildup in Great Britain. Advancing meant taking Monte Cassino, a monastery built like a fortress that overlooked the Liri. The series of assaults on Cassino illustrated the multinational makeup of the Allied armies at this point, as Free French, Polish, New Zealander, and other units joined the U.S. troops in the costly attempts. U.S. bombers leveled the place, but the German paratroops defending the area discovered that the rubble made excellent cover.

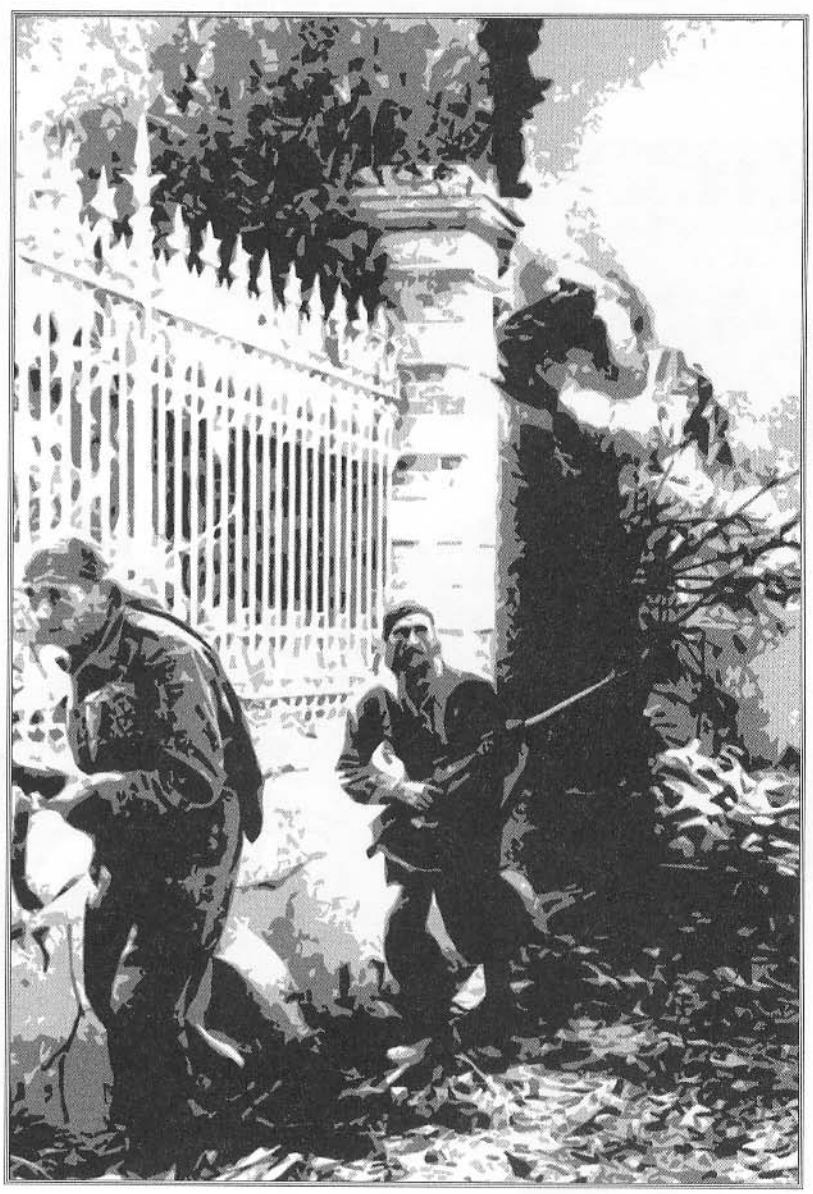
Cassino held until the Poles took it May 18, but by then breakouts from Anzio and elsewhere had provided the Allies a clear road to Rome and an excellent chance of encircling the German defenders. On May 26, however, the Fifth Army's commander, Gen. Mark Clark, changed his direction of advance so that U.S. troops would enter Rome first, allowing the Germans to escape encirclement.

Thousands of jubilant Italians greeted the Americans as they liberated Rome on June 4. The freed Germans reinforced the Gothic Line, 150 miles north.

Destination Berlin

Renewing their offensive in the new year, the Soviets also were taking side trips on their path to Berlin, but without anything as formidable as the Alps between them and Germany. Attacking on both ends of their front, on Jan. 6 they entered Poland, while on Jan. 27 they relieved Leningrad (see p. 22) after a 900-day siege had reduced the population to eating glue, and worse.

Early in January the southern Soviet forces encircled 12 German divisions at the Dnieper. Through February they chewed up these 73,000 men, and the 15 divisions attempting to relieve them, in a hard, bitterly cold campaign.



By March, other Soviets were cutting off the Germans in southern Russia. On April 8, they began retaking the Crimea from 17th Army, just about the last effective German troops in southern Russia. A month later, they were gone, too.

The German high command could only watch in dismay. They had expected the fatigue and supply strain of a long advance, or the seasonal muds, to stop the Soviets. By April they realized that this Soviet thrust – now 4 million men strong – could and would reach the Reich itself. They didn't realize that they would soon face an equal disaster in the West.

Overlord

By June, the army training in Britain was ready. The moon and tides favored landing in France on June 6. The weather did not, and Eisenhower delayed his decision until the last moment.

They went. Paratroops jumped in overnight and, though badly scattered, fulfilled most of their mission of securing the flanks. The French resistance, signaled by radio, sabotaged railroad equipment and other installations. The bomber crews that had rampaged across France to conceal the landing location – Normandy – dropped their pretenses and concentrated their efforts on reducing to rubble the German fortifications along the targeted coastline. Mostly, they missed.

Rommel had been leading the defensive buildup for six months, but most of his major decisions had been made, badly, for him. His armor reserves waited too far back, giving the dreaded *jabos* (Allied ground-attack airplanes) plenty of opportunity to kill them before they got to the fight. The intricate Allied deceptions made the Germans defend every beach, spreading their infantry too thin. Worst of all, Hitler had given orders not to move several reserves without his command.

The German defenders on Sword, Juno, Gold, Omaha, and Utah beaches awoke to find 6,500 naval vessels and 12,000 aircraft bearing down upon them. Many of their commanders were away on leave. Those on scene called Berlin. Hitler, so nervously strung out that he rarely rested, was asleep. No one dared wake him, even for this.

Of the Canadian, two British, and two U.S. divisions in the first wave, all got ashore without huge cost except the U.S. troops at Omaha. Disembarked too soon, their tanks sank. Wading to shore under huge loads in withering crossfire, the infantry fell in bunches. For a while, all the scattered soldiers could do was catch their breath, but as reinforcements arrived they began working their way to the beach wall, then through its passes. By night's fall, 34,000 Americans had landed at Omaha. More than 1,000 had died to get them there. They had advanced less than a mile, but the Germans had needed to throw them off entirely.

Into Fortress Japan

Combined with carrier raids that rendered Rabaul helpless, Tarawa had represented the first serious chink in the Japanese defenses. In 1944, the Allies exploited the breach.

> The Japanese commander had reminded them not to be taken alive.

Through April, the Allies scoured the Japanese out of the Marshall Islands. In the meantime, U.S. carriers penetrating the central Pacific forced the Japanese to move their fleet from its ineffectual main base at Truk to Singapore. And MacArthur continued to chew up the southern leg of the Japanese zone, obtaining effective control of New Guinea in late April.

The Japanese no longer could hope to hold out on the defensive. They planned, instead, to concentrate their remaining arms and meet the Allies in a winner-take-all bout. On May 27, U.S. landings at Biak, off New Guinea's northeastern point, appeared to offer just such an opportunity.

The Saipan Landing

On June 11, U.S. carriers began savaging Japanese positions in Guam, Saipan, and Tinian, softening the Marianas for landings. From there, land-based bombers could target the home islands of Japan. The Japanese, gathering to provoke a fight off Biak, rushed to this new battleground.

On June 15, the Marines went in against 36,000 dug-in Japanese on Saipan. The Navy had made fewer mistakes in preparing Saipan than at Tarawa, but still overestimated battleships' ability to uproot concrete fortifications. The reef erupted under Japanese fire that left 1,575 Marines dead, but 20,000 made it to shore to fight off banzai charges during the night.

The next night, the Japanese sent in tanks. A Marine colonel sat on a stump, watching them lumber forward and directing Navy shells to greet them. The morning found him still sitting there, surveying a company of burned-out armor.

Battle of the Philippine Sea

The Japanese armada – nine carriers, five battleships, 13 cruisers, and 28 destroyers – lacked a crucial weapon: good pilots. Combat losses and fuel shortages had forced them to deploy green, ill-trained aviators.

The U.S. fleet – 112 ships including 15 carriers and seven battleships – spotted the incoming Japanese planes on radar June 19. Launching their own fighters, they began the slaughter. The crack U.S. pilots, who had burned all the aviation gas that they needed in training, overwhelmed the Japanese. The Japanese lost 75% of their aerial power, 240 warplanes in the air with perhaps 100 more destroyed on the ground, in what the U.S. troops would call "The Great Marianas Turkey Shoot." U.S. losses included 29 planes and one bomb hit on the battleship *South Dakota*. U.S. submarines, which spent most of the war destroying 80% of Japan's 1941 cargo tonnage, added to the toll by sinking the carriers *Taiho* and *Shokaku*.

The next day, the Japanese fleet regrouped, thinking their planes had landed safely on Guam. The Americans sent 216 warplanes to follow up their victory, sinking the carrier *Hiyo* and damaging other ships. Only 20 U.S. planes fell during the raid, although another 72 crashed trying to return to their carriers at night. The U.S. Navy retrieved most of its downed crews. The Japanese lost theirs, and had no pilots left to replace them.

Horror and Honor

Meanwhile, the Marines were rapidly taking Saipan, though their relationship with the U.S. Army reached a new low when the overall Marine commander sacked his lone Army subordinate for moving too slowly. On June 25, Marines shrugging off 50% casualties took Saipan's highest point, Mount Tapotchau.

Though his troops had killed 9,800 attackers, the Japanese commander knew he had lost Saipan. He committed hari-kiri. The next morning, 4,300 of his remaining troops sprang into a banzai charge. Marine artillerymen fired into them at point blank, leaving fields of random gore where men had stood.

Saipan would fall on July 18, and with it Tojo (see p. 22) would resign, but the grim finale had yet to begin. In 25 years of Japanese rule, 18,000 Japanese civilians had colonized the island. Before killing himself, the Japanese commander had reminded them not to be taken alive, and they all had been told how Americans tortured, then slaughtered, their captives.

They began mass suicide, smashing their babies' skulls against rocks, having their children play one last game with a live grenade, and jumping off cliffs into the sea. Japanese-speaking natives tried to convince them of their safety. U.S. destroyers tried to rescue the jumpers, but their props fouled in waters packed with decomposing flesh.

If colonists showed such conviction, U.S. admirals and generals had to wonder what the home islands' inhabitants would sacrifice. The U.S. commanders may have felt relief that, at that point, an invasion of Japan wasn't seen as absolutely required to force a Nipponese surrender.

The Beast in the East

On their flanks, the Soviets finally were fighting on other people's soil, having entered Finland on June 9. The time had come to face the still powerful Army Group Center.

On June 22, the Red Army began by cutting out two towns that the Germans had turned into fortresses. Tank columns streamed past them to converge at Minsk on July 4. Stalin had learned to concentrate his forces: This time, the Red Army closed the jaws of its trap, with a good portion of Army Group Center caught in it, and the remainder scattering westward. The Germans lost 17 whole divisions, with 50 more taking 50% casualties.

On July 24, the Soviets liberated the concentration camp at Majdanek, the first in a string that would open the world's eyes to the Nazis' atrocities. Six days later, the Soviet advance paused just outside Warsaw, to allow supplies to catch up.

Counting on the Red tanks moving again shortly, the Polish resistance in Warsaw began an uprising Aug. 1. Though hopelessly outgunned, they wanted to get their own government in place before the Soviets arrived and installed puppets.

Instead of helping, the Soviets sat it out, while the Germans devastated the Polish freedom fighters over the next several weeks. When the Soviets finally cleared Warsaw, they would install their own people, just as the freedom fighters had feared.

Breaking Out

The Allies in Normandy began expanding their bridgehead in a close-quarters fight among Normandy's bocage, a series of high earthen walls stiffened by tree roots that favored the German defenders. American ingenuity finally dealt with the nuisance – the G.I.s welded huge hedgecutters to the fronts of tanks and punched holes in the earthworks.

Several failed attempts on Caen led the British to try using their armor, which did not work, either, but pinned the German armor in their area during July. Thus, on the 25th, a U.S. bid to break out met little resistance. The Germans brought up two tank divisions, but the Americans skirted around them and threatened to cut off the Germans in Normandy.

On Aug. 1, Patton took charge of the new Third Army and the advance, now intended to pin the Germans against the British and Canadians. An Ultra intercept allowed the Americans to ambush an armored counterattack, which in turn allowed the British and Canadians to advance toward Falaise, where they would close the Normandy pocket.

Several German units slipped through the Falaise Gap before the Allies closed it Aug. 20, but they left their equipment and 50,000 comrades behind. The Allies raced into the void that they left, with a Free French division liberating Paris on Aug. 25. The Germans' Western Front appeared to be collapsing.

Failed Conspiracy

For years, a loose network of officers and officials, mostly aristocrats and Catholics, had been conspiring to assassinate Hitler and free Germany from the war. On July 20, 1944, they showed their hand, placing a bomb in a conference room at Hitler's Rastenburg headquarters.

A table's sturdy leg shielded the Führer from serious injury. Unaware, the conspirators moved to take over the government. Once Hitler's survival became known, the plot fell apart. Thousands of suspects, many of them only loosely connected to the conspiracy, were executed. Even the popular Rommel, though only vaguely aware of the plot, faced the choice of a puppet trial or suicide, poisoning himself Oct. 14.

Hitler enjoyed watching film of the conspirators' executions, and lost any last shred of respect for his officers.

The Noose Tightens

Since 1942, the Allies had been trying to retake Burma, so that supplies from India could propel more Chinese into the war. Traditional advances had fared badly, though the behind-the-lines Chindit operations had met some success. In June 1944, the Allied forces smashed a Japanese advance and counterattacked, slowly denting in yet another flank of the Japanese perimeter. By December, the Japanese were retreating.

"I Shall Return"

MacArthur convinced his superiors that the island drives should next reclaim the Philippines, fulfilling the vow he made on March 11, 1942, when Roosevelt had ordered him to leave.

By the time the attack began in October 1944, the Japanese had just about used up all their oil, planes, and pilots. Using their empty carriers as decoys, they divided the rest of their fleet into two pincers aimed at destroying the Philippines landing force at Leyte Gulf. The Japanese sailors had few illusions; they were launching a suicide mission, simply on a larger scale than the *kamikaze* pilots that they now dispatched to crash their planes into American ships.

The battle of Leyte Gulf began Oct. 23 and blossomed into history's largest naval clash. Though most of the U.S. fleet chased the empty carriers, the ships left covering the landing managed to screen the transports and inflict serious damage. By Oct. 27, the Japanese had lost four carriers, three battleships, 10 cruisers, and 11 destroyers. The U.S. losses amounted to a light cruiser, two escort carriers, two destroyers, and a destroyer-escort. Japanese seapower effectively died in the engagement.

The Philippines landings took place on schedule, finally securing Manila on March 3, 1945.

The Sinking Ship

Germany's east European allies could not desert quickly enough as the Red Army approached. The Romanians quit just after the Soviets entered their country Aug. 20, 1944, leaving the German garrison to improvise a hasty, and useless, defense. Bulgaria also dropped out of the war. Both countries would rejoin the fighting as Soviet pawns within a month.

When the Soviet troops toward the north launched a massive assault, the Finns signed a punitive peace Sept. 8. They, too, would rejoin the conflict against Germany in March.

The nearly friendless Germans held out in late 1944 as the Soviets methodically bludgeoned their way across Estonia, Poland, Hungary, and Romania, but by late January the front collapsed. The paper-thin German units began a pell-mell retreat Jan. 19. The next day, Hungary quit, too.

In early 1945, the Red juggernaut ground to a halt on the eastern banks of the Oder and Neisse rivers. As their supply trains rushed to catch up with the advance, the Soviet leaders began planning their final campaign.

Onto the Rhine

The Western Allies were moving even more quickly. They had opened a beachhead in southern France on Aug. 15 to divert even more troops from Italy, and now had several large armies racing to the east.

These armies, unfortunately, burned up supplies at previously unseen rates. Even as they took Brussels on Sept. 3 and Antwerp the next day, they slowed down to organize a mammoth distribution network. The Germans reformed their lines.

Market Garden

Montgomery convinced Eisenhower to give him all three Anglo-American parachute divisions to pave the way across the Rhine. On Sept. 17, the American paratroops seized their bridges in Operation Market. The British division, attempting the farthest bridge spanning the Lower Rhine at Arnhem, dropped into the middle of two panzer divisions in Operation Garden. The armored column meant to relieve them and exploit their work slowed down in the face of fierce resistance, while the panzer units overwhelmed the British paratroops. On Sept. 25, the British survivors and their Polish reinforcements swam back to Allied lines.

The other Allied armies again began advancing in more methodical fashion, often in fierce combat, as when the 1st Army broke through the Siegfried Line, or West Wall, at Hürtgen Forest in November. By early October, advanced units had reached German soil, and by mid-December the western front stood on the banks of the Rhine.

The Bulge

Though the disastrous 1944 would cost Germany at least 100 divisions, Hitler had scraped together an armored reserve. He committed this to a replay of his Ardennes Forest offensive, this time aimed at the U.S. forces.

Launched on Dec. 16 in bad weather that grounded Allied *jabos*, the attack initially stunned the four worn-out divisions facing it, and the world, which recalled Hitler's 1940 surprise. Eisenhower quickly sent the 101st Airborne to defend Bastogne, which they did against great odds in cheeky style. The paratroops, and weather, and critical fuel shortages, slowed the panzers down until the skies cleared.

With ground-attack planes hunting them, and Patton and Montgomery counterattacking in force, the Germans withdrew on Jan. 8, 1945, at a cost of 100,000 casualties, 600 tanks, and 1,600 airplanes. The Reich had emptied its arsenal in the west.

Poising the Dagger

The Pacific offensive could still benefit from air bases closer to Japan for its final phase. With this goal, the U.S. Joint Chiefs of Staff authorized huge, new assaults in October, though difficulties in the Philippines would create delays.

Iwo Jima and Okinawa

The Japanese knew they couldn't hope to hold Iwo Jima when the Marines finally arrived on Feb. 19, 1945. Instead of trying to throw them off at the beach, they turned the inland reaches into one vast tunnel-riddled trap, designed to send a message about the costs of a home-island invasion and pin the Navy in the area for *kamikaze* counterattacks.

After a massive, but still largely ineffective, preliminary bombardment, the Marines practically strolled onto the dusty island. Once they moved inland, the fighting turned white-hot. Fighting for ridge after hill after bunker, the U.S. riflemen suffered more than 24,000 casualties before finally securing Iwo Jima on March 26.

Okinawa was worse. The Japanese used similar tactics, with *kamikazes* in the hundreds screaming down on the naval support. Of 75,000 U.S. casualties in the operation spanning all of June, 20,000 died, with 38 naval vessels and 768 planes also lost.

The Japanese had spent the last of their air and naval resources, with their superbattleship *Yamato* hounded to death by bombers as it steamed in relief of Okinawa. By then the Allies believed they would have to invade the home islands to defeat Japan. The door stood wide open for the invaders – but at what price would they enter?

GOTTERDAMMERUNG

1945 opened with the Allies firmly in control. At Yalta in February, Churchill and Stalin met for the last time with the ailing Roosevelt, who would die April 12. Along with carving up postwar Germany into U.S., Soviet, British, and French occupation zones, the western leaders effectively surrendered Poland by dropping recognition of the London government in exile, and gave the Soviet Union a free hand in eastern Europe. They had few alternatives; the Red Army already was there, en masse. Stalin also won territorial concessions in the Pacific, for refining his promise to break his treaty with Japan once the European war ended. The fanatical Japanese island defenses had left the western Allies with a great unease about what the home islands, and a million Japanese standing guard in China, would endure before surrendering.

Moving Fast

Eisenhower wielded 85 divisions, 23 of them armored, against 26 ragged German divisions as he prepared to cross the Rhine. Led by the U.S. 1st Army, which caught the defenders of the Remagen bridge napping March 7, most of his forces had crossed by April 1, when U.S. 1st and 9th Armies pinned the main German force in the Ruhr. The other units were roaring east at 40 to 50 miles a day. Their job was to secure western and south Germany, then stop on a predetermined line, where they met up with Soviet troops April 25.

Many of the U.S. generals had angled their maneuvers with a thought toward making a dash for Berlin, in the Soviet zone. Eisenhower vetoed that idea. When he asked veteran Gen. Omar Bradley how many casualties the capital might cost, the answer he got was 100,000. Beyond that price, Eisenhower wanted to ensure that the much-rumored (though illusory) Nazi plan to establish an Alpine redoubt never manifested, which meant securing the south. As far as he was concerned, if the Russians were going to keep Berlin, they could fight for it.

The Battle of Berlin

Terrified that the Anglo-Americans would get there first, the Soviets hurried to do just that. Two army groups stood outside Berlin, under the rivals Marshal Ivan Koniev and Zhukov, who had provided the Red Army with some of its ablest leadership since the very earliest battles (see p. 11). Stalin erased the line between their fronts and told the best man to win.

On April 16, both juggernauts began to roll forward. Zhukov had failed to properly identify the German lines. At the Seelöw Heights, his drive immediately stalled. His men, packed into an existing bridgehead, couldn't bring their overwhelming advantage in firepower to bear. Meanwhile, Koniev moved faster but had farther to go.

Koniev's tanks reached Berlin on the 20th, but Zhukov's influence reached Moscow; Stalin declared him the winner. Both armies advanced into the teeth of boys and old men doggedly defending Berlin's rubble. After fierce fighting, two sergeants flew the Soviet flag from the second story of the Reichstag on the 30th. Estimates are that the Soviets spent close to Bradley's 100,000 lives in the assault.

Hitler Bows Out

Well past nervous exhaustion, Hitler refused to leave Berlin. He ordered armies that existed only on his maps into counterattacks, and watched as his Red tokens moved inexorably closer. On April 30, as the Soviets reached the Reichstag, he committed suicide with cyanide and pistol.

On May 7, Germany surrendered.

A Star in the East

By spring, most Japanese on the home islands knew that they were through. Massive U.S. bombing raids were leveling their paper-and-wood cities, and the Allied naval cordon could starve them well within a year. Though many still preferred to go down fighting, other factions began to seek peace terms via Moscow, which hosted both U.S. and Japanese diplomats. Even as the home islanders taught their children to strap on explosives, roll under tanks, and detonate themselves – "Sherman carpets," they called them – the U.S. authorities learned that the Japanese civilian government was seeking surrender.

Then, the atomic bomb (see p. 28) became a reality, pushing forward the complex question of whether or not to use it. Even if the Japanese surrendered, they had a history of stretching negotiations for an eternity; costly ships and troops would have to be kept ready during that interval. Furthermore, there were the Soviets. Their aid, so eagerly sought, had proved unnecessary, but Stalin was hurtling troops eastward to take symbolic part in the conquest of Japan – and fill the power vacuum in China and Japan left by the Japanese collapse.

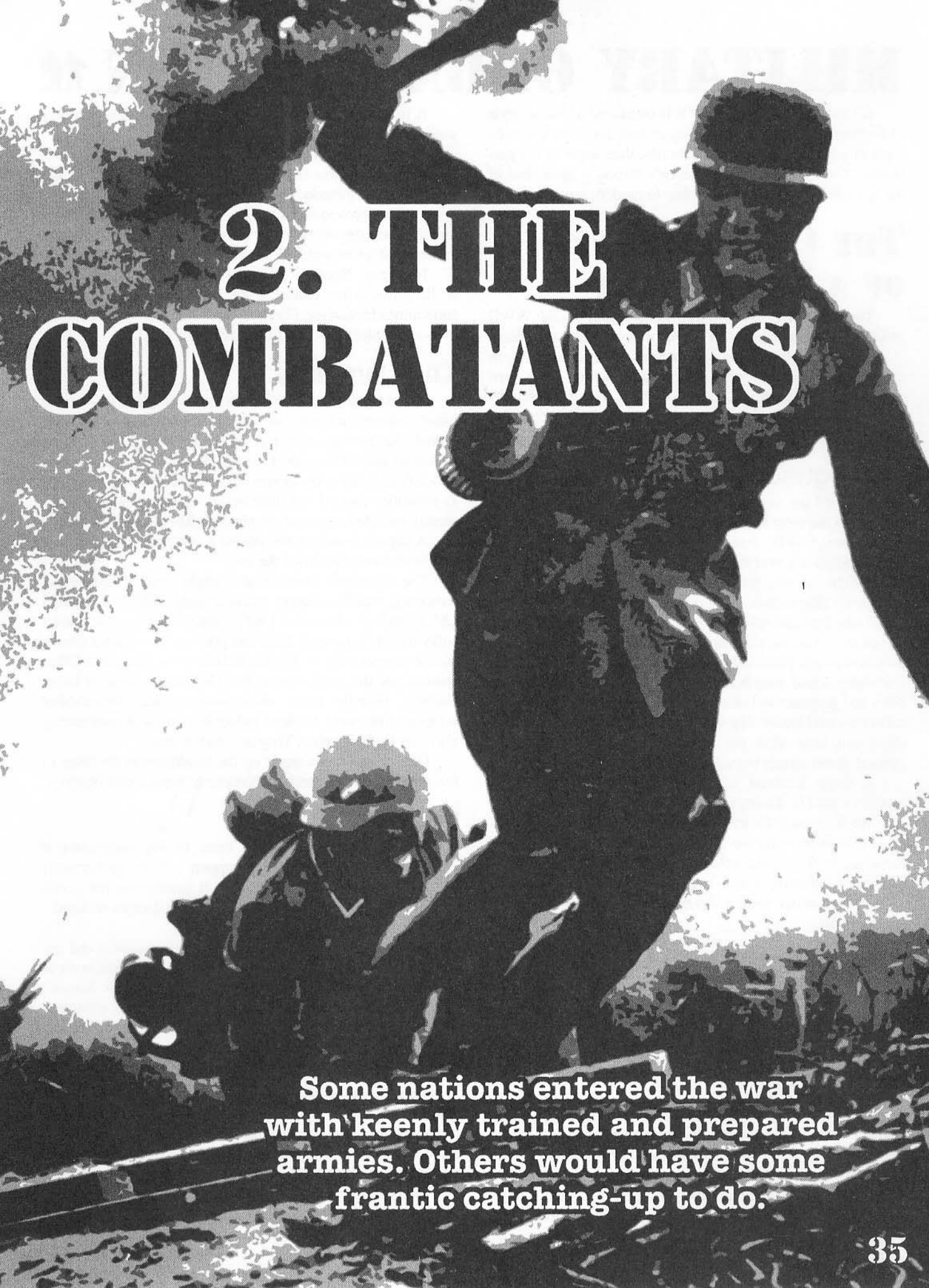
President Harry S Truman decided to use the bomb. Dropped on Hiroshima and Nagasaki on Aug. 6 and 9, the weapons caused fewer immediate deaths than many of the conventional bombing raids, but their overall toll through cancer deaths decades later may have reached 1 million.

After Hiroshima, the Soviets jumped their schedule forward and declared war against Japan on Aug. 8. They shattered the Kwantung Army, but in a week the war had ended.

Aftermath

British courage, American production, and Soviet blood had won the war. Not all would win the ensuing peace. Bankrupt Britain would soon fall from the superpower ranks as the last of its empire unraveled. The Soviet Union immediately entered a five-decade cold war with the United States that would destroy it through excessive spending on arms.

Reinvigorated, the United States expanded its economic might and global influence. Japan and Germany both rebuilt thriving societies on the ashes of the old. And liberal democracy not only survived its greatest test, but flourished, in the wake of a conflict that cost the world up to 100 million lives.



2. THE COMBATANTS

Some nations entered the war with keenly trained and prepared armies. Others would have some frantic catching-up to do.

MILITARY ORGANIZATION

All major combatants in WWII employed a similar style of military organization. This chapter first describes the basic form of an army, then the basic tactics, then some of the particular characteristics of each nation's forces. A great deal of the general information also applies to modern armies.

The Components of a WWII Army

The following explains the units found in all WWII armies. See the table on p. 37 for the many naming variations.

The unit values reflect full rosters, before factoring in casualties, units on detached assignment, men on leave, men absent without leave, etc. Once in action, all of these units began to shrink in size. In extremes, battalions might not muster more than a platoon's worth of men.

The Squad

A squad usually consisted of eight to 13 infantrymen, with 10 as the most standard number.

Before WWII, corporals led squads, but sergeants increasingly took over the role during the war.

A light machine gun provided the main weapon for most squads. Of rifle caliber and mounted on a minimal bipod, the LMG was light and relatively easy to move. Four men usually served it: a gunner, a loader, and two riflemen who carried ammunition and protected the gun crew from flank attacks. The remaining squad members, minus the squad leader, carried rifles and grenades and often came under the supervision of an assistant squad leader. The squad leader often carried a submachine gun. Less often, the entire squad did. As the war progressed, some squads began carrying two or even three LMGs.

A single armored vehicle or field gun equated to an infantry squad in the organization of armor or artillery units.

Mechanized infantry, which rode in armored carriers capable of supporting the troops in combat, usually included the one- to three-man vehicle crew as part of the squad. Motorized infantry, which rode in trucks that stayed well away from combat, usually did not. The truck crews formed a separate unit.

The Section

Rarely, two squads would be organized into a section (which was itself an older term for a squad still in use by the British). The section might have a senior NCO commander, or one of the two squad leaders might command it.

The Platoon

The platoon consisted of three to five squads, a command element, and often a couple of support vehicles – trucks or horsedrawn carts for infantry, halftracks or trucks with extra fuel and personal gear for armor, etc. A platoon might have 35 to 40 fighting personnel and two to seven in support. Often, the headquarters element included a medic, possibly two.

A first lieutenant usually commanded a platoon, though a senior sergeant sometimes filled the position.

Usually, the command element or one of the squads included some form of specialized weaponry. Early in the war, this often included light mortars and antitank rifles. The light mortars proved of little utility, and thickening tank armor rapidly made the antitank rifles obsolete, so by 1943 antitank rockets and additional LMGs were replacing these weapons.

In armor, three to five tanks made up a platoon. In artillery, two to four guns did, but guns often were grouped by pairs into sections (see *The Section*), with these units standing in as small platoons on the organizational chart.

The Company

The company consisted of three to five platoons, a command element, and some additional support vehicles and personnel. An average company might have had 140 fighting personnel and 20 in support; early-war units counted closer to 180-200 men, but most armies streamlined their organizations as casualties thinned out their troops. Company headquarters usually included medics if the platoons had none assigned.

A captain usually commanded a company, though a second lieutenant often filled the role.

The command element also might include specialized weaponry, usually medium machine guns. MMGs resembled LMGs (indeed, often were LMGs) except that they included a bulky tripod. This made them less portable, but more accurate. (Some sources refer to MMGs as heavy machine guns. Other sources, and this book, reserve the HMG designation for larger calibers. Heavily built, often water-cooled, rifle-caliber weapons that could be fired indefinitely without overheating also vary in designation. They are MMGs, here.)

One or two tanks made up the headquarters for three to five armor platoons. Artillery companies were called batteries.

The Battalion

The battalion consisted of three to five companies, a command element, and further support vehicles and personnel. A battalion had 500-1,000 men. It usually was the smallest unit to host a field medical facility with doctors on hand.

A major usually led a battalion.

Battalion and higher command elements usually did not host special weapons – at this level, commanders spent most of their time planning rather than leading at the front. Instead, infantry battalions often had one heavy-weapons company, which usually fielded MMGs or HMGs and medium mortars.

The Regiment

This was the smallest standard unit to include a mix of unit types within its composition. Also, from this level on up, subordinate units came and went on a temporary basis – while battalions and below maintained relatively permanent personnel, regimental and higher HQs often shuffled subordinate units.

The average infantry regiment might have had three infantry battalions, an artillery battery, and an antitank-gun

Military Unit Names

Military-unit names evolved haphazardly over centuries, so usage isn't even consistent within a single army. Generals don't mind the confusion that this creates, as it can keep opposing generals guessing as to just what size of formation they face.

The following table illustrates the most common usages for major combatants; for instance, a U.S. armor platoon is equivalent to a British armor troop. Often, cavalry and other specialized ground forces will use the nomenclature for armor units. In the U.S. Army, cavalry and reconnaissance units called a company a troop and a battalion a squadron – which can create additional confusion when comparing them to the smaller British units of the same name. A "–" means that nation usually didn't employ that level of organization.

GURPS WWII will use U.S. units in most usage, but switch to British units when specifically addressing British or Commonwealth forces.

	U.S.	*British*	*German*	*Russian*	*Japanese*
Infantry	Squad	Section	Gruppe	Gruppa	Buntai
Infantry	Section	–	Halb-Zug	Otdelnyi	–
Armor	Section	–	Trupp	Otdelnyi	–
Artillery	Section	Section	Trupp	Otdelnyi	–
Infantry	Platoon	Platoon	Zug	Vzvod	Hoheishōtai
Armor	Platoon	Troop	Zug	Vzvod	Senshashōtai
Artillery	Platoon	Troop	Zug	Vzvod	Yahōshōtai
Air	Flight	Section	Kette	–	Hikōshōai
Infantry	Company	Company	Kompanie	Truppa	Hoheichūtai
Armor	Company	Squadron	Kompanie	Truppa	Senshachūtai
Artillery	Battery	Battery	Kompanie	Truppa	Yahōchūtai
Air	Section	Flight	Staffel	Zveno	Hikōchūtai
Infantry	Battalion	Battalion	Abteilung	Batalyon	Hoheidaitai
Armor	Battalion	Regiment	Abteilung	Batalyon	Senshadaitai
Artillery	Battalion	Regiment	Bataillon	Batalyon	Yahōdaitai
Air	Squadron	Squadron	Gruppe	Eqskadril'ja	Hikōdaitai
Infantry	Regiment	Brigade	Regiment	Polk	Hoheirentai
Armor	Regiment	Brigade	Regiment	Polk	Sensharentai
Artillery	Regiment	Brigade	Regiment	Polk	Yahōrentai
Air	Group	Wing	Geschwader	Polk	Hikōsentai
Ground	Brigade	–	Brigade	Brigada	Ryodan
Air	Wing	Group	(Jagd)fliegerführer	Brigada	Hikōdan
Ground	Division	Division	Division	Divisyi	Shidan
Air	Command	Command	Flieger/Jagddivision	Divisyi	Hikōshidan
Ground	Army Corps	Army Corps	Korps	Corpus	Tai
Air	Air Force	Air Force	Flieger/Jagdkorps	Corpus	Hikōtai
Ground	Army	Army	Armee	Armya	Gun
Air	–	–	–	Voyenno-vozdushnyye sily	Kōkūgun
Combined	Army Group	Army Group	Armee/Heeresgruppe	Front	–
Ground	Task Force	Battle Group	Kampfgruppe	–	Dokuritsu konsei rentai

company. A regiment within a division (see below) would itself have had substantial support equipment and personnel, but many were independent, directly attached to an army or army group as a special resource. These included very large support resources. A regiment had 3,000-4,000 men.

A colonel usually led a regiment, with a lieutenant colonel as the executive officer, or second in command.

The British infantry regiment was strictly a peacetime organization of battalions that might mess (dine) and train together, but fought together only by rare happenstance.

The Brigade

Two regiments of the same type within a division might be organized into a brigade. Sometimes, the brigade HQ simply handled administration, not combat command.

The Division

The smallest *self-contained* unit within an army, the division included all of its own support services – payroll, supply procurement, laundry, etc. – and could function without outside support for long periods. The average infantry division might have consisted of three infantry regiments, an artillery regiment, a reconnaissance battalion, an antitank-gun battalion, an engineer battalion, a signal battalion, and a vast network of support equipment and personnel. It usually had 9,000 to 15,000 men.

Most divisions were primarily infantry or armor. Though these units contained a good deal of artillery, only the Soviets organized pure artillery units at greater than regimental level.

A major general usually led a division, often with a brigadier general as executive officer.

How Strict Is the TO/E?

This chapter describes a great number of military organizations, called tables of organization and equipment, or TO/Es for short. Most units rarely reached their full TO/E authorized strength in men or gear. If they did, it usually was just prior to an assault, which usually would make the unit understrength again . . .

Also, TO/Es changed frequently during the war. Those described here were among the more common, but variations were almost the rule rather than exception.

While often short of men, U.S. units often possessed gear at or beyond TO/E level. They would pick up extra trucks, machine guns, tanks – anything that light fingers could "appropriate" or skilled hands could wire back together after the item was written off.

Army Corps

An army corps consisted of several divisions with attached elements. Most often these attached elements were independent regiments of artillery, to be parceled out where the fighting was thickest. Infantry and antitank guns (including mobile, armored versions much like tanks) also made up attached elements, but true tanks usually formed part of a regular divisional formation. A corps would have roughly 50,000 men.

A lieutenant general usually led an army corps.

Army

Several army corps made up an army, with attached elements up to the size of divisions, totaling about 150,000 men.

A full general or equivalent rank usually led these.

Army Group

An army group consisted of several armies. An army group had no size limit, though they averaged some 600,000 men and didn't often exceed 1 million men in practice.

A general or general of the army usually led these.

Task Force

Task forces were special formations, created for specific missions. They often included an infantry battalion and smaller units of armor, artillery, engineers, etc., making them miniature divisions in combat. Reconnaissance units were the only regular formations to mix combat arms at this small of a level.

Air Units

As with armor and artillery, a single plane stood in for a squad on the organizational chart of air forces. Usually, fighters were then grouped in two pairs or bombers in trios, to form a platoon equivalent. Six to 12 aircraft was a company equivalent. A squadron held 12-25 planes. A group usually had at least 20 aircraft, up to 125. Numbers per unit varied greatly. Even more than in ground forces, officers of nontraditional rank could be found leading air units – a major rather than captain might be the proper officer for a company equivalent, but a second lieutenant might be filling the role because of wartime personnel shortages.

Naval Units

Naval units were divided up by boat or ship, of course, with the largest battleships requiring a regiment's worth of sailors. The internal organization of crews resembled army organization, with the significant addition that non-specialist crew members were formed into watches that relieved each other to maintain a ship's 24-hour operations. A naval officer often supervised a watch rather than the specific group of men within the watch. Usually, these watches spent four hours on shift, then eight off shift during routine operations, or four hours on then four off in combat theaters or on submarines. Everyone went into action during combat.

The position of captain was not the same as the rank of captain, but most oceangoing ships had captains as captains. Coastal craft and submarines almost always had lower ranks in command; on board, these men were "captain" regardless of actual rank, or "skipper" if that seemed too pretentious.

Small-Unit Tactics

All nations built their army operations upon some basic small-unit tactics, briefly described here.

As mentioned, most infantry squads carried an LMG. In action, the squad set these up with the best possible field of fire. The LMG's automatic fire would then *suppress* enemy troops, making them duck under cover where they couldn't see much or shoot back effectively. The rest of the squad would then maneuver so that they could either fire their rifles *around* the cover, or creep close enough to use grenades *over* the cover.

A platoon would use the same principles on a larger scale. Usually, two squads would advance side by side and pin down any enemy they encountered. The third squad, which had been advancing behind its brethren, would then maneuver to flank the enemy to put in the mortal blow.

A company used its platoons in the same way, a battalion its companies, and so on up the organizational pyramid.

In a four-squad platoon or four-platoon "square" company, the third and fourth squads or platoons would share the reserve role. Often, though, only one flank showed any promise, rendering one reserve squad ineffective. For this and other reasons, armies with square formations evolved toward "triangular" three-subunit formations before and during the war.

Basic armor tactics often used speed to replace the suppression fire. Instead of leaving part of an armor unit to pin down opposing forces, the entire unit wheeled around to find an exposed flank offering no cover. This also served to concentrate the tanks' fire, and made it difficult for enemy forces to concentrate antitank weapons against a moving target.

Artillery did not really have tactics of its own, but rather supported infantry and armor operations as integral components of those units particularly effective at suppressing the enemy.

Aerial and naval tactics differed from ground tactics in many ways. See p. 83 for a brief discussion of aerial tactics. Naval tactics generally hinged upon the effective range of available weapons, whether guns, torpedoes, airplanes, etc. Often, a boat or ship tried to stay just within its own weapons' effective range, minimizing the number of weapons that an opposing vessel could bring to bear.

GREAT BRITAIN

For centuries, Great Britain had relied upon the Royal Navy to maintain its empire. As the nation entered the war in 1939, this remained a potent force. The Royal Air Force did not possess an overwhelming number of planes, and their quality was highly mixed, but its pilots knew their jobs, and their commanders developed excellent communications with the radar network guarding the coast. The small army consisted of a few professional Regulars, more part-time Territorials, and a hastily organized Home Guard of militia men unsuited for active service abroad. Quality was uneven.

As the war progressed, Great Britain rapidly transformed to a total war footing unparalleled by any other democracy. Stiffened by a healthy supply of U.S. equipment, all of its services improved across the board, with the land forces making the largest gains, having had the most ground to make up.

Entry and Basic Training

Despite its 1.5 million volunteers, Great Britain employed conscription drastically, extending the draft to women in 1941. The law exempted coal miners and other vital workers, such as lighthouse keepers, as crucial to the war effort. Many miners volunteered, so that late in the war conscripts were sent to replace them rather than to the military. By 1945, the country had mobilized a greater part of its population than any other, save perhaps the Soviet Union.

Basic training remained erratic into the early war years. Each regiment conducted its own training to a large degree. Some worked hard and well. Some assumed any good Englishman already knew how to fight. Others simply "lacked purpose" with no rationale.

Home Guard instructors usually taught dubious and bloodchilling tactics that emphasized bayonet work; "experts" told them to take recruits to slaughterhouses to get comfortable with the sights and smell of gore.

Training also suffered from the poor nutrition that many British endured during their youths in the 1920s and '30s.

Service Culture

While the Regulars had a fairly tightknit culture, the various Territorials usually had their own distinct customs, messhall rituals, and points of etiquette. In ***GURPS*** terms, even a fellow British soldier from another regiment may take a -1 to -4 to Savoire-Faire (Military) when participating in another regiment's social functions. (An American soldier would take *at least* a -4 during a dining-in with colors . . .)

Across British arms, men from the lower classes had to display exceptional promise to hope for a commission, but men from the middle and upper classes sometimes served among the enlisted, either in elite units because slots were limited, or because they had a decidedly unmartial bearing and history. Some of these enlisted Tommies would be quite formidable figures in civilian life.

Regardless of social class, a proper English soldier was expected to keep his cool in the hottest fight. No matter how grim the circumstances, a dry quip rarely was out of place. Many English didn't apply this standard to the Scots or Irish, whom they perceived as naturally lusty fighters, or the Welsh, whom some perceived as potential madmen with a dark, bloodthirsty bent. These might qualify as Social Stigmas in civilian life – basically "second-class citizen" or "minority group" per p. 180 – but military culture perceived these stereotypes as mixed blessings of the "lousy in barracks, great in battle" variety, canceling any potential Social Stigma for Celtic soldiers from the British Isles.

The British military command also supervised units from the colonies and dominions – primarily India, Canada, Australia, New Zealand, and South Africa. Troops of non-European descent retained a Social Stigma, even in uniform. Many British perceived Australians as something like below-the-equator Irish, but *so* good at fighting that they might enjoy a +1 Reputation during the war.

The Irish nation of Eire (see p. 9) officially remained neutral during "The Emergency," but many Irish nationals volunteered. The draft exempted those from Northern Ireland, but they too often joined the British colors willingly.

Overall, more than 6 million troops from across the globe and scores of local cultures entered the British military culture, making it remarkable that it remained fairly consistent.

Commendations

The numbers are Reputation bonuses; see p. 63.

Several ribbons and badges for active service, or several mentions in dispatches, earn a +1.

Junior officers (captains and below) could earn the Military Cross (+2). At first they couldn't use the initials "M.C." after their name, but later in the war they could. The enlisted version was the Military Medal. Aviators received the Distinguished Flying Cross or Medal, instead. The naval equivalents were the Distinguished Service Cross, available to commanders down to warrant officers, and Distinguished Service Medal.

Ranks below army captain rarely received the Distinguished Service Order (+3). The Distinguished Conduct Medal was the enlisted equivalent.

The highest award was the Victoria Cross (+4), until 1942 cast from the bronze of cannons captured in the Crimean War.

The brass wound badge (+0) was worn on the lower sleeve.

Multiple decorations usually were represented by silver bars across the ribbon.

Standard Units

The standard British section included a corporal and eight men, armed with a Bren LMG and rifles. The platoon included three sections, and a headquarters element with a 2" mortar (armed only with smoke rounds as the war began) and a Boys antitank rifle.

A company included three platoons and a headquarters element with a 3" mortar. The battalion included headquarters, four infantry companies, a mortar platoon with two 3" tubes, a signal platoon, a motorized antiaircraft platoon, an engineer troop, an administrative platoon, and a carrier platoon of 10 armored personnel carriers. The carrier unit allowed a battalion commander to transform one infantry company into mechanized infantry, capable of crossing ground under fire.

Standard Armored Units

The standard armor squadron included four troops of three or four medium tanks each, and a headquarters of four medium tanks, or two mediums and two close-support tanks armed with larger-caliber but very short-barreled cannons.

The regiment included three squadrons and a four-tank headquarters. The headquarters often held four self-propelled antiaircraft guns, in addition. Often, the squadrons would be of mixed types (perhaps U.S.-made Grants in one and home-built Crusaders in two of them).

Standard Artillery Units

British field artillery was for the most part organized along typical lines, integrated into infantry and armor units. The armored units usually had self-propelled pieces, almost all of which were U.S.-built. The British also maintained independent artillery regiments, up to superheavy (only 10 guns per regiment) in size.

British artillery techniques were simple and fairly effective, fitting well with their overall strategy of accumulating decisive materials. Forward observers accompanied leading units into combat, and most artillery strikes had to be called through the forward observer or a higher command element especially assigned to the job. The forward observer was equipped with an excellent but simple grid map, for which all the artillery commanders in the area were supposed to have a matching copy.

The local artillery network usually had a good, radio-based communications system, so when the forward observer called in a mission, many of the guns within range could be included in the strike. They simply aimed their guns at the point on the grid map to which the forward observer referred them. Since this simple, flat-plane equation ignored many factors that greatly affected accuracy – weather, barrel wear, the curvature of the Earth – none of the rounds would be quite on target. But, since most artillery missions are designed to spread the shells around a wide area, this built-in error acted as a dispersal pattern.

The system allowed for rapid, reasonably accurate response to a forward observer's call – usually within two minutes historically, though the ***GURPS*** mechanics will allow for quicker follow-through. The British were willing to fire quite close to friendly troops, reasoning that losing a few men to their own shells still saved men from the unsuppressed enemy.

Operations and Tactics

The British military in general preferred methodical, well-planned operations to hasty improvisation. Most officers would gladly sacrifice the temporary openings offered in combat to bypass the risks of a bad decision. They much preferred to carefully build up a surplus in weapons and fuel (though not necessarily men, since Tommies had built a long history of defeating numerically superior forces that appealed to the British self-esteem). They would then attack in careful, methodical fashion, moving inexorably forward and minimizing the haphazard elements of combat.

Later in the war, this philosophy did not appeal to their U.S. allies, who came to criticize Gen. Montgomery in particular for letting opportunities slip by him. Most analysis agrees

that the British sometimes were too careful in their execution. The Germans often outmanuevered them by constantly reacting to changes in local conditions, exploiting every opening ruthlessly. The Japanese took advantage of their predictability by taking risks the British themselves would not take, then zeroing in on where they knew the British units would be.

Though the British often had to flee the battlefield early in the war, they never routed across their front. This too, could be attributed to their careful, Fabian ways. A methodical army that emphasizes planning was hard to overwhelm, even at the long odds the British often faced during the early years.

The general philosophy might also help explain the British passion for commando operations (see below and p. 80), given that many junior and field officers must have itched for greater local control and responsibility to make decisions.

As the war progressed, British units began to show more independence, partly in response to U.S. criticism and leadership, and partly in response to their own track record.

Tactically, small units were expected to display this same methodical professionalism. Squads and platoons were taught how to fire and move, and most battalions included a few carriers to enhance this, but overall doctrine stressed limited objectives, advancing closely behind scheduled artillery fire, and well-protected flanks, all hallmarks of the Great War.

Special Units

These are some of the units that served special purposes and received special training.

Chindits

The 77th Indian Infantry Brigade of mixed British, Gurkha, and Burmese troops specialized in piercing deep behind Japanese lines in Burma. Its commander, Maj. Gen. Orde Wingate, had led the Gideon Force guerrillas in Ethiopia in 1940, using techniques he learned from Jewish rebels in Palestine. Each roughly battalion-sized column had integral support troops, including (perhaps most importantly) air-liaison troops to arrange crucial drops of supplies. The Chindits operated in 1943 and 1944 and included one Commando, the 142nd. They were the first unit to defeat the Japanese in the jungle.

Commandos

After agitation from several quarters during the general lull of 1939, the British formally formed commando units in June 1940. A commando included six 60-man troops and support totaling 464 volunteers. They primarily trained in Scotland, though often not for long before entering action. Commandos served in all British theaters.

Long Range Desert Group

Created a month after the Commandos, the Long Range Desert Group specialized in expert orienteering and desert survival, in order to scout behind Rommel's lines. Maj. Ralph Banold recruited mostly New Zealanders for his initially 87-man force, later expanded to 349. The LRDG also conducted courier missions and raids, but primarily sought to stay invisible. When the SAS used them as transport in 1941-42, the LRDG troops disliked what they saw as the SAS troops' tendency to start fights that distracted from the overall mission.

Special Air Service

Organized by Col. David Stirling in the African campaign, these troops took extreme risks in operating behind enemy lines, living by their motto of "Who Dares, Wins." The SAS – at one point jokingly called "Stirling And Stirling" when the colonel commanded one regiment and his brother another – leaned considerably toward flashy missions that drummed up support for increasing the unit's resources. The public relations worked – by the end of the war, the SAS had grown to a 2,500-man brigade, and it survived the postwar cuts that dismantled the LRDG and other special units.

The Jewish Brigade

This 5,500-man unit of the British Eighth Army had a special operation in mind, but the British did not know it. Consisting mostly of volunteers from Palestine, it fought in Italy in 1945. When the war ended, the brigade broke into small units that rescued Jewish survivors and hunted down Nazi officials for revenge.

Intelligence

In Britain's Secret Intelligence Service, Military Intelligence Department 5 (MI-5) conducted counterintelligence in general, and was particularly effective in rounding up Germany's often poorly handled spies. MI-5's Twenty Committee then turned most of them around to feed disinformation back to the Nazis. Scotland Yard's Special Branch assisted MI5 with police skills, and by providing a public face for its work.

MI-6 conducted espionage abroad. Under Sir Stewart Menzies it was very much an "old boy's club" of patricians in public service, some of them secret Communist sympathizers, but no less effective against the Nazis for that.

In July 1940, the Special Operations Executive was created to foster and lead resistance fighters in Europe. Primarily a military operation, it also effectively served as a main point of contact between the British government and exiled leadership. The SOE and MI-6 often clashed – their missions were too similar and their cultures far too different. This resulted in an intramural rivalry that sometimes resulted in decisions placing the service's best interests over the nation's.

British intelligence had an operational Achilles' heel in its routine radio codes, which were relatively easy to break, but MI-8 deciphered far more radio intelligence from the Germans than the Gestapo did from the British. Far and away the most important signals-intelligence program of the war was Ultra, a team of mathematicians and cryptographers based in Bletchley Park. They translated the German's Enigma codes, which the Germans thought were unbreakable. The Special Liaisons Unit conducted operations that concealed Ultra's existence – including not passing on information that would have saved Allied lives – in order to keep the Germans from improving or abandoning Enigma, thus rendering Ultra obsolete.

MI-9 helped POWs, and aviators that were shot down but not yet captured, return to England from occupied Europe.

THE UNITED STATES

As the war began in 1939, the United States possessed a first-rate Navy, a small and outdated Army, a smaller but solid Marine Corps, and an Air Force that showed promise, if only on paper. All arms made rapid progress before the U.S. entry into the war; however, the Germans and Japanese would still manhandle U.S. forces in the first battles of 1942.

These lessons were learned, then improved upon, as the U.S. forces continued to fight and expand at a rate that experts would have deemed impossible. By 1945, this historic mobilization left the United States with a military second only to the Soviets in effective numbers and to no one in quality.

Entry and Basic Training

Despite the large numbers of volunteers who signed up after the bombing of Pearl Harbor, the U.S. military depended on conscription to fill its personnel needs. Entry standards varied widely depending on the local draft board. Some diligently weeded out those with physical ailments, while others liberally erred on the side of filling quotas. Few induction officials looked for mental illness, and fewer still identified it, so U.S. forces sometimes included men who would have been found too unstable to serve in other countries.

U.S. inductees underwent some of the more brutal basic training of the war, particularly those entering the Marines. Drill sergeants enjoyed near-absolute authority, and kept up a nonstop stream of verbal, emotional, and physical abuse. This promoted team-building, and prepared men who had not all experienced armed conflict for the combat that they would soon endure.

Service Culture

The U.S. military was free-thinking and free-wheeling in comparison to rival armed forces. Relatively few officers received promotion based upon their civilian status or contacts, and able men of any social stripe soon found themselves advanced in rank or grade. The high command encouraged innovation and offensively oriented, individualized leadership. Results counted, methodology often remained open to debate, and the commander who took high casualties with less-than-prudent aggression received more sympathy than the commander who conserved his men and let enemy forces slip away.

This relative independence decreased in the lower ranks, and ended rather abruptly at the enlisted grades. Training, feeding, arming, moving, and burying a historic number of men, the Army in particular developed a no-nonsense attitude toward the rank and file. The enlisted were treated as so many interchangeable components, like the rifles they carried, and most of them found the culture unbearably bureaucratic and rigid.

This attitude would end up costing a good deal in combat effectiveness. The Army maintained replacement personnel behind the lines, and simply plugged them individually into units still fighting. Engaged in the ultimate team activity, the veterans in those units did not trust the newcomers, nor always have the emotional energy to nurture them. The untutored and alienated replacements often became early physical or stress casualties. The veteran core of the unit, meanwhile, kept getting whittled down, with the few survivors enduring ever-increasing emotional stress.

Other armies pulled depleted units out of the line, inserted replacements in already established groups, gave the restored unit a period to get acquainted, and avoided a significant amount of trauma and bloodshed.

Commendations

The numbers are Reputation bonuses; see p. 63.

Multiple Commendation Ribbons or Air Medals, or a single Bronze Star or Distinguished Flying Cross, earned a +1. A Silver Star or Legion of Merit was +2. A Distinguished Service Cross was +3.

The Medal of Honor (+4) was awarded posthumously in more than 40% of cases. In a salute, the lower rank normally initiates it and the higher rank responds, but all U.S. soldiers were expected to initiate the salute with a Medal of Honor winner, regardless of respective ranks.

In practice, higher-ranking officers received a lesser Reputation bonus, because they received medals for less life-threatening work. Reduce the bonus by 1 at Military Rank 5+.

The Purple Heart (+0) was awarded for combat wounds.

Army units could receive the distinguished unit citation or meritorious unit citation, while Navy units could receive the Navy unit commendation or presidential unit citation (all +1 for unit members).

Standard Units

The standard U.S. infantry squad included 12 men and one Browning Automatic Rifle, a weapon which did not match the firepower of true LMGs. U.S. squads often scrounged up extra BARs to compensate. Regardless, the riflemens' semiautomatic M-1 Garand rifle provided a great deal more firepower than their opponents' bolt-action rifles, so even a one-BAR U.S. squad enjoyed superior firepower as a whole.

In a standard one-BAR squad, one man served the BAR with two riflemen assigned to him as ammo carriers; the rest of the squad included four men in a rifle team, two men serving as scouts, a marksman/sniper, the squad leader, and an assistant squad leader. The sniper carried an unscoped Springfield bolt-action rifle and the squad leader often carried a Thompson SMG; the other nine riflemen carried Garands. The U.S. Army tended to inflate its enlisted pay grades, so by the end of the war staff sergeants were leading squads with sergeants as assistants.

A platoon held three infantry squads and a headquarters.

The roughly 193-man company consisted of three infantry platoons, a heavy weapons platoon with two MMGs, an antiaircraft .50-caliber HMG, three 2.36" bazookas, three 60mm mortars, and a headquarters. An 871-man battalion included headquarters, three infantry companies, and eight .30-caliber water-cooled MMGs and six 81mm mortars in a heavy weapons company, which also included seven bazookas and three .50-caliber HMGs in 1943.

The regiment included three infantry battalions, a battery of six 75mm and two 105mm self-propelled guns (changed to six towed 105mm howitzers in 1943), an antitank company of 12 37mm guns (later upgraded to 57mm pieces), headquarters, and services.

A division included three infantry regiments totaling 9,354 men, headquarters, a military police platoon, maintenance and quartermasters companies, a signal company, a 58-man division band, a medical battalion, an engineer battalion, a reconnaissance troop, and a 2,160-man artillery regiment of three light artillery battalions (each with three batteries of four 105mms) and one medium battalion (with three batteries of four 155mms). Total strength was 14,253 before adding the one (sometimes more) tank battalion, one tank-destroyer battalion, and other support units often attached to the division, as well as air assets attached to the artillery regiment.

Armored infantry squads usually included 11: a squad leader, eight riflemen, the halftrack driver, and a two-man MG team who manned the carrier's weapon or dismounted it to support the squad on foot.

Standard Armored Units

The U.S. Army deployed tanks in platoons of five. Companies usually included three platoons, with two tanks as headquarters. Later, a third tank fitted with a short howitzer of larger caliber was added to HQ.

A 729-man battalion included three medium tank companies, one light tank company, services, and headquarters.

The light armored division that did the most fighting included three tank battalions; three 1,001-man mechanized infantry battalions, each with three rifle companies, services, and headquarters; three self-propelled artillery battalions, each with 18 105mm cannons; a division band; a signal company; an engineer battalion; a reconnaissance squadron; support; and five command structures – one for artillery, one for support, and three for combat. The fighting units shuffled between the combat commands as circumstances dictated. As with infantry divisions, U.S. tank divisions usually had attached independent battalions, such as tank destroyers or antiaircraft guns.

One reason that divisions always seemed to have tank destroyers attached is that the U.S. Army had a lot of them, with no very good use for them. Prewar planners had decided that tank destroyers – built just like a tank, but with much thinner armor and an open-topped turret – would provide a fast, cost-effective countermeasure to the panzers racing across Europe at the time. By the time that the Army found out that they were wrong – armor *wasn't* the place to trim weight on a fighting vehicle – the units already had landed in a combat theater.

These independent TD battalions usually had a headquarters; a reconnaissance company with scouts and engineers mounted in jeeps and halftracks; and three TD companies, each with 12 TDs and four armored cars. They often led perilous lives. Attached to a higher command, they usually ended up at the point of attack (after all, they weren't the commanding officer's own men) performing duties better left to tanks (after all, to the commanding officer they *looked* like tanks).

The Army abandoned the TD concept after the war.

Standard Artillery Units

U.S. artillery was organized along standard lines, except that Army units usually had more guns than their contemporaries, and more of those were self-propelled. (Neither case held true for the Marines.) This gave Army units a pronounced advantage in artillery, but their dominance only began there. The expertise with which the weapons were handled provided an even more decisive edge.

The Marines

The Marines organized themselves far differently than the Army. After several evolutions, the standard Marine squad included 13 men: a carbine-carrying sergeant as squad leader and three four-man fire teams. A corporal led each fire team, which also included a BAR man, a carbine-carrying assistant gunner, and a rifleman.

A platoon had a six-man headquarters and three squads. The 242-man company had three platoons, a 56-man MG platoon with 14 MMGs and HMGs, a 20-man mortar section with three 60mm tubes, and headquarters. A battalion possessed three infantry companies, a 58-man mortar platoon with 12 81mm tubes, headquarters, and a 55-man assault platoon. The assault platoon specialized in tackling strongpoints such as bunkers. It contained three sections of two seven-man squads. Each squad had a leader, two-man flamethrower team, two-man bazooka team, and two demolition men.

A 3,412-man regiment had three infantry battalions, two antitank platoons with 37mm guns, a platoon of self-propelled 105mm guns, headquarters, and services.

The Army precalculated the firing data for its weapons, factoring in just about every possible variable of weather, elevation, barrel wear, etc. This data was first combined into books full of tables, then converted to a special calculator that functioned much like a slide rule, and basically served as a nonelectronic dedicated targeting computer.

Any front-line U.S. soldier with a good map and radio could be walked through calling in an artillery strike, if the need was urgent. Aerial spotting was frequently available, too. Their special tools allowed U.S. artillerymen to calculate trajectories in as little as 5% of the standard time. Well-aimed shells could start landing in about three minutes. Furthermore, the U.S. forces often had excellent communications, lots of guns, and good ammo reserves. So *lots* of shells arrived in that interval.

Even nastier, against a target expected to sit still for a while, the U.S. artillery commanders would contact every battery within range and call for a time-on-target strike in 15 to 20 minutes. All those batteries would perform their firing calculations, then subtract their own shells' flight time from the requested time on target to determine when to fire. Thus, without warning, an astonishing amount of high explosive would arrive at the target simultaneously, before anyone had chance to take cover.

The Germans felt that U.S. artillery practices amounted to cheating. Patton credited the artillerymen with winning the war.

Operations and Tactics

U.S. forces believed in aggressive, fluid warfare. Armor was expected to make deep penetrations, the rest of the Army to keep up. This worked where blitzkrieg had become outdated because the whole U.S. Army was extremely mobile, allowing it to concentrate overwhelming force at points of attack.

The Army did not entirely trust its tactical commanders, so companies and smaller units rarely maneuvered to flank opposition. When they did, G.I.s sometimes switched the basic squad roles. Since their pseudo-LMG fired so slowly, and their rifles so rapidly, the riflemen could provide the cover fire while the BAR team maneuvered to flank the enemy. Squads suffered tactically because the Army trained squad leaders to be up front with the two scouts. When opponents opened fire, though, they often pinned him down, keeping him from leading his men.

Patton also used walking fire. His infantry would form a skirmish line, backed up by armor and self-propelled guns, and walk forward, firing at every possible hiding place, leaving a trail of brass. If executed well, the sheer volume of fire suppressed defenders, allowing rapid advance at a huge cost in ordnance. If executed poorly, casualties could be prohibitive.

Special Units

These two units, formed in 1942, served special purposes and received special training.

Rangers

Inspired by the British commandos, the Army formed six 489-man battalions of these troops. Each battalion had six 68-man companies, with two 32-man platoons in each company.

The Rangers enjoyed good training, but the high command did not always understand the commando concept of hitting quick and hard, then getting out just as quickly. They often used the Rangers as elite standard infantry, instead. That role required heavier arms than the commando missions, requiring the Rangers to compromise in their choice of weapons, and leaving them not ideally equipped for either role.

Thrust into the line at Anzio, three Ranger battalions suffered severe enough casualties that they were disbanded. The other three fought out the war in both U.S. theaters.

Raiders

The Marine answer to the commandos, these four battalions of 700 to 950 men improved upon the already high U.S.M.C. combat-training standards. Striking out across the Pacific campaigns, they conducted quick raids (sometimes arriving via submarine), penetrated deep behind enemy lines for lengthy intervals, and prepared islands for amphibious assaults by landing on difficult shorelines.

Intelligence

The Federal Bureau of Investigation performed counterintelligence in the United States, and caught several German spies. They failed to counter Soviet espionage in the atomic-bomb program, as did Army intelligence. Under the severe direction of J. Edgar Hoover, the FBI maintained a buttoned-down, clean-cut, bureaucratic image, as it does today.

Created in 1942, the Office of Strategic Services conducted paramilitary-intelligence operations abroad, often in conjunction with the SOE (p. 41) and local resistance fighters (p. 85). Under "Wild" Bill Donovan, the OSS was filled with Ivy League graduates brimming with enthusiasm and ideas. They worked hard to earn their cowboy image, funding and leading scores of behind-the-lines operations. Quietly, the research and analysis departments probably did even more important work.

THE SOVIET UNION

When the Germans invaded their homeland, the Soviets possessed a huge army, eclipsing any other on Earth. After the disastrous results of the Winter War (p. 13), they had even begun modernizing it – improving troop training, abandoning unworkable armor concepts, and improving organization.

Unfortunately, a great deal of work remained to be done when the Wehrmacht's invasion thrust these troops and equipment into action. Despite casualties that would make the Winter War pale in comparison – and geographic losses that would require dismantling entire industries and relocating them east on minimal rail networks and bad roads – the Soviets would do an impressive job of regrouping on the fly, absorbing a huge number of men into their armed forces, and fabricating a competent if still crude juggernaut.

By the end of the war, the Soviets had the largest army left standing, much of it battle-hardened, but the effort had drained the population to its limits. Of those Soviet men born in 1923, only some 20% lived to see 1946.

Basic Training

Soviet basic training was harsh, though the average Russian recruit might not have found it as shocking in comparison to his civilian lifestyle as did the average U.S. trainee.

Some of it taught outdated, WWI-era tactics: charging in a line, elbow to elbow, and similar maneuvers that more sophisticated forces had abandoned. The bayonet was highly stressed, not just as a method to improve the "killing psychology" of troops (as in most U.S. training), but as a viable weapon. Throughout the war, the Red Army constantly updated this training toward the tactics of the time, but never quite met the standards of other major combatants.

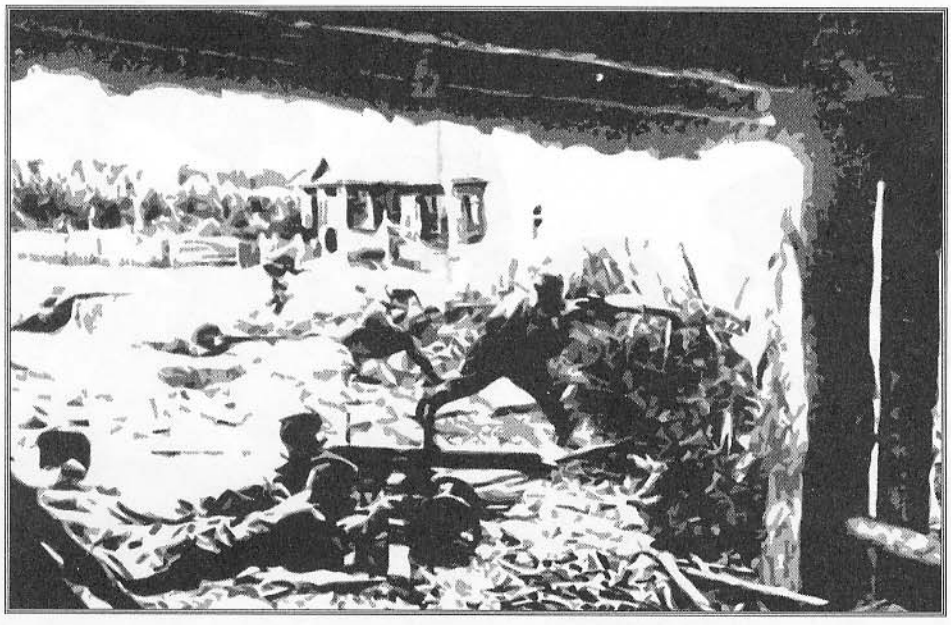
The outdated content caused many Soviet soldiers to leave training without important skills. Amplifying the problem was an early shortage of weaponry – rifles for trainees made little sense if the men already on the lines had none. Some Soviet conscripts performed all of their training with mock rifles and grenades.

The Soviets quickly blooded new units. Soon after training, they would insert the men into some relatively static lines (often in front of Moscow), then quickly pull them back out. This accomplished two worthy goals: It got the new soldiers over the initial shock of combat before asking them to do anything more strenuous than sit through it, and it confused the Germans as to which units were where.

Service Culture

The Communists distrusted officers as a social class, so when the war began, the Red Army featured a weak officer corps and a strong system of political commissars. The officers wielded relatively little authority, and had to yield to the commissars on many issues. An earnest charge of non-Communist behavior, from enlisted man or commissar, could ruin an officer's career, even if no evidence supported it.

As the war progressed, the failings of this system became clear. Stalin invested officers with more authority, commissars with less. Reflecting this, Red Army officers' uniforms, which began the war as drab and utilitarian as the enlisted versions, became increasingly more decorated during the fighting. (The Soviets amazed the western Allies by listing gold braid among their most crucial war imports – but the Red Army was trying to instantly offset years of its own precedents in regards to officers' command authority.)



Soviet enlisted men were treated like the serfs that many of their grandfathers had been. Either an officer or commissar was driving them, usually without a hint of human consideration, or no one was looking out for their interests, leaving the Germans to overrun them. Their basic allotment of clothing and food was minimal, and even that often went missing. Few officers thought twice before dispatching them on suicidal missions. (This pitiless attitude to a large degree mirrored the way in which Stalin's government treated its civilians. Many non-Russian Soviets looked upon the invading Germans as saviors – until the Nazi's programs began exceeding the Communists' cruelty. Even then, some minority groups preferred the devil from the west over the devil they knew.)

Commendations

The numbers are Reputation bonuses; see p. 63.

The Soviets issued millions of Combat Service Medals, Medals of Valour, and Orders of the Red Star (all +1). The Order of the Red Banner and Order of the Patriotic War, Second Class (both +2) were slightly rarer; much more rare was the First Class version of the latter (+3).

The highest honor was the Hero of the Soviet Union (+4). The Order of Lenin was attached if won again, and a bust of the recipient erected in his hometown. A bronze bust was placed in the Kremlin's Palace of the Soviets upon a third award.

Exceptional regiments or larger units were designated guards units (+1 to all members). Guards enjoyed somewhat better weaponry and doubled pay.

Standard Units

The standard Russian infantry squad included nine men and one or two DP LMGs. A platoon included four infantry squads, two snipers, and a headquarters.

The company consisted of three platoons, a medical squad, and a headquarters with two 50mm mortars and one (or two in Guards units) MMGs. A battalion included three infantry companies, an MG company with nine MMGs, a mortar company with nine 82mm mortars, an antitank platoon with two 57mm guns, a medical platoon with one doctor and three orderlies using a horse-drawn ambulance, and a horse-drawn supply platoon.

The regiment included three infantry battalions, a battery of four 76mm howitzers, a battery of six truck-drawn 120mm mortars, two antitank companies, a small engineer platoon that specialized in laying and removing mines, a horse-mounted reconnaissance platoon, an infantry scout platoon, a gas-defense platoon, an NKVD (secret police) squad, a political staff headed by the executive officer (a major), headquarters, and support staff.

A division included three infantry regiments; an artillery regiment with four 152mm, eight 122mm, and four 76mm guns; an antitank battalion with 18 45mm guns; an antitank battalion with eight 37mm and four 76mm guns; an armored reconnaissance battalion with 10 armored cars and 16 light tanks; an engineer battalion; a signal battalion; a medical battalion; support; and headquarters.

Standard Armored Units

The Soviets initially deployed medium tanks in platoons of three, with lighter tanks most often in platoons of four and heavy tanks sometimes in platoons of two. Their tank companies most often included three platoons (sometimes just two), with one tank as headquarters. The tendency toward smaller formations reflected that many early Soviet tanks lacked radios – tank commanders had to communicate via signal flags (see p. 131). Even giving basic orders could be quite challenging in the middle of combat!

A 130-man tank battalion usually included three tank companies, a motorized rifle company, support, and headquarters. Alternately, the infantry company was armed with submachine guns and rode on the tanks. This provided the armor with good protection against close assault by German infantry, but the SMG troops lived very hard lives.

The standard regiment included three tank battalions (often of mixed type, such as one heavy and two medium) and support. The Soviets discarded armored divisions in 1941, instead building up brigades straight into a modest corps level of organization, often not much more powerful than a German armored division in practice.

Standard Artillery Units

Soviet infantry and armor units incorporated a roughly average number of guns, but the army overall fielded a high proportion of independent and very large artillery units, up to corps size. Mortars and rockets played a larger role than in other armies, as well.

Soviet artillery's ability to respond to mission requests from forward observers probably was less than that of

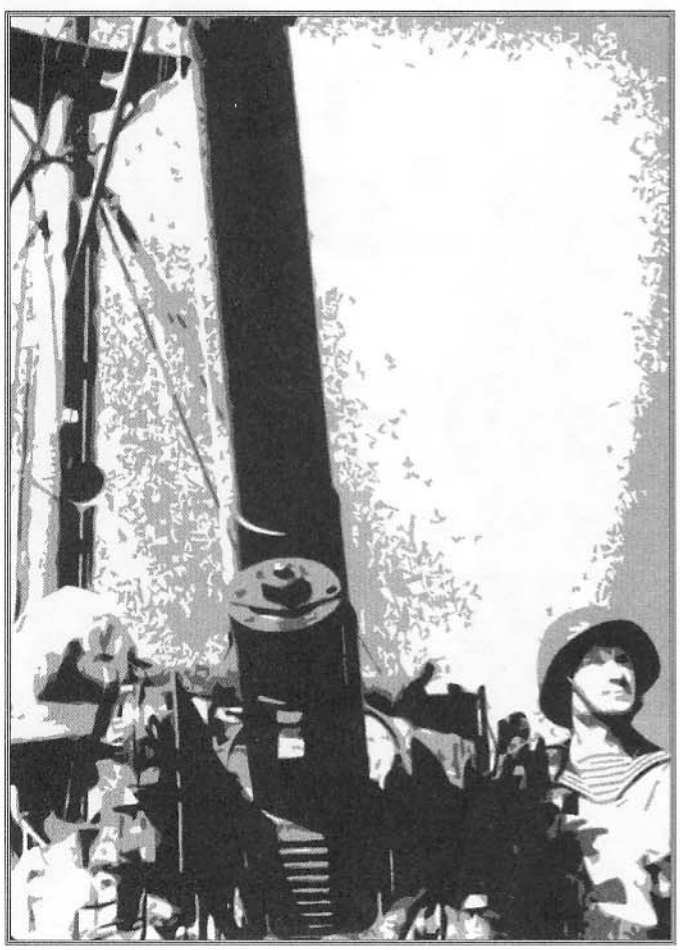
Germany or the western Allies. The Soviets were most comfortable with the WWI tactics of massive, preplanned artillery fire, packing up to 500 guns behind every mile of front to be attacked. The guns then opened the assault with a barrage that made up for any lack of precision with its sheer volume. This explosive line of destruction could be moved forward in a "rolling" barrage, usually about 200 yards in front of the attacking troops and moving at the pace of a slow walk. Alternately, the guns would open up "lanes" in this wall of fire through which Soviet troops would advance.

Once the infantry and armor attacked, and made any gains, the artillery sometimes could not keep up, given its frequent transport shortages. Sometimes this wasn't too great of a factor, because the guns had used up their ammo, anyway.

Operations and Tactics

Much as described for their artillery, overall Soviet operations still held traces of their Great War roots. Central control and lengthy preplanning characterized their operations, with a resulting lack of flexibility in execution. This basically stemmed from bad communications and less-than-perfect trust of junior commanders' initiative.

Bad communications sometimes improved initiative when they collapsed altogether. The countless units cut off in 1941's rout often surrendered, but some displayed a dogged wiliness that oversight might have stifled. The heroic defense of Stalingrad owed less to staff brilliance than to the unfettered cunning of corporals and captains left to take charge in the rubble.



Tactically, Soviet units tended toward extremes. When under observed fire, men often were ordered forward in waves, charging with the idea that sheer numbers would carry the objective despite the high casualties resulting from this tactic. When unobserved, Soviet small units displayed great skill at infiltrating German positions, often crawling quite close to their positions at night in groups as small as two soldiers.

Both the wave and the infiltration tactics were meant to get Soviet troops up close to their opponents. The Red Army believed the Germans did not like close-quarters fighting, preferring to set up at a distance and let their LMGs do the work.

Soviet infantry often displayed superior defensive tactics. When possible, they took up positions in woods or marshes, where armor could not reach them and preliminary bombardment only made the going tougher for attackers. They dug well-protected positions with overhead cover, and cut themselves fields of fire only through the *bottom* of surrounding foliage, so that the work wouldn't pinpoint their positions from the air.

Special Units

While the Soviets deployed many resistance fighters and paratroops, commando-style special units were not common. See p. 80 for further discussion. The intelligence units described below often approached their work in commando style.

Intelligence

The People's Commissariat of Internal Affairs (or NKVD by its Russian initials) controlled state security (the GUGB bureau), the internal troops who put down riots and uprisings and guarded the borders (the GUPV and other bureaus), the militia who performed routine police duties (the GUM bureau), criminal investigations, and the guards at prisons (the GULAG bureau). Lavrentii Beria led the NKVD, wielding enormous power inside the Soviet Union.

The GUGB conducted counterespionage (its UK bureau), intelligence (its UR bureau), and secret-police work (its USP bureau). Beria deputy V.N. Merkulov led it. In 1943, it reverted to its prewar name, the NKGB.

Under GUPV control, "special forces" battalions moved into newly taken lands and ensured the quick transition of power by arresting or killing those who threatened Soviet interests. "Destroyer battalions" patrolled the Soviet rear to eliminate any German agents and gauge local patriotism. Massive relocations of vast, suspect populations were not uncommon.

The NKVD also fielded some pure military units.

SMERSH ("death to spies") units conducted vigorous "self"-policing of the armed forces. Though ostensibly military units, NKVD transfers filled their ranks. A SMERSH unit first investigated Hitler's death, and concluded that the Führer's underlings used poison to kill him. A later NKVD investigation provided the now-accepted conclusion of suicide. Some analysts believe the SMERSH men got it right the first time.

During the war, Soviet spies were nearly as widespread and pervasive as their foes alleged. Major rings penetrated into Germany and Japan's leadership. Lesser penetrations into U.S. and British command also provided valuable data. No other combatant enjoyed as many "human intelligence" resources.

GERMANY

The Germans began the war with a large and unparalleled army, a combat-tested air force, and a navy that was growing but unprepared to challenge its first-rate rivals. As impressive as these were, they represented a significant percentage of Germany's full war potential. The Soviets and western democracies had barely scratched the surface of theirs.

Racing against this mobilization clock, Hitler badly overextended his forces. The resulting backlash slowly eroded the Wehrmacht's quality and numbers, though the troops gave way only grudgingly. By the end, most of them had died in Hitler's thoroughly discredited cause.

Basic Training

The Germans used conscription, in effect beginning in childhood. Nazi youth programs kept many boys physically active. Compulsory labor-corps service then taught them the rudiments of military organization. By the time they entered the military proper, much "basic" training already had transpired.

Training was efficient and thorough, and less brutal than in many nations. Many conscripts did not lower their standard of living moving from civilian to military life. Group expectations replaced fear to a significant degree as a primary motivation. The secret staffs of the interwar years had radically reformed the traditionally severe Prussian techniques.

Service Culture

Clashing philosophies tugged at Wehrmacht service culture – those of the regular army and those of the Nazi party.

Like most major combatants, the Wehrmacht secret staffs had turned to psychology to improve their forces before the war. Unlike their counterparts, those staffs could not pay military psychologists to form theories approving of their preferred methods; they instead had to form methods around prevailing theories. This led them to develop very advanced policies on handling troops. They decreased punitive measures and replaced them with increased "comradeship" and unit bonding. NCO and officer candidates were selected for their potential to show initiative and build teams, rather than to whip unwilling enlisted men into shape.

Nazi officials also held authority over Wehrmacht personnel. Initially, their handling did not conflict too much with internal practice, but as the war grew more grim, the Nazi approach became increasingly strident and high-handed. Political officials began treating regular troops with open contempt, and employing frequent threats of death.

Though the overall service atmosphere became increasingly bleak, within regular units the old, almost familial bonds rarely disintegrated – contributing significantly to the defense of the Fatherland past all hope.

Commendations

The numbers are Reputation bonuses; see p. 63.

Multiple War Service Crosses (with or without swords) or Honor Roll Clasps, or a single Iron Cross of Second or First Class, was worth +1. A 1914 Iron Cross (with or without 1939 bar) or Knight's Cross is +2. A Knight's Cross with Oak Leaves (with or without Swords) is +3. A Knight's Cross with Oak Leaves, Swords, and Diamonds (with or without Gold Oak Leaves) is +4.

The German Cross is +2 to devoted Nazis, +0 to old guard Prussians (p. 81) if not worn, -2 to old guards if worn.

In addition, the Winter Defensive Campaign in the East (or "Frozen Meat") Medal (for any survivor of the 1941-42 winter in Russia), a gold Tank Destruction Badge (for five or more tanks destroyed with infantry weapons), or a gilt-bordered Sniper's Badge, First Class (for 60 or more kills) earn a +1.

For wounds received, a Wound Badge (+0) was awarded in black (Third Class) for the first two, silver (Second Class) for the third or fourth, or gold (First Class) for the fifth and subsequent combat injuries.

Entire units could receive the Iron Cross, Second or First Class, regardless of individual conduct.

In general, German soldiers *highly* valued their medals, wearing them at all times, even when regulations forbade.

Standard Units

On the eve of war, the standard infantry squad included 10 men and one MG34. A platoon held three infantry squads, three two-man antitank teams with a 7.92mm Panzerbüchse 39 each, and a headquarters with a 50mm mortar. The antitank teams usually were farmed out one to a squad. Sometimes, one infantry squad would be outfitted as combat engineers (with mines and explosives) and another with SMGs. In 1943, the standard squad became nine troopers to conserve manpower. By then, squads often were carrying two MG42 LMGs with two-man crews, with the four riflemen carrying spare ammo.

The 180- to 200-man company consisted of three platoons and a headquarters with two MG34s in the MMG role. A battalion included three infantry companies, a heavy weapons company of eight MMGs and six 81mm mortars, and headquarters.

The regiment included three infantry battalions, a battery of six 75mm and two 105mm howitzers, an antitank company of 12 37mm cannons, and headquarters. Each regiment numbered its companies 1 through 14, with the heavy weapons companies being 4, 8, and 12; the battery 13; and the antitank company 14.

A division included three infantry regiments, an artillery regiment of 48 105mm and 155mm howitzers, a reconnaissance battalion, an antitank battalion with 37mm guns, an engineer battalion, a signal battalion, services, and headquarters.

Armored Units

The Germans deployed medium tanks in platoons of five and heavy tanks in platoons of four. Early companies usually included four platoons, with two tanks as headquarters; late-war companies held three platoons.

An armored battalion held three tank companies, support, and headquarters, sometimes with an attached company of assault guns (essentially, turretless tanks) later in the war. A regiment held two tank battalions, an antiaircraft platoon, support, and headquarters.

A late-war division held one tank regiment, two panzergrenadier regiments, an artillery regiment with 24 105mm and 18 15cm guns of mixed self-propelled and towed design, an antiaircraft battalion of 18 20mm and eight 88mm guns, an antitank battalion of 12 75mm guns and 31 tank destroyers, a mechanized engineer battalion, a reconnaissance battalion, a signal battalion, services, and headquarters. Earlier divisions possessed a higher concentration of armor, but by the invasion of Russia the Wehrmacht had diluted its armored division to create more of them from a relatively small pool of tanks.

German tank design always exceeded this limited production. Early in the war, a company often would possess one platoon of the latest Panzer IIIs with all other platoons being Panzer IIs and Is. Later, a battalion or regiment of Panzer IVs might include a company or battalion of Panthers or Tigers. The most common panzer in the field was never the most advanced panzer in production at that time.

Artillery Units

German units often did not possess their TO/E allotment of artillery. Horses transported most guns throughout the war, with self-propelled pieces rarely found outside panzer units.

The Wehrmacht employed ammunition-conserving tactics with its artillery. Surveying crews assisted highly trained forward observers in precisely pre-registering fire points. These usually were landmarks – a building, a hilltop, a particularly noticeable tree. Once these landmarks were registered, artillery units within the forward observer's chain of command could deliver accurate fire on top of them within two minutes historically.

For targets near a registered point, fire orders would use the nearby point as a reference for adjusting the guns' aim, historically adding about a minute to response time. For targets not near a pre-registered point, fire had to be walked toward the target and adjusted , taking a great deal more time. See p. 202 for game rules.

All combatants used this technique when they had the time and highly trained personnel to pre-register fire. The Germans simply provided more personnel and training to use it more thoroughly and with less preparation time.

SS Units

The Nazi party fielded its own military units, the Waffen-SS, which owed their loyalty to the party. Technically, regular army units owed their loyalty to the state – *not* the Nazis – though obviously this distinction could be hard to draw.

Initially, the handful of SS units consisted of infantry of dubious quality. The number and size of SS units expanded during the war, and incorporated armor units, so that by the end the SS included almost all the best armor units. These SS formations employed a different ranking system than regular Wehrmacht units, and late in the war usually wielded more and better arms. ***GURPS WWII: Iron Cross*** will describe them.

Operations and Tactics

The Germans' early operations hinged upon their famous Blitzkrieg (see p. 16) tactics, using a highly mobile force to cut off segments of an opponent's forces. Blitzkrieg slowly fell out of favor as Germany's foes became more adept at countering it and pressed the Wehrmacht onto the defensive. That defensive fighting was well-conducted using the "hedgehog" principle of isolated strongpoints that did not form a continuous line, but supported one another through firepower.

Tactically, German infantry *did* like to rely upon its superior LMGs, a preference which the Soviets interpreted as an aversion to close-quarters fighting. Allied troops also noticed that they chattered among themselves quite frequently – a habit that reinforced morale among squad members, even if it did reduce stealthiness.

Though Hitler often refused to let his armies budge, on the smaller tactical scale the Germans were adept at firing for effect upon initial contact, then retreating before Allied forces could be grouped to respond. Often, the Germans would preregister the positions from which they retreated, and would begin dropping accurate mortar rounds on Allied troops as soon as they advanced onto the site. They would then counterattack to reclaim the ground.

Special Units

The Germans often conducted special operations using small detachments of their highly trained paratroops, the Fallschirmjägers, or SS units. Strictly specialized units included:

Brandenburger

The Abwehr (see *Intelligence*, below) fielded these troops in units that were fluent in at least one foreign language. Early in the war they posted some spectacular successes, infiltrating into enemy positions (usually via parachute) disguised in enemy uniforms to seize key installations such as bridges. Later, the SS borrowed their methodology when it inserted its infamous English-speaking units wearing U.S. uniforms during the Battle of the Bulge (see p. 33).

Intelligence

The Gestapo handled internal security and counterintelligence inside Germany and all conquered territories. Led by Heinrich Himmler, Gestapo agents in their black-leather trench coats earned a fearsome reputation for making suspect persons disappear in the night and torturing information out of prisoners. Both reputations were well-deserved – the Gestapo frequently employed hardware that had rarely seen use since the days of the Spanish Inquisition – but its agents also could handle investigations in less brutal fashion. They allowed many suspects to keep operating under surveillance, to see to whom else they might lead. Other arrests led to a relatively cordial interview and release, either because the Gestapo believed they had detained the wrong person . . . or wanted the arrestee to believe that they believed that.

The Abwehr conducted military intelligence abroad. Led by the enigmatic Admiral Wilhelm Canaris, the Abwehr retained strong old-guard sympathies. It may have collected more internal intelligence on the Nazis than external intelligence on Germany's enemies. Abwehr agents sometimes slipped information to the Allies. Canaris took part in many plots to kill Hitler. The Nazis executed him in 1945.

The Sicherheitsdienst, or SD, started out policing the Nazi party, but rapidly expanded to rival the Gestapo internally and far outshadow the Abwehr abroad. Its extraordinary leader, Reinhard Heydrich, was the most feared man in Nazi Germany. Heydrich and Canaris loathed one another. British-backed Czech agents assassinated Heydrich in 1942.

Duty or Dogma?

A key question for GMs handling German troops is how much did they personally believe in the extreme Nazi worldview. No one answer fits all men, but in general the rank-and-file soldiers supported Hitler and his policies more than may be commonly believed. The majority of them fought in a particularly savage war on the Eastern Front; the horror and hardships surrounding them served to reinforce Hitler's message that Germany faced desperate times requiring desperate measures.

The officer corps, with their better education and own morals and politics, did not all support Hitler as fervently. Recognizing this early on, the Führer made them swear loyalty to him personally, using their own ethics to bind his officers to faithful service even if his orders disgusted them, which is not to suggest that they always did.

Even some faithful Nazis recognized the sheer inhumanity of the war they waged. Many fought well but with a consuming sense of guilt, believing both that they would lose and would deserve whatever suffering followed.

JAPAN

The Japanese began the war in a remarkable state of preparedness given the resources that they had. They fielded a large army with superior battlefield discipline, good air forces in both the army and navy, and a naval force that believed it could contend with any challenger.

Even more so than with the Germans, however, the Japanese military was stretching its resources paper-thin. Much of their equipment was marginal, and fuel scarce. Worst of all, they did not possess the training regimens to replace high casualties. Faced with the overwhelming resources of the Allies, the Japanese military fielded replacement units with increasingly lower skills, though for the most part discipline remained exceptional by any western standards.

Basic Training

Japanese children began learning military basics as part of their routine schooling at 8 years old. Conscription could take place at just about any time between the ages of 17 and 40. Formal military training was efficient, built in increments such that teachings built upon previous teachings. It also featured a searing brutality, in which officers, NCOs, and even more advanced trainees routinely beat recruits and treated them as slaves. Death was a real and constant threat.

The army moved a great deal of its training to China, which remained a semiactive theater requiring a huge garrison. Trainees often experienced limited amounts of live combat as an instructional aid.

The Japanese still highly valued the blade. Bayonet training was extensive, and even Japanese SMGs and LMGs could mount a bayonet. NCOs and officers perfected their swordsmanship just as much. The highest training honors went to those who best wielded cold steel.

Service Culture

Life in the Japanese military was austere – with meager rations and extraordinary demands – but to a large extent it only reflected civilian Japanese life, in which living standards remained low and every individual was expected to subordinate himself to the Emperor's needs. The minimalist living standards under canvas still represented a lifestyle improvement for many former fishermen and farmers. Japanese culture constantly reinforced that the individual only had worth by adding value to the race.

Not all Japanese individuals accepted these strict circumstances without friction. Music, poetry, and other arts were held in high regard, even among soldiers, and these works sometimes hinted at the dissatisfactions of the artist. Others took the more extreme measure of deserting. Some wounded or killed themselves to avoid service.

The relationship between officers and enlisted men had mutated drastically prior to the war. At the turn of the century, officers were noted for their friendly fraternizing with their riflemen. By WWII, the average officer treated his subordinates viciously, often striking them with fists, canes, or swords.

Commendations

The numbers are Reputation bonuses; see p. 63.

Various minor awards include the good conduct badge, or Zenkō Shō; the good conduct certificate, or Zenkō Shōsho; the diligence badge, or Seikin Shō; and the victory medal, or Senshō Kishō (all +1).

Also available are the distinguished service medal, or Kunkō Shō (+2); the meritorious service medal, or Kunrō Shō (+3); and the exceptional service medal, or Kōrō Shō (+4).

A wound badge (+0) also brought an increase in pension.

A diploma of merit (+1) may be given to an individual or an entire unit.

Standard Units

Japanese organization varied more widely than in western units. While squads could vary from eight to 15 men, the standard squad often included 10 men: a squad leader, six riflemen, and a three-man LMG crew including two riflemen acting as ammunition carriers. Unlike western squads, the Japanese squad was not trained to maneuver the riflemen and LMG crew separately.

The usual platoon included a tiny headquarters, three infantry squads, and a 10-man *Tekidanto* squad servicing three 50mm mortars. Each three-man mortar crew included two riflemen acting as ammunition carriers. Records vary on whether these were the well-known 89 Shiki "knee mortars" consisting of a minimal tube and butt plate and no sights, or a more traditional light mortar with bipod and ranging equipment. The latter is more likely; the knee mortar probably was special-issue gear for standard rifle squads.

The usual company held three infantry platoons and headquarters. The battalion held three infantry companies and a MG company with six 7.7mm MMGs.

The 2,000- to 5,700-man regiment usually included three infantry battalions, a battery of 75mm guns, a battery of 47mm antitank guns, and headquarters. The division held three infantry regiments, a group headquarters particularly for the infantry regiments, an artillery regiment with 36 75mm guns, a reconnaissance regiment, an engineer regiment, a medical regiment, support, and headquarters.

Standard Armored Units

The Japanese fielded only three independent tank divisions during the war. More usually, tanks were attached to infantry units at a strength of 20 light and 48 medium tanks organized into a three-company battalion.

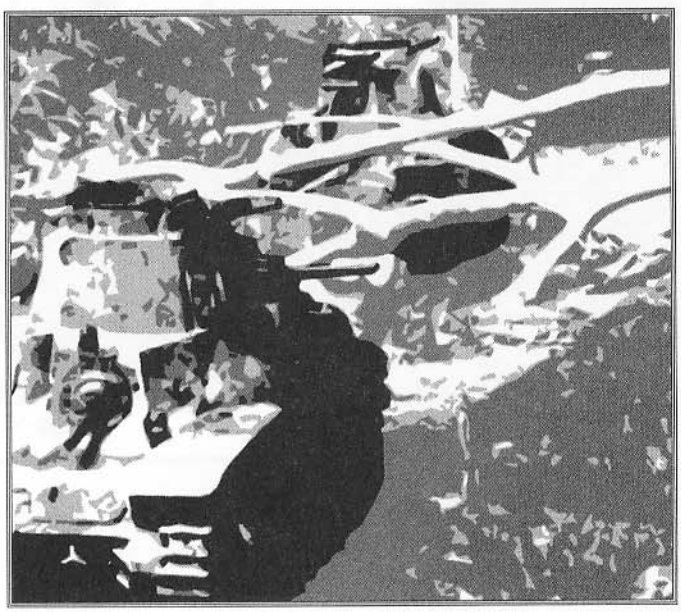
The tank division most likely consisted of three tank regiments, a motorized infantry regiment, an artillery regiment with eight 105mm and four 150mm guns, an antitank battalion with 18 47mm guns, an antiaircraft battalion with 16 20mm and four 75mm guns, an engineer battalion, a very light medical battalion, support, and headquarters.

Standard Artillery Units

The Japanese fielded artillery at low but still standard numbers within infantry and armor units, but the pieces tended to be of smaller caliber than for most armies, reflecting the realities of transporting artillery across the rugged, undeveloped terrain that made up most of Japan's conquests.

As reflected in their infantry organizations, the Japanese compensated for their lack of artillery "throw weight" by fielding a large number of mortars.

Overall, while individual units could employ their mortars or guns very accurately, communications were poor, so the Japanese rarely amassed a large amount of artillery fire on a single target. More frequently, one or two tubes maintained an intermittent, nagging fire that kept nerves frayed but did relatively little physical damage.



Operations and Tactics

Japanese land operations depended almost exclusively on their riflemen deployed as light infantry. Having worked its troops into a superb marching endurance, the army then minimized the load they carried into combat. The soldiers often wore field caps instead of steel helmets, carried minimal provisions (which depended too much on rice, but also included canned fish and seaweed), and rarely possessed creature comforts such as bedrolls, rain parkas, and the like.

Thus equipped, Japanese units on the offensive could execute long, sweeping movements around the enemy flank. The basic technique reflected the universal methods described on p. 38 under *Small-Unit Tactics*, but the Japanese could do it so much better that they often took Allied commanders by surprise, or exposed weaknesses that other units would not have reached.

Meanwhile, the pinning force in front of the enemy did not wait for the flankers to strike, but pressed home its attacks with unrelenting vigor.

Defensively, the Japanese initially believed in aggressive counterattack, taking the fight to the attacker rather than sitting in a foxhole waiting for him. They at first tried to throw Allied troops off their beaches, but this left the defenders exposed to decimation by naval gunfire. By 1944, they had evolved into defending the interiors of their islands from

sophisticated entrenchments, allowing the Allies to walk ashore in order to pin a large force on the island for destruction.

These defensive works could be very difficult to ferret out, because Japanese troops could be ordered to man positions that were covered and blind to their front. Firing to their sides, these positions would have their fronts safeguarded by the sideways fire of another position. Most western troops found such an arrangement too unnerving, and needed the comfort of being able to fire at attackers in front of them. Similarly, attackers tended to fixate on the space in front of them, and had a hard time recognizing fire from other angles.

An overriding weakness in all these operations was overconfidence, which stemmed from a racist perception of all opponents as weak and easily beaten. The Japanese often multiplied their casualties by underestimating the enemy.

Once defeat seemed inevitable, Japanese units almost always resorted to a headlong *banzai* charge. Most troops willingly engaged in this form of suicide, because surrendering was both deeply shameful and officially a crime. Banzai charges sometimes caused some tense moments for the Allied recipients, but eventually they always resulted in a massacre of the Japanese troops.

Special Units

The Japanese did not greatly embrace the concept of commando warfare, the individuality of which ran counter to their general societal principles. They did develop specialized units, including the Special Naval Landing Force (naval infantry or marines trained for amphibious warfare), paratroops, and particularly skilled engineer units. Smaller, more specialist units included:

Savage Swords

Beginning in China in the late 1930s, the Japanese earned a horrific reputation for sadistic treatment of prisoners and conquered civilians. Mass rapes, the torturing of babies, experimental surgery without anesthesia, and other atrocities were routine. Soldiers of all nations committed atrocities, and the German and Soviet regimes were at least as bloodthirsty, but the sheer outlandishness of Japanese conduct made a particular impression.

These crimes were not universal. While service was universally brutal *on* the Japanese soldier, the brutality expected *of* the soldier depended to a large degree on his commander. Many officers of the younger, firebrand generation demanded savagery and atrocity as part of daily soldiering. Older officers often subscribed to a much different 19th-century interpretation of *bushido*, one more in line with its Buddhist roots and which had led the West to *admire* Japanese restraint in battle prior to the iniquities of WWII.

The Japanese also did not adhere to the Geneva Convention, which they had pledged to do. Beyond battlefield practices such as shooting at medics, violations included extensive germ warfare in China.

Teishintai

These "raiding units" were temporary, like small task forces on a commando scale. They usually were formed to sneak behind enemy lines and destroy their artillery.

Betsudōtai

Usually seen in China, these "special forces" were small and highly mobile. They often roamed behind enemy lines and targeted key installations, or performed reconnaissance.

Kamikazes

Most of these infamous pilots were trained just well enough to fly their bomb-laden plane into a ship, delivering a great deal of explosives in a suicide attack. Allied seamen greatly feared them, as they were far more effective than Japanese torpedo or dive bombers of the same late-war period.

The kamikazes illustrated the incredible reaches of Japanese morale, though a few balked when the time came to perform their mission, and many expressed grief over their sacrifice.

Intelligence

The Tokubetsu Kōtō Keisatsu (Special Higher Police) were civilian "thought police" who used broad powers to monitor dissidents, potential dissidents, and the always-suspect foreign population of Japan. The TOKKO had six departments: special police work (primarily dealing in political activity), foreign surveillance (included enforcement of the restrictions on foreign influence on the Japanese public), censorship, monitoring of Japan's Korean population, arbitration, and labor relations. The TOKKO tended to dress in black, break into homes on the slightest pretext without a warrant, and employ torture and long imprisonments to extract confessions.

The civilian Hikari Hikan conducted intelligence and sabotage operations.

The Kempeitai military police performed the same functions as the TOKKO in Japanese domains outside of the home islands and in the army, through its general affairs section. Its service section dealt in counterintelligence and security, and created police units to consolidate rule of conquered territories. The Kempeitai also managed many prison camps, making them the secret police that foreigners most likely would encounter. Even Japanese officers dreaded the Kempeitai.

The Tokumu Kikan (Special Service Agency) conducted intelligence and counterintelligence for the Japanese military. Its agents also dealt in propaganda and counterinsurgency.

The Kempeitai and Tokumu Kikan worked closely together, while the Kempeitai and TOKKO maintained something of a rivalry. In conjunction with several specialized "secret societies," these agencies thoroughly monitored Japanese life and ferreted out most intelligence efforts, though the Soviets managed to maintain a valuable spy network during the early war years. Abroad, Japanese intelligence maintained competent but unspectacular information-gathering.

Military codes were the weakest link in Japanese intelligence; several Allied nations were listening to "secret" Japanese radio communiques even before the war began.

MEDICAL SERVICES

The national descriptions in this chapter discuss the medical personnel permanently attached to fighting formations. These formed only half of the casualty-treatment system in most armies. The main medical services were an independent support unit that worked in conjunction with both the fighting units and the front-line medics attached to those units.

Most armies began their combat medical organization at the division level, with a medical battalion of roughly 500 personnel, of whom up to 10% would be doctors. Those with limited tactical mobility (such as paratroops) or medical resources (such as the Japanese) or independent regiments might have only a company at this level.

The medical battalion organized a medical plan of evacuation and distributed its personnel among the division's units based upon need. All evacuation plans began with applying immediate first aid, then getting the wounded soldier off the front line, usually by stretcher, sometimes by ambulance (or jeep in the U.S. forces), rarely by light plane. This hazardous job consumed the great majority of the medics attached to regular units and many of the medical-battalion personnel as well. "Walking wounded" would be pointed in the right direction and left to make their own way.

These wounded were taken or directed to a battalion aid station, as close to the front lines as possible, where a doctor applied immediate medical treatment to stabilize the patient. Often, the patient then was moved to a regimental aid station, some 500 yards further back; in other cases, the regimental station was the first medical aid. Here, doctors divided cases into those requiring surgery and those simply requiring transfer to a collection pool for the slightly wounded. U.S. forces often had 25-bed portable surgeries that could be assigned to reinforce this effort.

Lightly wounded and serious cases that could be moved were then sent to a divisional field hospital, usually installed in a permanent building some 12-30 miles from the front and at a transportation hub next to roads, airfields, or canals. Here, the surroundings began to resemble a civilian hospital, whereas before *M*A*S*H* would be the prototype.

Armies maintained further hospitals beyond divisional level, well away from combat. U.S. forces would send home cases requiring more than 90 days of convalescence in the Pacific or Africa. Since Europe had better medical infrastructure, the cutoff there began at 180 days, but later became 120. Other armies leaned toward shorter convalescence periods before sending a soldier home (and often had to transport him less distance), but actual policy could deviate greatly depending on evacuation resources immediately to hand.

At all levels, these medical services also practiced general medicine, though distinct hospitals handled these cases separate from combat casualties at higher levels. Troops in the field required a great deal of general care. Communicable respiratory ailments or insect-transmitted diseases spread rapidly. Diseases stemming from lack of proper sanitation were common. So was venereal disease.

The Medic

Sometimes unarmed and virtually untrained, the front-line medic wielded great influence on the fortunes of a wounded soldier. When the cry of "Medic!" (or "Sani!" among the Germans) went up, his duty included braving enemy fire to move to the casualty's side, apply bandages and drugs, and carry him to safety.

All medics underwent standard basic training, and those attached to fighting units trained with their units. In game terms, this means that they should be designed as described for fighting troops in Chapter 3, with the following modifications:

Advantages: All medics may include Fearlessness [2/level] among their available advantages.

Skills: A good medic will have First Aid-14 (M/E), and Diagnosis-10 and Physician-10 (both M/H). A *great* one will increase Physician to 12 and take Surgery-10 (M/VH). Alternately, they might take very high skill in First Aid and use defaults to perform more advanced functions in emergencies.

In either case, the character points for these skills can come from spare points or those assigned to optional skills. Or, some basic and secondary template skills can be trimmed to free up points for medical skills. The GM should rule on this; for instance, a paratroop medic might forgo Demolition training, but certainly would still have Parachuting skill.

Customization Notes: Doctors usually had Military Rank 3-5, but often lacked the full prerequisite skills described on p. 70. Further notes by nationality include:

U.S.: Generally well-trained and -supplied, these men usually possessed Driving skill.

British: Driving skill was almost as common among these troops, particularly known for their bravery under fire.

Germans: Training dropped sharply during the war, as did supply. Though TO/Es provided for a good number of ambulances, in practice they operated primarily on foot.

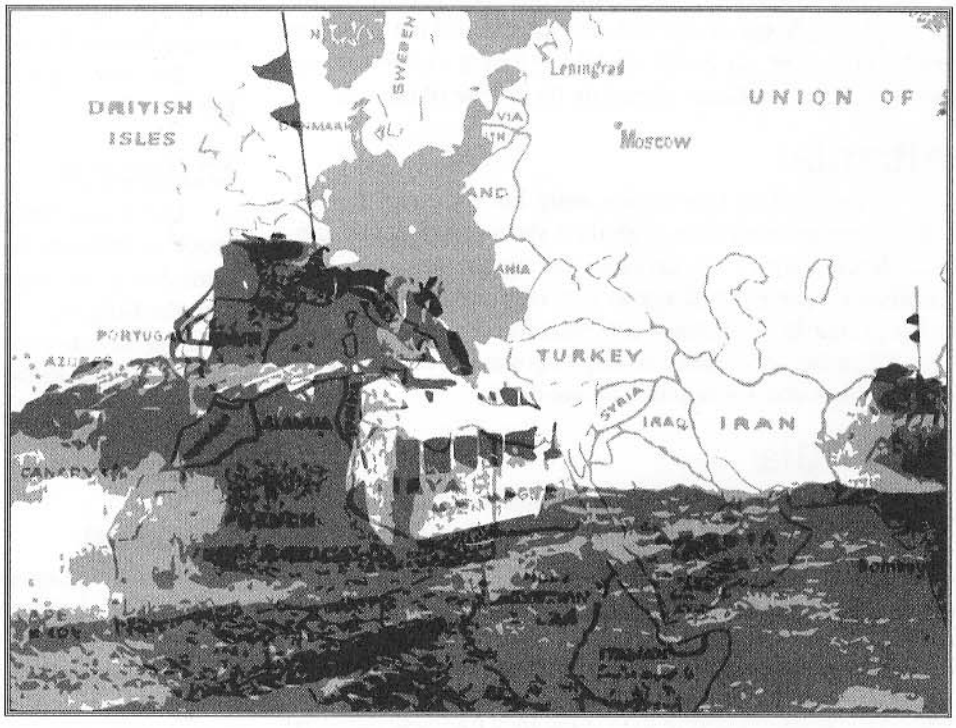
Soviets: Female soldiers made up a good portion of front-line medics. Training and supply were very poor. Teamster would be fairly common.

Japanese: Their respected medical system quickly collapsed from combat losses. Late-war medics might be untrained boys, or even girls. Field medicine became rudimentary. Medical supplies included a significant number of Eastern remedies dismissed by Western medicine.

The combatant status of medics was not a clear issue. The Geneva Condition forbade medics from using weapons and fighting troops from firing at them. The Allies and Germany *generally* respected these terms; the Japanese did not, and even specifically targeted medics. The Germans sometimes fired at medics or used medical planes for reconnaissance; the Allies shot at any caught in the act. Allied medics in Europe usually went unarmed. Allied medics in the Pacific and Axis medics often carried a pistol for self-defense; Axis medics also might use these to end a dying soldier's suffering.

THE WORLD AT A GLANCE

No nation could ignore World War II. The loyalties of the world parsed out as follows:



Allied Powers

Britain and its Commonwealth of colonies and ex-colonies formed the mainstay of western resistance to the Axis powers, particularly in the years before the United States entered the war. The Commonwealth included Aden, Australia, the Bahamas, Barbados, Bechuana Land, Bermuda, the British Cameroons, British Guiana, the British Honduras, British Somaliland (held by the Italians for a period; see p. 18), the British West Indies, Burma, Canada, Ceylon, the Channel Islands (though occupied by the Wehrmacht from June 1940), Cyprus, Egypt, the Egyptian Sudan, Gambia, Gibraltar, the Gold Coast, Hong Kong (which the Japanese conquered in December 1941), India, Jamaica, Kenya, Malaya (until the Japanese invasion in December 1941), Malta, New Zealand, Nigeria, Northern Rhodesia, Palestine, the Protectorate of Nyasaland, Sarawak, Sierra Leone, the Solomon Islands (until Japanese occupation), South Africa, Southern Rhodesia, Tanganyika, Togo, Transjordan, Trinidad, Uganda, and Zanzibar.

Other principal Allied powers included China, the Soviet Union, and the United States.

France and its colony of French Guiana were Allied until France fell in June 1940, upon which point the Free French government became an Ally. The French colony of Madagascar became an Ally in September 1942.

Belgium was an Ally until May 1940. The Belgian Congo remained Allied despite Belgium's collapse.

Allied powers that at some point fell to the Axis included Czechoslovakia, the Dutch East Indies, Dutch New Guinea, Greece, the Netherlands, Norway, and Poland.

Allied nations that did not join the war effort as a primary contributor (many of them not declaring war until 1945) included Argentina, Bolivia, Brazil, Chile (vs. Japan only), Colombia (vs. Germany only), the Dominican Republic, Ecuador (vs. Japan only), Greenland, Iran, Iraq, Peru, Saudi Arabia, Syria, Turkey, and Venezuela.

Finland joined the Allies for the war's closing months.

Iceland enjoyed Allied protection, but was not officially an Allied nation.

Axis Powers

Germany and its conquests formed the mainstay of the Axis cause, with varying degrees of enthusiasm in the case of the subject countries.

German conquests included Albania, Austria, Belgium, Czechoslovakia, Denmark, France, Greece, northern Italy, the Netherlands, Norway, Poland, and Yugoslavia. Many of these conquests technically remained neutral . . . under German control but sympathetic to the Allies.

Japan and its conquests formed the other primary Axis power. Even fewer of Japan's conquests willingly joined the war effort. They included Borneo, Burma, the populous portion of China, the Dutch East Indies, French Indo-China, Hong Kong, Malaya, the Philippine Islands, Sumatra, and many other islands with low populations.

Italy and its possessions (Castelrosso, Eritea, Ethiopia, Italian Somaliland, and Libya) and conquests (British Somaliland) remained in the Axis cause until liberated by the Allies or the Italian surrender of September 1943.

Finland was a major Axis power for much of the war.

Bulgaria, Hungary, and Romania also served the Axis, as satellite states of Germany.

Neutral States

Many countries stayed on the sidelines for most of the war. These included Abyssinia, Afghanistan, Angola, Egypt, Eire (Ireland), Iran, Iraq, Liberia, Mongolia, Mozambique, Portugal, Portuguese Guinea, Rio de Orio, Saudi Arabia, Siam, Spain, Sweden, Switzerland, Syria, Tibet, Turkey, and almost every country in South America except Brazil. As noted, many of these joined the Allied cause once its victory became assured and their participation in combat highly unlikely.

The Vichy French were neutral from June 1940 onward.

Many neutral countries favored one side or another, simply not to the point of declaring war.

The Combatants

The following briefly summarizes the military forces, efforts, and casualties of the nations that took part in significant fighting. Some of the included nations did not fight, but could have done so under slightly different circumstances, possibly with significant impact on the course of the war.

Albania

Albania had no true regular army, but resistance fighters who impressed both sides with their sheer ferocity. The anti-Nazi forces formed six divisions during the war. The anti-Communist groups were not as well organized, and fell prey to the primarily Communist anti-Nazi forces.

Albanians are counted among Yugoslavia's 305,000 military fatalities and 1.4 million civilian dead.

Australia

Australians were fighting under British command in Africa and the Mediterranean when the Japanese began the Pacific war. Japan's advances directly threatened Australia itself, causing many Australian units to be shipped homeward. In the Pacific, they fought in the U.S.-dominated Allied command.

Australians earned one of the highest reputations for hard fighting during WWII. In Africa, they routinely held on where British forces failed, and in the Pacific they routinely outpaced U.S. Army units. Their conduct off the battlefield was less sterling. The Australians held no great zeal for the war. Desertions were not uncommon. The civilian population did not always place war priorities above maintaining their peacetime lifestyle, despite the immediate Japanese threat.

Australian units would be organized along British lines. Though the Australians did produce some of their own arms, much of their equipment was of British or U.S. manufacture.

The war killed 37,600 Australian military personnel and 2,500 civilians.

Austria

The Austrians possessed a small army (seven infantry divisions, a partially armored division, and assorted independent battalions) before becoming part of greater Germany in 1938. Afterward, they fought as part of the Wehrmacht.

The war killed 380,000 Austrian military personnel and 145,000 civilians.

Belgium

Facing the German invasion with seven infantry corps and a cavalry corps backed by a formidable fortress complex, the Belgians lost quite a few troops in 1940. After German occupation, a moderate resistance movement formed.

The war killed 22,700 Belgian soldiers and 76,000 civilians.

Brazil

Unlike most of South America, Brazil joined the Allied cause relatively early, in the face of repeated sinkings of its merchant ships by U-boats. This included a Brazilian Expeditionary Force of about 20,000 men in Italy.

The war killed 1,500 Brazilian military personnel and 1,000 civilians.

Bulgaria

The Royal Bulgarian Army fielded a compact force of about 23 infantry, two cavalry, and two semi-armored divisions during the war as a nominal Axis member. For the most part, the Bulgarians managed to stay out of front-line fighting until the Soviets brought the front lines to them. At that time, the Bulgarians switched sides and took part in some small operations cleaning up behind the Red juggernaut.

The war killed 18,800 Bulgarian military personnel and 140,000 civilians.

Canada

Though geographically as far from the fighting as a nation of its size could be, Canada mobilized rapidly when it appeared Britain was headed toward war. The country fielded a highly volunteer force of up to eight divisions, mechanized to the highest standards and very well supported. These troops posted impressive combat records in some of the toughest fighting in Italy and western Europe.

Canadian merchant ships and naval vessels also played a crucial role in keeping open the trade lanes to Britain, even after the United States entered the war.

The war killed 42,700 Canadian military personnel and 1,000 civilians.

China

On paper, the Chinese Nationalists continued to field an immense army, consisting of scores of infantry corps reinforced by cavalry, with some German arms and training. In practice, these troops lacked basic skills, equipment, and supply. Many of them owed their primary allegiance to local warlords in nearly open conflict with the Nationalists. The Communists also possessed a sizable resistance force waiting to contend for control should the Japanese disappear.

None of these interests possessed the resources to effectively mobilize but a tiny fraction of its nominal manpower.

The war killed 1.4 million Chinese military personnel and 20 million civilians.

Croatia

The Croatians fielded a small and mostly conscript army with low morale, high desertion, and equipment problems. It mostly engaged in counterinsurgency work at no more than regimental strengths.

Croatians are counted among Yugoslavia's 305,000 military fatalities and 1.4 million civilian dead.

Czechoslovakia

The Czechs fielded a somewhat disorganized army of some 40 divisions, basically organized along French lines, before Hitler's shrewd maneuverings caused the nation to surrender itself without a serious fight.

Though the Czechs had not fielded many tanks, nor any pure tank units, they yielded a robust arms industry to the Germans, who made maximum use of Czech arms and armor in their own forces. At one point, up to 25% of the Wehrmacht's tank force was Czech in origin.

The war killed 6,600 Czech military personnel and 315,000 civilians.

Denmark

The army that briefly resisted the 1940 German invasion consisted of but two infantry divisions well reinforced with artillery and antiaircraft guns.

The war killed 6,400 Danish soldiers and 1,000 civilians.

Egypt

Prewar expansion enlarged the army to three infantry brigades and support, including a handful of tanks. Most of the rank and file were peasants (more wealthy citizens could purchase their way out of conscription), while most of the officers were upper-class and prone to treat their troops callously.

The British incorporated Egyptian forces in their defense of the country until the fighting actually started. Then, realizing that their hosts were politically unreliable, they moved the native units to internal-security duties, where they remained for the course of the war.

Estonia

The Estonians fielded three infantry divisions during their short period of independence between the world wars. These and a hastily formed fourth division were ordered to stand by as the Soviets occupied the country early in WWII. Estonians would serve in both the Soviet and German forces during the following years.

Estonians are included among the Soviet Union's 12 million military and 17 million civilian casualties during the war.

Finland

The Finns fielded 10 infantry divisions against the Soviets in the Winter War, most of them trained to a very high degree in fluid light-infantry tactics. During this war, the Soviets established a Peoples Army of Finland to masquerade as the legitimate national military while enforcing Soviet rule. They never found enough Finns to fill it, so used other soldiers who could pass as Finns. Regardless, the army did not take a heavy role in the fighting and accomplished little in the war.

During WWII, the Finns joined the Axis cause fighting the Soviets, based to a large degree on the principle of "the enemy of my enemy is my friend."

The war killed 82,000 Finnish military personnel and 12,000 civilians.

France

France had 105 divisions available when Germany invaded, including a high proportion of tanks and artillery. They were poorly organized, and could not be concentrated or mobilized as efficiently as the Wehrmacht.

Many survivors of the 1940 blitzkrieg fled to Britain, where the Free French Forces were organized primarily along British lines with U.S. equipment. These expanded from five divisions in 1943 to 14 by 1945. Meanwhile, in France itself, an extensive resistance network flourished, the Maquis.

The war killed 245,000 French military personnel and 350,000 civilians.

Germany

See pp. 48-50. German arms reached their height in 1944, with 347 divisions fielded, many of these severely undersized.

The war killed 2.9 million German military personnel and 2.3 million civilians.

Great Britain

See pp. 39-41. Great Britain fielded up to 39 divisions during the war, before factoring in Commonwealth troops.

The war killed 403,000 British military personnel and 92,700 civilians. Another 7,000 soldiers and 92,700 civilians from the British colonies died.

Greece

The Greeks formed about 20 infantry divisions (with some minor armor, motorized, and cavalry support) to fight off the Italians before the Germans caught them wrong-footed and occupied the nation.

A few Greek troops escaped with the British evacuation, to continue fighting on Crete (see p. 19).

After some costly early efforts, the Greek Communist resistance coalesced into the ELAS with about 11 divisions by mid-1943. They even had their own navy, the ELAN, which mounted captured German arms on small boats. The ELAS held the field when the Germans retreated, but the British and pro-British resistance mastered them during 1944-45.

The war killed 88,300 Greek military personnel and 325,000 civilians.

Hungary

The Royal Hungarian Armed Forces followed Germany's lead in rearming prior to WWII, and helped invade Russia in 1941 with dozens of two-regiment "light" infantry divisions, one cavalry, and three undersized armor divisions. The Eastern Front rapidly chewed up what were mostly second-rate units. The exhausted survivors fought the Soviets on their own soil, and the Germans disarmed the few who remained upon the nation's surrender in 1945.

The war killed 200,000 Hungarian military personnel and 600,000 civilians, most of them Jews.

India

India provided the largest portion of Britain's Commonwealth forces, with up to 18 divisions primarily serving in Burma, Malaya, the Pacific, Africa, and Italy. Often, a cadre of British officers, and sometimes NCOs, laced Indian units.

The Gurkhas, in particular, were well regarded for their light-infantry skills, particularly in night infiltration and knife fighting. Indian units sometimes received more than their share of frontal-assault and similarly costly assignments.

The war killed 48,700 Indian military personnel and 3 million civilians, primarily due to economic disruption resulting in starvation.

Iraq

Iraq had four infantry divisions and support elements that could have contributed more to the low-key German and British struggle over control of the government early in the war.

Ireland

Eire had two fairly mobile divisions with several independent brigades guarding its neutrality during the war.

Italy

The Italians should have been a larger player in WWII. They maintained very high physical-fitness standards for their troops, already possessed combat experience in three campaigns, and fielded some 56 infantry divisions backed by six armored and four cavalry divisions.

Unfortunately, their tactical training was badly out of date. Their troops often lacked basic equipment, and what they had was poorly designed. Their officers (primarily from the north) often treated the troops (primarily from the south) with contempt. Perhaps most importantly, the Italian public did not share Mussolini's enthusiasm for warfare.

These factors combined to greatly reduce the fighting effectiveness of Italy's forces. As described in Chapter 1, most of their advances rapidly turned into retreats. Italian troops could – and often did – display startling bravery in the field, but their poor leadership and equipment doomed them no matter how valiantly they struggled. Most of their retreats, for which they earned a somewhat comic reputation, began under circumstances in which almost any troops would have broken.

The war killed 380,000 Italian military personnel and 152,900 civilians.

Japan

See pp. 51-53. The Japanese began the war with about 70 divisions, and by the end posted 197 on paper. In terms of training, supply, and numbers, the 1945 units were mere shadows of the troops that conquered the Pacific islands and died on them.

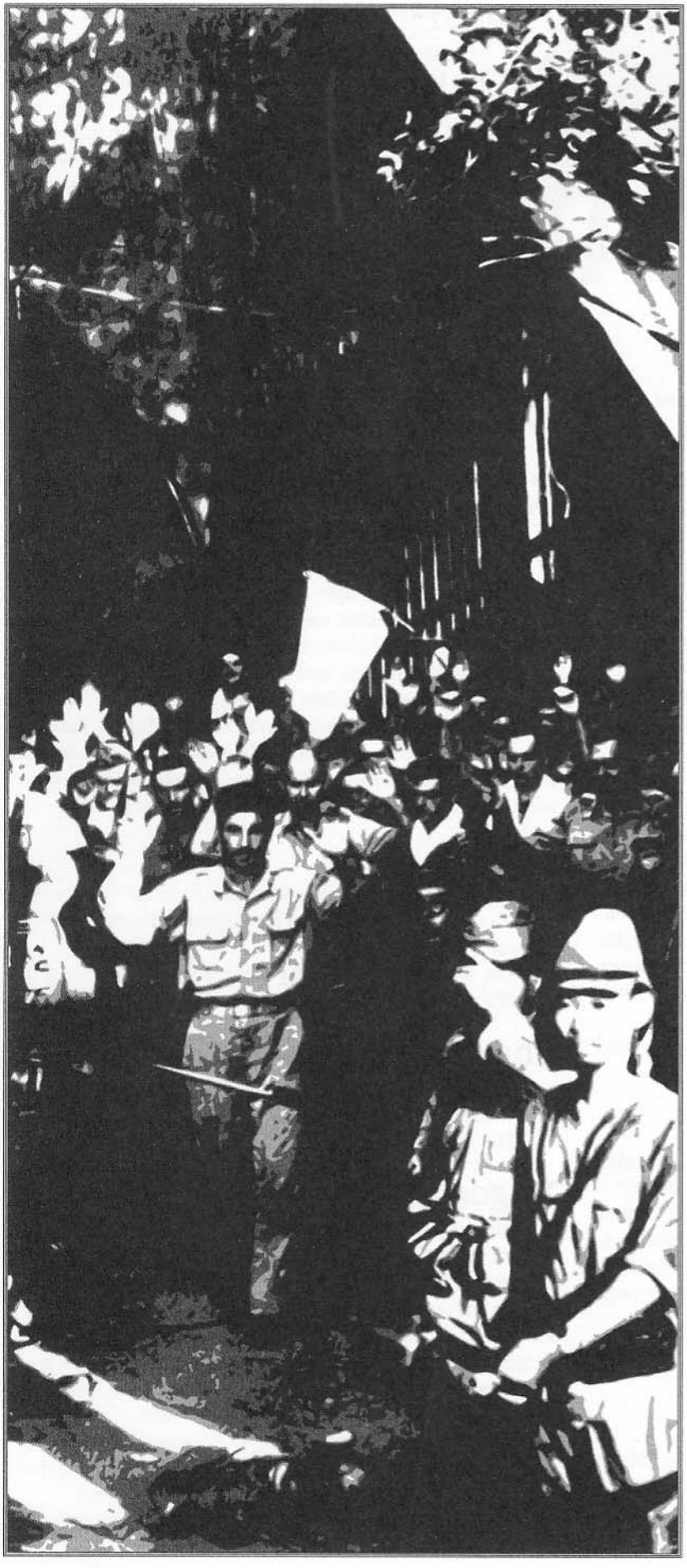
The war killed 2.6 million Japanese military personnel and 672,000 civilians.

Korea

The Japanese recruited a large number of Koreans into their forces, most often using them as laborers. At least 10,000 Korean troops of this nature and 250,000 civilians died.

Latvia

Like their neighbor Estonia, the Latvians let the Soviets enter their country and take over without a fight. The Soviets incorporated their four infantry divisions and supporting arms.



Latvians are included among the Soviet Union's 12 million military and 17 million civilian casualties during the war.

Lithuania

Before the war, this country had four infantry divisions and a light armor battalion protecting its interests against a variety of hungry neighbors.

Lithuanians are included among the Soviet Union's 12 million military and 17 million civilian casualties during the war.

Netherlands

The Dutch had eight infantry divisions with support facing the German invasion of 1940. Afterward, some veterans fled to Britain to reorganize under Anglo-American arms, many joined the thriving resistance movement, and some joined the Wehrmacht.

The war in Europe killed 13,700 Dutch military personnel and 236,000 civilians. Perhaps another 100,000 Dutch citizens died in the Dutch East Indies.

New Zealand

New Zealand never fielded more than two divisions, but these could be found far from home fighting with British Commonwealth forces.

The war killed 8,700, all military personnel.

Norway

Six infantry divisions squared off against the German's 1940 invasion.

The war killed 3,000 Norwegian military personnel and 7,000 civilians.

Persia

Iran's small military played a minor role in the machinations between Germany and a British-Soviet alliance to gain control of the government early in the war. The Allies won the struggle by invading Persia, which was a vital supply route between them as well as a significant oil resource.

The Philippines

A U.S. cadre led the Filipino army in resisting the Japanese invasion from December 1941. Most of these troops were formed into eight infantry divisions and supporting elements on the main island of Luzon. Another three divisions and support were scattered on other islands. After the collapse of the U.S. defense, many resistance groups developed, with the strongest being the Communist faction.

The war killed 40,000 Filipino military personnel and 100,000 civilians.

Poland

When Germany invaded in 1939, Poland fielded about 32 infantry divisions, with large cavalry elements and two armored brigades reinforcing them. Large numbers fell in the brief fighting that followed. The Soviets rounded up many professional officers and shot them, and the country was heavily garrisoned after its defeat.

Despite this, many troops managed to escape, and eventually form up in England as Free Polish forces, usually organized along British lines with some British and mostly U.S. equipment, or as the Home Army resistance. Beginning in 1943, the Soviets formed a Polish Peoples Army that incorporated some 11 divisions plus heavy support and reserves. The Germans impressed more Poles into their service, usually as labor, than volunteered for the combined Allied armies. The Communists and Jews also formed resistance groups, and criminal networks effectively joined the cause. Large actions were rare given the heavy internal security to be faced.

The war killed 597,300 Polish military personnel and 5.7 million civilians, the largest portion of them Jews.

Romania

Romania fielded about 20 infantry, six cavalry, and two armored divisions at its height. Invading Russia along with Germany, these units suffered terrible losses on the Eastern Front, causing many of them to be disbanded. The Soviets savaged the remaining troops when they advanced into Romania. By the time that Romania switched sides and began fighting the Axis, its forces were only a fraction of their former size. Fortunately for them, the Hungarian and German units that they faced had suffered losses at least as grim.

The war killed 450,000 Romanian military personnel and 465,000 civilians.

Slovakia

After declaring independence in March 1939, Slovakia formed an army of never more than two or three infantry divisions. These second-rate troops assisted the Germans in their eastern campaigns, though they lost a steady stream of deserters who joined the resistance movements. Ultimately, the Germans crushed the Slovakian army as it attempted an uprising in the face of Soviet invasion.

Slovakian deaths are included among the 6,600 military personnel and 315,000 civilians killed in Czechoslovakia.

South Africa

Though it did not field more than four divisions, South Africa played a prominent role in manning the Commonwealth's African campaign.

The war killed 8,500, all military personnel.

Spain

Franco scrupulously avoided taking part in WWII. When Hitler pressed him, he cited his country's exhaustion after its civil war. Without adamantly saying "no," he set the Führer on edge by negotiating incessantly about what it would take for Spain to enter the war.

When certain elements of his own military clamored to take part in 1941, Franco craftily shipped them off to aid Hitler on the Eastern Front as the "Blue Division," thus showing gratitude to Hitler while ending much of the war talk at home.

Franco recalled the troops in 1943, as a gesture displaying his disapproval of the Holocaust. (Spain had long used concentration camps to quietly starve its enemies to death. The partly Jewish Franco held no illusions about Hitler's intents, and Spain worked throughout the war to save Jews.)

About 4,500 Spaniards died serving the Axis cause, 7,500 for the Allies. Another 10,000 political prisoners died in Spain's own concentration camps.

Sweden

After Germany caught them unprepared to resist invasion (see p. 13), the Swedes mounted a massive military expansion. By 1943, they fielded 10 infantry divisions, three incomplete armored brigades, and a motorized brigade – a small force, but still far larger than in 1940.

Incorporating Norwegian and Danish refugees into their command, the Swedes tentatively planned to invade both countries if the Germans tried to use a scorched-earth policy within them. Circumstances never required the assaults.

U.S.S.R.

See pp. 45-47. Including satellite forces, the Soviets escalated from 220 divisions when the Germans invaded to 491 by the war's end.

The war killed 12 million Soviet military personnel and 17 million civilians.

The United States

See pp. 42-44. The U.S. Army fielded 90 divisions (21 in the Pacific) and the Marines six (all in the Pacific).

The war killed 407,000 U.S. soldiers and 6,000 civilians.

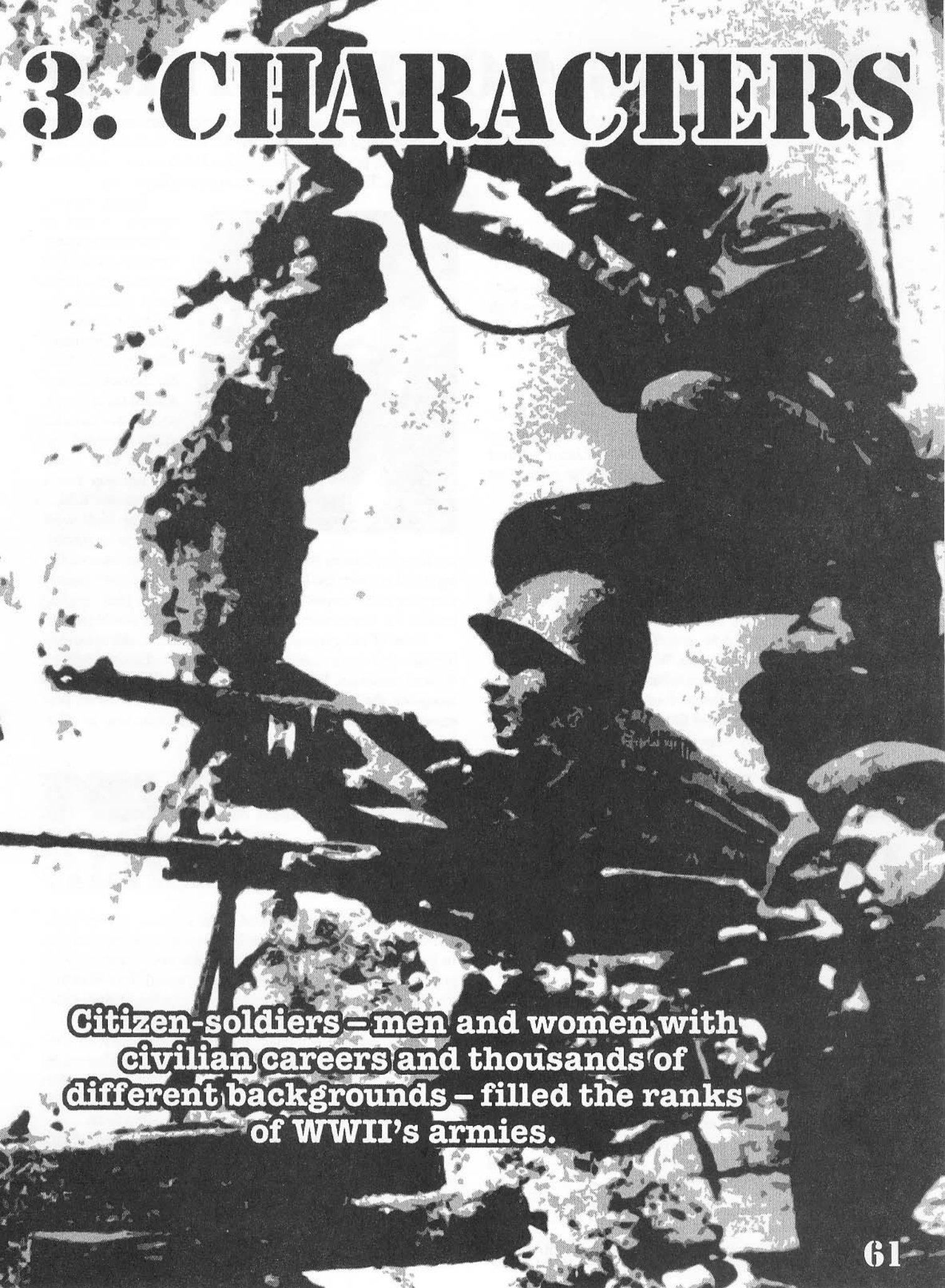
Yugoslavia

After Axis occupation in 1941, the Communist Partisans formed groups of traditional size, which fared poorly against efficient German counterinsurgency. By 1944, Partisan membership had swelled well past the traditional group structures, at some 800,000 strong, and various factions were fielding full-fledged armies with specialized, naval, and air units. Britain and the Soviet Union provided much of the heavier equipment for these units, including a brigade of tanks each. The pro-Serb Chetniks also entering the fighting in substantial force.

By the end of the war, the Communist units already were well on their way to becoming the Yugoslavian army.

The war killed 305,000 Yugoslavian military personnel and 1.4 million civilians.

3. CHARACTERS



Citizen-soldiers – men and women with civilian careers and thousands of different backgrounds – filled the ranks of WWII's armies.

CREATING A CHARACTER

The following character-creation guidelines take into account that the Second World War swept up men and women from very different cultures and all walks of life.

Starting Points

For a very realistic campaign featuring ordinary enlisted men and NCOs, 50 points should be the starting total. A 75-point campaign will nicely fit ordinary officers and top non-coms. At 100 points, characters will be crack troopers or high officers, though still well within the bounds of realism. At 150 points and higher, elite and cinematic heroes can be portrayed.

Height and Weight

The table on p. 177 portrays Americans and western Europeans. Other nationalities should subtract 1-3" from average height to reflect poor childhood diets. Natives of Japan subtract 3" – with Japanese career officers subtracting 4" to reflect that their schools starved them throughout their youths.

Female Roles

Men and women had very different social roles in this period. In most Allied countries, women generally were expected to stay behind and tend the home fires. Often, this involved filling jobs vacated by men now in uniform, a move that would change gender roles after the war. Women could put on a uniform, but often only for non-combat services – performing clerical functions at headquarters, feeding troops in rear areas, nursing, etc. Nurses came under fire, but for the most part these women worked far away from the shooting.

Germany also put women auxiliaries in uniform, but fewer than most Allied states. The Nazis felt that a woman's place was in the home, pregnant, providing the Reich its next generation of troopers. The Japanese were even more chauvinistic.

Soviet women, notably, served in all the combat arms. Russian culture had retained its traditional gender roles, but the Communist ideal did not define roles by sex. Also, the Soviets always needed more troops, so any woman who really wanted to drive a tank could talk her way into a uniform and T-34.

The Reds went so far as to specialize female pilots as night bombers. The job consisted of flying a biplane over the lines at night, cutting the engine, quietly dropping a few bombs to interrupt the Germans' sleep, gliding back to the Soviet side, and hoping the engine would restart.

None of the general restrictions applied to the resistance fighters and secret agents scattered across Europe fighting without uniforms. Women often, even usually, took up arms alongside the men in those groups. And all countries possessed uniformed exceptions – for instance, one of Germany's top test pilots was a woman.

ADVANTAGES, DISADVANTAGES, AND SKILLS

A few of the advantages, disadvantages, and skills in ***GURPS Basic Set*** and ***Compendium I*** require elaboration when used in a WWII setting.

Advantages

More specific data will supplement these general guidelines in subsequent books in the ***GURPS WWII*** series.

Military Rank see p. 179

Military Rank – more properly referred to as pay grade when discussing enlisted ranks – costs 5 points per level. It quite simply determines who gets to give orders to whom. It also can bestow a free Status bonus; see *Status* on p. 66 for more information.

During WWII, armies tend to have fewer enlisted ranks and one more officer rank than is common in the present day. In particular, corporals often filled roles now considered the province of sergeants, such as leading a squad. To reflect this, the corporal pay grade is Military Rank 1 in this setting, rather than the Military Rank 0 cited in ***GURPS Special Ops***.

Army enlisted personnel usually are addressed by their pay grade. Naval enlisted personnel usually are addressed by their rating (area of specialty) rather than grade, thus "radioman" or "gunner's mate" rather than "seaman first class." Navies can have scores of rating classifications.

Most armies have a special pay grade, called warrant officers in the U.S. military, for specialists who do not command other troops. They outrank all enlisted personnel, but are outranked by all officers. They have Military Rank 3.

Sample GURPS Military Ranks

MR	*U.S. Army*	*U.S. Navy*	*German Army*	*Japanese Army*	*Soviet Army*
8	Gen. of the Army	*Admiral of the Navy*	Generalfeldmarschall	Gensui	Marshal Sovetskogo Souza
8	General	Fleet Admiral	Generaloberst	Taishō	General Armii
8	Lt. General	Admiral	General	Chūjō	General-polkovnik
7	Major General	Vice Admiral	Generalleutnant	Shōshō	General-leitenant
7	Brigadier Gen.	Rear Admiral	Generalmajor	–	General-major
6	Colonel	Captain, Commodore	Oberst	Taisa	Polkovnik
5	Lt. Colonel	Commander	Oberstleutnant	Chūsa	Podpolkovnik
4	Major	Lt. Commander	Major	Shōsa	Major
4	Captain	Lieutenant	Hauptmann	Tai-i	Kapitan
3	1st Lieutenant	Lieutenant, junior grade	Oberleutnant	Chū-i	Starshiy Leitenant
3	2nd Lieutenant	Ensign	Leutnant	Shō-i	Leitenant
2	Master or First Sgt.	Chief Petty Officer	Stabsfeldwebel	Sōchō	Starshina
2	Technical Sergeant	1st Cl. Petty Officer	Oberfeldwebel	Gunsō	Starshiy Serzhant
1	Staff Sergeant	2nd Cl. Petty Officer	Feldwebel	Gochō	Serzhant
1	Sergeant	3rd Cl. Petty Officer	Unterfeldwebel	Heichō	Mladshiy Serzhant
1	Corporal	1st Class Seaman	Obergefreiter	Jōtōhei	Efreitor
0	Private 1st Class	2nd Class Seaman	Oberschütze	Ittōhei	–
0	Private	Apprentice Seaman	Schütze	Nitōhei	Ryadovoy

A "–" means no equivalent rank. Italics indicate rank was not filled in WWII.

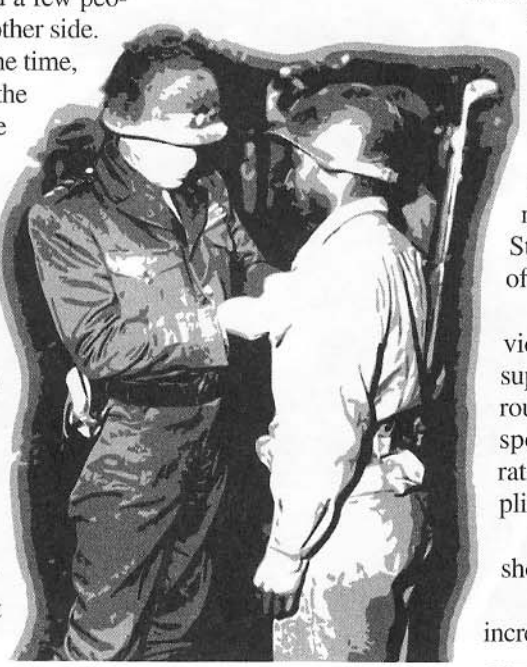
Patrons see p. 181

Though a soldier's service (usually) feeds, shelters, and equips him, it very rarely counts as a Patron. The Patron advantage represents a special relationship. A soldier certainly may have a Patron in the army, or receive special treatment that make his service into a Patron, but most will not.

Reputation (Medals) see p. 179

All soldiers receive a certain number of qualification badges, campaign ribbons, and the like that count simply as background color. True medals and other hard-to-obtain military decorations are purchased as Reputations. These range from +1 to +4; see Chapter 2 for specific values. These modifiers apply to almost everyone on the same side (whether they are soldiers or civilians), and a few people (mostly officers) on the other side. This is a large group, all of the time, worth 1/2 value. Use only the Reputation bestowed by the highest medal received; for multiple awards, add +1 to the Reputation bonus, with a maximum of +4.

Many soldiers did not care for the attention (or expectations) that their honors brought them, and actively offset the positive first impression with bad behavior. GMs may want to allow players to partially offset the cost of a medal awarded in play with a new Odious Personal Habit that reflects this behavior.



Wealth see p. 180

Most soldiers' wealth will be determined by their Military Rank. Wearing the uniform is a full-time job. A modifying factor is nationality. Some countries pay better than others.

In real life, military pay can be a bewildering thicket of special additions and deductions, from combat bonuses to money sent directly to the wife and kids. As a general rule, ***GURPS*** Military Ranks 0-1 bestow a Wealth of Struggling, Ranks 2-3 are Average, Ranks 4-5 Comfortable, Ranks 6-7 Wealthy, and Rank 8 Very Wealthy. Furthermore, U.S. soldiers increase Wealth by one level at all Ranks. French, British, German, and soldiers of most nations use the listed Wealth. Soviet, Japanese, Chinese, and soldiers of other poor nations decrease Wealth by one level at all ranks.

To determine monthly pay, modify the Rank-based Wealth by nationality, then multiply $50 by that Wealth level's modifier to starting income on p. 180. For instance, a U.S. rear admiral would have a Rank-based Wealth of Wealthy modified by nationality to Very Wealthy, which increases starting income by 20 for a monthly pay of $1,000. A Soviet ryadovoy would have a Rank-based Wealth of Struggling, modified by nationality to Poor, for a pay of one-fifth the standard, or $10 a month.

As a special effect, a soldier's wealth also provides a rough guide to how well his nation equips and supports him; pay and equipment expenditures go roughly hand in hand. A Poor soldier might get a rifle, sporadic ammunition, and even more sporadic rations. An Average private can expect steady supplies, artillery and air support, and road shows.

Average starting wealth is $1,500, but the GM should rule that soldiers leave 80% of it at home.

Anyone with income from outside their job should increase Wealth and see *Independent Income*, p. 65.

Disadvantages

The disadvantages described below will be extremely common in a WWII-based campaign.

Code of Honor see p. 184

Professional soldiers often set themselves apart with an elaborate Code of Honor. Generically, these are:

Enlisted Man's Code of Honor: Be willing to fight and die for the honor of your unit, service, and country; follow orders; look out for your buddies; take care of your equipment; treat an honorable enemy with respect (a dishonorable enemy deserves a bullet); wear the uniform with pride. -10 points.

Officer's Code of Honor: Be tough but fair; bring honor to your unit, service, and country; follow orders; lead from the front; look out for your men; observe the "rules of war"; wear the uniform with pride. -10 points.

Each of these honor codes also has an "Extreme" version worth -15 points. The extreme versions take the values above to sometimes bizarre, often suicidal lengths. Instead of just following orders, groveling often is expected. The slightest offense requires bloodshed in retribution. Wearing the uniform with pride often means taking the fight to the enemy even when defense would be far more prudent, etc. Any military organization can create the odd fellow who takes these extreme positions, but in all Japanese services and certain German units the extreme code of honor was expected of *everyone*. (In Japanese service, this is the modified bushido code discussed on p. 7.)

Every nation (and, within each nation, every service) had its own take on these principles. In particular, the "rules of war" varied considerably depending on who was explaining them. The appropriate books in the ***WWII*** series will describe the more specific values for each nation and its services.

Compulsive Behavior (Binge Drinking) see p. 184

This -10-point disadvantage is Alcoholism (p. B30) without the withdrawal penalties. When alcohol is available, a binge drinker drinks. He withstands short dry periods without penalty. When denied alcohol for a long time – either none is around or he can't afford it – the binge drinker improvises; a Will roll will be required to avoid drinking poisonous medicinal alcohols, stealing distilling supplies, or something equally foolish.

Binge drinkers with uninterrupted access to alcohol usually develop full Alcoholism or buy off the Compulsive Behavior. Many soldiers displayed this disadvantage.

Duty see p. 179

All military personnel must take some level of Duty. Working back home, well away from the fighting, merits -5 points. Taking part in routine training away from the war is worth -10 points. Special training (flight, hard-hat diving, mineclearing) away from the war or working in the rear areas of a combat theater is -15 points. Front-line fighting or commando training merits the -20-point Extremely Hazardous Duty. As an extra hazard, some soldiers such as commandos rarely were taken prisoner; they still rate only the -20-point version.

Fanaticism see p. 184

Fanaticism for one's country is very common among soldiers. Career soldiers might instead have Fanaticism for their service; for instance, many an admiral has chosen to do what best served his navy over what best served his country.

Conversely, Fanaticism (Patriotism) was not as universal as some people may think. Plenty of soldiers went to war against their wishes, desiring only to emerge in one piece. Even among relatively elite units such as the U.S. Marines and German S.S., cynicism and biting black humor ran deep.

Skills

No existing skills *require* special attention, but see *New Skills*, below. Specializations are per pp. CI119-125 except that Driving (Tank) is called Driving (Tracked).

New Advantage

This advantage allows for characters who don't rely upon their military pay to make ends meet; see *Wealth* on p. 63.

Independent Income 5 points

You have a source of income that does not require you to work. The exact nature is up to you: a trust fund, a pension, rent on land or houses, royalties on inventions. Income per month is 5% of the starting wealth for your Wealth level. At the GM's discretion, you may need to spend 10 hours a month looking after financial matters – doing anything from standing in line at a pension office to reading reports from trustees. (This can, of course, conflict with overseas assignments.) This advantage only applies to those who normally would work for a living; i.e., Wealth from Poor to Wealthy. If you are Very Wealthy or better you already have it, and the same 5% of starting wealth per month can be used to determine your income; if Dead Broke, you have no income.

This advantage can be used to represent military pensions. If your income derives from investments, their exact value need not be specified; it is assumed that you cannot or will not invade your capital.

New Skills

Optionally, these four skills can replace and expand the ***Basic Set*** versions of Tactics and Strategy.

Soldier/TL (Mental/Average) Defaults to IQ-5 or Tactics-5

This represents the ordinary private's or rifleman's skill in surviving in the field and combat, and in implementing a tactical plan (see *Tactics*, below). It includes such combat matters as knowing when to fire weapons, when to move under cover vs. sprint, recognizing the sounds of different weapons, etc., as well as the equally important rules for surviving in the field, such as keeping your feet dry, eating when you get the chance, etc.

Soldier skill also provides a good measure of an enlisted soldier's preparedness and discipline. During military action, troopers may need to make daily Soldier rolls, with failure indicating an inconvenience (some minor piece of equipment acts up) and critical failure meaning a disaster (the soldier is part of a "friendly fire" incident, contracts trench foot, etc.).

In ***GURPS*** mass combat, Soldier replaces Tactics in calculating Battle skill. Therefore, Soldier skill directly determines troop quality (see p. CII116).

The military training that Soldier skill represents includes short, easily remembered lessons in a variety of related fields for which the soldier usually has no background knowledge. As a result, at the GM's discretion, Soldier skill can be substituted for an appropriate military skill, only for *regular usage* in routine cases where someone with the proper skill would roll at +4 or higher. A roll vs. Soldier will not receive the bonus for routine usage, but will take any situational penalties.

For instance, someone with Electronics Operation (Communications) would roll at +4 (if at all) to use a field telephone; someone with Soldier trained in field-telephone usage could roll with no bonus to use the phone, but not to repair a broken one or install a new one. Other skills for which Soldier often can substitute include Engineer (Combat) (to dig a foxhole or build a sandbag wall), Explosive Ordnance Disposal (to disarm a grenade or mine by safely exploding it, but not to disarm one), and NBC Warfare (to put on a gas mask or cape).

Note that Soldier can only substitute for skills which have been integrated into the trooper's training. For instance, the average Soviet rifleman would enjoy no routine usage of Electronics Operation (Communications) because the Red Army did not teach its privates to use equipment they didn't possess, but after 1940 he could use Soldier to substitute for routine applications of Survival (Arctic), whereas most troops of other nations could not. Treat Soldier skill as having a special kind of Familiarity (see p. B43) that almost always will be based upon the trooper's nation, branch, and period of service.

The sort of training that Soldier represents never includes new or top-secret technologies! Soldier skill can only be used for rolls to *do* things, never for information or innovation.

Other services have equivalent skills. Air force and naval personnel learn Aviation skill (see p. 188) or Sailor skill (see p. 191) with a military familiarity. (***GURPS Compendium I*** describes the skills' *civilian* familiarity.)

Tactics/TL (Mental/Hard) Defaults to IQ-6, Soldier-6, or Operations-6

Corporals and lieutenants begin learning this skill, because the fate of most armies depends on how well they've mastered it as sergeants and captains. Tactics represents skill in operating, commanding, and supplying a small unit (to attain tactical objectives designated by an operational plan (see *Operations*, p. 66). A small unit would be anything from a squad to a company, usually no more than 125 riflemen, or the crews of 17 fighting vehicles or artillery pieces, a few naval boats, or one ship.

Tactics *must* have a specialization. During WWII, common examples include Infantry (also used by marines, paratroops, cavalry, and motorcycle troops), Armored (includes lightly armored reconnaissance crews), Artillery (includes antiaircraft and antitank crews), Air-to-Air (for fighter pilots), Air-to-Ground (for ground-assault and bomber pilots), Naval (for all surface vessels), Submarine, Guerrilla (also used by commandos), and Police (also used by military police).

Specialties default among one another at -4, though many specialities share particular applications. For instance, anyone with Tactics (Infantry), Tactics (Guerrilla), or Tactics (Police) would roll at base skill level to deduce the best route from which to approach a dwelling occupied by hostile forces.

On the other hand, no matter how many usages are shared by several specializations, each specialization will have unique applications. For instance, only Tactics (Infantry) would not take a penalty to figure out the best place to dig a machine-gun pit, only Tactics (Guerrilla) would not take a penalty to properly sneak in a team of soldiers via rubber raft, and only Tactics (Police) would not take a penalty to figure out how to get those hostiles out of the dwelling *alive*.

Operations/TL (Mental/Hard) Defaults to IQ-6, Tactics-6, or Strategy-6

Majors and lieutenant commanders begin learning this skill, which army colonels and sea captains ideally should have at a high level before enjoying their limited independence of action. Operations represents skill in coordinating multiple tactical missions to achieve the goals of a strategic plan (see *Strategy*, below). The usual unit sizes involved are anywhere from a battalion to an army corp. Thus, in most cases ***GURPS*** mass combat will involve Operations rolls by the commanders, unless both sides deploy units that are very small (requiring Tactics) or extremely large (requiring Strategy).

The skill includes operating, commanding, and supplying units on this scale. It requires specialization by medium; e.g., Air, Land, Sea, or (at higher TLs) Space. Officers in non-standard units may instead specialize in a combination medium; for instance, a paratroop colonel would have Operations (Air-Land) while a Marine major would have Operations (Sea-Land). All Operations specializations default to one another at -3.

Strategy/TL (Mental/Hard) Defaults to IQ-6 or Operations-6

Generals and admirals use this skill, which they begin learning as staff officers. Strategy is the skill of coordinating multiple operations of all kinds – land, naval, air, and space – to achieve a grand-scale outcome. The units deployed are usually armies and fleets. Strategy fully encompasses the general principles of planning and executing a military campaign. This means that – far more than Soldier, Tactics, or Operations – Strategy involves knowing *what* to fight for as well as *how* to fight for it. Some WWII generals display high Operations but low Strategy by winning battles well but selecting them poorly.

Strategy takes no familiarity or specialization.

Converting Back and Forth

To revert to the ***GURPS Basic Set*** system, simply fold any character points in Soldier into Tactics, and any points in Operations into Strategy. Remove the Tactics TL designation and specialization. Finally, remove the Strategy TL designation and give it a specialization of Land, Naval, or Space.

To convert *from* ***Basic Set***, split the points in Tactics into Soldier and Tactics (leaning toward Tactics at higher Military Ranks), and those in Strategy into Operations and Strategy (leaning toward Strategy at higher Ranks), then add appropriate TL designations, familiarities, and specializations.

Status

Status is purchased normally in the WWII setting. Military Rank can provide a free increase to Status of +1 at Ranks 3-4, +2 at Ranks 5-7, or +3 at Rank 8, but not past the Status that it would give a person of Status 0. For instance, a Status 2 millionaire who becomes an army lieutenant will remain Status 2, while a Status 1 doctor who becomes a lieutenant colonel will only increase Status by 1, to Status 2.

As an exception to ***GURPS Basic Set***, any free levels of Status from Military Rank *do* increase cost of living (see below) in the WWII setting. Many of the "old guard" traditions and expectations for military officers persist, and many armies have pay structures that expect high-ranking "officers and gentlemen" to finance these expectations from their private resources.

The following table provides several civilian examples of Status, and the monthly cost of living for civilians. Military personnel enjoy a reduced cost of living, because their service provides basic food, work clothing, and housing. These benefits deduct $40 from cost of living at Military Ranks 0-2, $80 at Ranks 3-4, $160 at Ranks 5-7, or $260 at Rank 8.

Status/Cost of Living Table

Level	*Example*	*Monthly Cost of Living*
8	Dictator of major country	$5,000+
7	President of major country, minor dictator	$2,000+
6	Governor, senator, president of minor country	$1,000
5	Industrialist, major noble title	$800
4	Prominent scientist, renowned author	$600
3	Mayor of large city, diplomat	$400
2	Mayor of small city, medium business owner	$240
1	Doctor, councilman, police chief, pastor	$120
0	Ordinary citizen	$60
-1	Poor	$30
-2	Hobo, refugee	$5

Civilian Jobs

Some WWII roles require civilian jobs. In general, 20% of U.S. civilians during WWII were self-employed, primarily as farmers. The average job required a fourth-grade education. The *Job Table* provides specific positions in U.S. industry.

GMs should use the table rather flexibly. U.S. women and minorities, and men in other countries, may make considerably less money for the same work. Also, in certain sectors, wages rose considerably during the war years.

The cited civilian pay is *before* taxes, which were *very* high in most countries during WWII. Assume taxes take 40% of U.S. civilian annual income up to $100,000 – for any additional income, it's 90%! In other nations, assume 40% taxes for the first $30,000, then 90% afterward. Many people evaded some or all of their taxes. Also, good patriots were expected to invest at least 10% of take-home pay in war bonds or similar devices.

The Merchant Marine, while technically a civilian service, uses the military pay calculations found on p. 63, substituting Merchant Rank for Military Rank. Consider this to be pay *after taxes*, as an exception to the format in which civilian pay usually is presented.

JOB TABLE

Job (Prerequisites), Monthly Income	*Success Roll*	*Critical Failure*
Poor Jobs		
Farmhand (ST 9+), $40	12	drafted
"New Deal" or "Labor Corp" Worker, $30	ST	drafted/6d
Struggling Jobs		
Clerk (Accounting 10+), $70	PR	drafted
Farmer* (Agronomy 9+), $5 × planted acreage	PR	-4i/-10i, 3d
Hustler* (Streetwise 11+, Merchant 8+), $75	Worst PR	-1i/-1i, arrested, drafted
Novice Factory Worker (DX 10+), $100	DX	drafted/4d
Manual Laborer (ST 10+), $80	ST	drafted/4d
Thief* (Streetwise 11+, DX 11+), $90	Worst PR	-1i/-2i, arrested, drafted
Waiter (Savoir-Faire 12+), $60	PR	drafted
Average Jobs		
Bank Teller (Accounting 11+), $150	PR	drafted
Black Marketeer* (Streetwise 13+, Fast-Talk 10+, Merchant 10+), $200	Worst PR	-4i, 3d/6d, caught
Clergyman (Theology 12+, Status 1+), $175	PR	sent to smaller church/parish
Foreman (any Craft skill 13+, IQ 10+), $240	Best PR	-1i/4d, drafted
Journalist (Photography or Writing 12+), $180	Best PR	LJ
Mechanic (Mechanic 11+), $180	PR	drafted/-3i, 4d
Police Detective (Criminology 12+, PS: Law Enforcement 11+), $200	Worst PR	3d/6d
Police Officer (Guns [Pistol] 12+, PS: Law Enforcement 11+), $150	IQ	3d/6d
Private Eye* (Fast-Talk 12+, Streetwise 12+), $120	Worst PR	-2i/-2i, 3d, drafted
Prostitute* (Sex Appeal 10+), $150 + ($25 × Appearance modifier toward men)	PR	-2i, social disease/-4i, 4d
Skilled Laborer/Factory Worker (any Craft skill 12+), $200	Best PR	-1i/3d, drafted
Teacher (Teaching 12+), $160	PR	-1i/drafted
Telephone Operator (IQ 11+, Bard 10+), $100	IQ	-1i/LJ
USO Entertainer (Bard 14+, Musical Instrument 13+, or Singing 12+), $250	Best PR	2d/4d
Comfortable Jobs		
Author* (Writing 13+), $300	PR	drafted
Business Manager (Administration 12+, Leadership 11+), $400	Worst PR	-1i/drafted
Doctor (Physician 16+, Diagnosis 16+, Surgery 14+), $450	Worst PR	-2i/drafted
Engineer (Engineer 12+), $450	PR	-2i/drafted
Lawyer (Law 13+), $300	PR	drafted/-10i, disbarred, drafted
Mineral-Rights Speculator* (Fast-Talk 10+, Geology 10+, $5,000), $500	Worst PR	-5i/-20i, drafted
PR Executive (Psychology 12+, Fast-Talk 10+, Administration 10+), $350	Best PR	-2i/LJ
Spy* (Guns 12+, Acting 13+, Fast-Talk 11+), $400	Worst PR-1	-1i, 2d/captured, 4d
University Professor (any Scientific skill 14+, Status 1+), $400	PR+Status	-2i/drafted
Wealthy Jobs		
Atomic Scientist (Research 14+, Engineer 15+, Nuclear Physics 15+), $700	Best PR-1	-1i/-3i, accused of spying
Big Bank President (Economics 13+, Administration 11+, Status 4+), $1,000	Administration	-3i/LJ
Corporate Executive (Administration 14+, Status 4+), $1,000	PR + Status	-2i/LJ
War Profiteer (Fast-Talk 13+, Status 1+, $2,000), $1,500	PR-3	-6i/-10i, imprisoned
Movie Actor* (Performance 12+, Charisma 2+), $700	Best PR-2	-5i/drafted
Politician (Politics 12+, Fast-Talk 13+), $800	Worst PR	-2i/-4i, LJ, -2 Status
Underworld Boss* (Streetwise 13+, Administration 12+, Leadership 12+), $700	Worst PR	-4i, 3d/-20i, prison

* Indicates freelance jobs.

Key: *PR* means "prerequisite," or the skill(s) required to get the job in the first place; *i* indicates that many months of lost income through a bad affair of some sort; *d* means the jobholder suffers a physical accident doing that many dice of damage; *LJ* means "lost job."

If jobholder is "4F" (see p. 70) or female, treat "drafted" as "LJ," or ignore "drafted" result for a free-lance job.

CHARACTER TEMPLATES

A character template is a list of attributes, advantages, disadvantages, and skills that a player can choose from in order to quickly build a character. The point costs of these traits are listed, and the sum is given as the "template cost." The player pays this cost, picks the options he wants, copies the template abilities to his character sheet, and spends any remaining points to customize his character. The templates that begin on p. 72 represent average soldiers with the indicated specialty. In a realistic campaign, they will serve as is for non-player characters.

A player never has to use a template. Original characters are completely compatible with those made using templates.

Many of the advantages, disadvantages, and skills listed here are described on pp. 177-191. The pages referred to in the ***GURPS*** core books usually provide lengthier descriptions.

National Advantages

Each template calls for a package of *National Advantages*, usually worth 25 points. These are described below. The points should first be used to pay for Military Rank and any Wealth that the Rank requires (see p. 63). Remaining points should then be used to purchase advantages from among the listed options. The allotted points won't pay for a lot of Rank and its accompanying Wealth; extra points will have to be found elsewhere.

A few templates already will mandate a minimum investment in Military Rank or other advantages found in these packages. In such cases, the mandated advantages need not be purchased again, though the *National Advantages* points may be used to further increase Rank.

Additional ***GURPS WWII*** sourcebooks will describe national packages for other countries. For now, the GM will have to create his own or use one of the five provided.

U.S. Advantages

Purchase Military Rank and resulting Wealth, with remaining points spent among: +1 to IQ [10]; Absolute Timing (p. B19) [5]; Acceleration Tolerance (p. CI19) [10]; Acute Senses (p. B19) [2/level]; Charisma (p. B19) [5/level]; Combat Reflexes (p. B20) [15]; Extra Fatigue 1-4 (p. CI24) [3/level]; Hard to Kill 1-2 (p. CI25) [5/level]; Intuition (p. B20) [15]; Less Sleep 1-5 (p. CI27) [3/level]; Luck (p. B21) [15 or 30]; Manual Dexterity (p. CI27) [3/level]; Reputation from medals (p. 63) or simply good conduct (p. B17) [varies]; Toughness (p. B23) [10 or 25]; Versatile (p. CI31) [5].

British Advantages

Purchase Military Rank and resulting Wealth, with remaining points spent among: Absolute Timing (p. B19) [5]; Alertness (p. B19) [5/level]; Ally (Batman or loyal mate) (p. B23) [varies]; Combat Reflexes (p. B20) [15]; Common Sense (p. B20) [10]; Contacts (Old school chums) [varies]; Danger Sense (p. B20) [15]; High Pain Threshold (p. B20) [10]; Reputation from medals (p. 63) or simply good conduct (p. B17) [varies]; Strong Will (p. B23) [4/level]; Toughness (p. B23) [10 or 25]; Voice (p. B23) [10]; any of Collected (p. CI22) [5], Composed (p. CI22) [5], Imperturbable (p. CI26) [10], Unfazeable (p. CI31) [15], and/or Fearlessness (p. CI25) [2/level].

German Advantages

Purchase Military Rank and resulting Wealth, with remaining points spent among: +1 to DX [10]; Alertness (p. B19) [5/level]; Appearance (p. B15) [5 or 15]; Combat Reflexes (p. B20) [15]; Danger Sense (p. B20) [15]; Extra Fatigue 1-4 (p. CI24) [3/level]; Hard to Kill 1-2 (p. CI25) [5/level]; High Pain Threshold (p. B20) [10]; Language Talent (p. B20) [2/level]; Less Sleep 1-5 (p. CI27) [3/level]; Reputation from medals (p. 63) or simply good conduct (p. B17) [varies]; Strong Will (p. B23) [4/level]; Voice (p. B23) [10]; Light Hangover (p. CI27) [2] *or* No Hangover (p. CI28) [5]; *either* Disease Resistant (p. CI24) [5] or Immunity to Disease (p. B20) [10]; *either* Rapid Healing (p. B23) [5] or Very Rapid Healing (p. CI31) [15]; improve Fit [5] to Very Fit (p. CI31) [15].

Soviet Advantages

Purchase Military Rank and resulting Wealth, with remaining points spent among: +1 to HT [10]; Absolute Direction (p. B19) [5]; Alcohol Tolerance (p. CI19) [5]; Combat Reflexes (p. B20) [15]; Common Sense (p. B20) [10]; Danger Sense (p. B20) [15]; Extra Hit Points 1-4 (p. CI24) [5/level]; Hard to Kill 1-2 (p. CI25) [5/level]; High Pain Threshold (p. B20) [10]; Less Sleep 1-5 (p. CI27) [3/level]; Night Vision (p. B22) [10]; Pitiable (p. CI29) [5]; Reputation from medals (p. 63) or simply good conduct (p. B17) [varies]; Strong Will (p. B23) [4/level]; Temperature Tolerance 1-2 (p. CI30) [1/level]; Toughness (p. B23) [10 or 25]; any of Collected (p. CI22) [5], Composed (p. CI22) [5], Imperturbable (p. CI26) [10], and/or Fearlessness (p. CI25) [2/level].

Japanese Advantages

Purchase Military Rank and resulting Wealth, with remaining points spent among: Absolute Direction (p. B19) [5]; Absolute Timing (p. B19) [5]; Combat Reflexes (p. B20) [15]; Daredevil (p. CI23) [15]; Fearlessness (p. CI25) [2/level]; High Pain Threshold (p. B20) [10]; Higher Purpose (Kamikaze or equivalent suicide attack) (p. CI26) [5]; Less Sleep 1-5 (p. CI27) [3/level]; Night Vision (p. B22) [10]; Reputation from medals (p. 63) or simply good conduct (p. B17) [varies]; Strong Will (p. B23) [4/level]; improve Fit [5] to Very Fit (p. CI31) [15].

National Disadvantages

The following templates call for a *National Disadvantages* package, usually worth -30 points. These do not include any Duty disadvantage (the templates tally that separately), but *do* include any below-average wealth (called the Poverty disadvantage) that results from a soldier's low rank (see p. 63).

Beyond those requirements, *no* disadvantage is absolutely required *ever*. One may always portray the open-minded exception, no matter how intolerant the background culture.

That said, these packages portray the perceived faults of WWII soldiers from various nations. Many were designed into the various cultures, and seen as virtues. Others were perceived as disadvantages, but defied efforts to eradicate them.

U.S. Disadvantages

U.S. troops displayed the most diverse disadvantages. A typical set might be: Addiction (Tobacco) (p. B30) [-5]; Fanaticism (Patriotism) (p. B33) [-15]; Intolerance (p. B34) [-5]; and Sense of Duty (p. B39) (Buddies in the unit) [-5].

Freely substitute any of: -1 to IQ [-10]; Bad Sight (p. B27) [-10]; Bad Temper (p. B31) [-10]; Bloodlust (p. B31) [-10]; Bully (p. B31) [-10]; Chummy (p. CI87) [-5]; Code of Honor (p. 64) [-10]; Compulsive Behavior (Binge Drinking) (p. 64) [-10]; Compulsive Gambling (p. CI88) [-5 or -10]; Compulsive Generosity (p. CI88) [-5]; Edgy (p. CI90) [-5]; Greed (p. B33) [-15]; Gullibility (p. B33) [-10]; Honesty (p. B33) [-10]; Impulsiveness (p. B33) [-10]; Lecherousness (p. B34) [-15]; Odious Personal Habits (p. B26) [-5/-10/-15]; Overconfidence (p. B34) [-10]; Post-Combat Shakes (p. CI93) [-5]; Semi-Literacy (p. CI94) [-5]; Sense of Duty (p. B39) (Service or U.S.) [-10]; Social Disease (p. CI84) [-5]; Social Stigma (Minority) (p. B27) [-10]; Stubbornness (p. B37) [-5]; Truthfulness (p. B37) [-5]; Weak Will (p. B37) [-8/level]; and Laziness (p. B34) [-10] *or* Workaholic (p. CI95) [-5].

British Disadvantages

Stock British disadvantages vary depending on whether addressing the lower-class ranks or upper-class officers. The average trooper might have: Chummy (p. CI87) [-5]; Code of Honor (Enlisted Man's) (p. 64) [-10]; Poverty (Struggling) [-10]; Sense of Duty (p. B39) (Mates in the troop) [-5].

The average cliché officer might have: Code of Honor (Officer's) (p. 64) [-10]; Intolerance (p. B34) [-5]; Odious Personal Habit (Condescending mannerisms) (p. B26) [-5]; and Overconfidence (p. B34) [-10].

Either may substitute: Bad Sight (p. B27) [-10]; Bloodlust (p. B31) [-10]; Bully (p. B31) [-10]; Compulsive Behavior (Binge Drinking) (p. 64) [-10]; Fanaticism (Patriotism) (p. B33) [-15]; Gullibility (p. B33) [-10]; Hidebound (p. CI91) [-5]; Honesty (p. B33) [-10]; Impulsiveness (p. B33) [-10]; Laziness (p. B34) [-10]; Obdurate (p. CI92) [-10]; Odious Personal Habits (p. B26) [-5/-10/-15]; Post-Combat Shakes (p. CI93) [-5]; Sense of Duty (p. B39) (Service or Country) [-10]; Stubbornness (p. B37) [-5]; and Truthfulness (p. B37) [-5]. Officers may increase Code of Honor to the Extreme version (p. 64) [from -10 to -15] or take a mild Delusion (p. B32) [-5]; enlisted may take Intolerance (p. B34) [-5] or Semi-Literacy (p. CI94) [-5].

German Disadvantages

A stereotypical set: Code of Honor (p. 64) [-10]; Intolerance (p. B34) [-10]; and Poverty (Struggling) (p. 63) [-10].

Substitute any of: Bad Sight (p. B27) [-10]; Bloodlust (p. B31) [-10]; Bully (p. B31) [-10]; Callous (p. CI86) [-6]; Chummy (p. CI87) [-5]; Fanaticism (Patriotism) (p. B33) [-15]; Glory Hound (p. CI90) [-15]; Gullibility (p. B33) [-10]; Honesty (p. B33) [-10]; Overconfidence (p. B34) [-10]; Phobia (Agoraphobia) (p. B35) [-10]; Post-Combat Shakes (p. CI93) [-5]; Sadism (p. B36) [-15]; Secret (Jewish blood) (p. CI78) [-20 or -30]; Sense of Duty (p. B39) (Comrades in arms) [-5] or (Service or Germany) [-10]; Truthfulness (p. B37) [-5]; Workaholic (p. CI95) [-5]; Youth (p. B29) [-2/level]; or increase Code of Honor to Extreme version (p. 64) [from -10 to -15].

Soviet Disadvantages

The stock Soviet soldier might have: Compulsive Binge Drinking (p. 64) [-10]; Poverty (Poor) (p. 63) [-15]; and Semi-Literacy (p. CI94) [-5].

Substitute among: Bad Sight (p. B27) [-10 or -25]; Bad Temper (p. B31) [-10]; Bloodlust (p. B31) [-10]; Bully (p. B31) [-10]; Callous (p. CI86) [-6]; Fanaticism (Communism) (p. B33) [-15]; Gullibility (p. B33) [-10]; Hidebound (p. CI91) [-5]; Incurious (p. CI91) [-5]; Indecisive (p. CI91) [-10]; Intolerance (p. B34) [-5]; Laziness (p. B34) [-10]; Odious Personal Habits (p. B26) [-5/-10/-15]; Overconfidence (p. B34) [-10]; Primitive -1/TL5 (p. B26) [-5] or -2/TL4 [-10]; Sense of Duty (p. B39) (Comrades in arms) [-5] or (Mother Russia) [-10]; Social Stigma (Female) (p. B27) [-5]; Stubbornness (p. B37) [-5]; Truthfulness (p. B37) [-5]. Illiteracy (p. B33) may replace Semi-Literacy [from -5 to -10]; this requires taking Uneducated (p. CI79) [-5].

Japanese Disadvantages

Most troopers have Code of Honor (Extreme Enlisted Man's) (p. 64) [-15] and Poverty (Poor) (p. 63) [-15]. Higher ranks keep the Code of Honor (substituting the officers' version as appropriate), but replace the Poverty disadvantage, often with Workaholic (p. CI95) [-5] then Intolerance (p. B34) [-10].

Japanese troops make fewer substitutions than in other cultures, but replacements (or additional disadvantages) might include: Bad Sight (p. B27) [-10]; Bloodlust (p. B31) [-10]; Bully (p. B31) [-10]; Callous (p. CI86) [-6]; Edgy (p. CI90) [-5]; Extreme Fanaticism (p. CI90) [-15]; Fanaticism (Patriotism) (p. B33) [-15]; Hidebound (p. CI91) [-5]; Honesty (p. B33) [-10]; Incurious (p. CI91) [-5]; Low Self Image (p. CI92) [-10]; Overconfidence (p. B34) [-10]; Phobia (Xenophobia) (p. B35) [-15/-30]; Post-Combat Shakes (p. CI93) [-5]; Reduced Hit Points -1 (p. CI82) [-5]; Sadism (p. B36) [-15]; Selfless (p. CI94) [-10]; Sense of Duty (p. B39) (Service or the Emperor) [-10]; and Truthfulness (p. B37) [-5].

Many enlisted men do not really believe in the Code of Honor, but must practice it, anyway. This can reduce it to a -10-point version. Soldiers who won't even pretend to honor the code must take a bad Reputation (p. B17): either -2 (Nonconformist) [-10] if they grovel and blame their lack of character, or -3 (Dangerous nonconformist) [-15] if they suggest that the code itself is flawed. The rare officer who disrespects the Code will need to take a -20-point Secret (p. CI78), instead.

4F: Forbidden Disadvantages

Many *GURPS* disadvantages would disqualify one from enlistment in most armies, whether a volunteer or draftee.

Regardless of enlistment standards, veteran soldiers will develop many of the same disadvantages in combat. When a soldier does so, his service may simply overlook the problem, move him to an office job back home, or discharge him.

Usually, this sort of decision is made on a case-by-case basis. Players of veteran, battle-scarred characters may take one or two of the following disadvantages with GM permission and a good back story. Players with characters just out of basic training usually should not take any of the following.

Mental Disadvantages

Armies varied in how hard and professionally they rooted out mental conditions, but people with the following usually would not make it out of basic training: Addiction (to any illegal substance; tobacco is acceptable), Alcoholism, Amnesia, Berserk, Cannot Learn, Chronic Depression, Delusions (major or severe), Dyslexia, Flashbacks, Kleptomania, Lunacy, Manic-Depressive, Megalomania, Non-Iconographic, Paranoia, Prefrontal Lobotomy, Short Attention Span, Split Personality, Voices.

Early signs of these disadvantages probably would get a recruit kicked out, but they often don't become obvious until the soldier is in combat, where they may be forgiven: Combat Paralysis, Confused, Cowardice, Edgy, Indecisive, Low Empathy, Low Self-Image, On the Edge, Pacifism, Phobias, Post-Combat Shakes, Reclusive, Trickster.

Physical Disadvantages

The following disadvantages make it virtually impossible to serve in uniform, though by the end of the war some countries (Germany, in particular) were lowering their standards to include many of these conditions. In the United States, a man physically unfit to serve was designated "4F."

The disadvantages include: Bad Back, Bad Sight (at -25 points), Blindness, Color Blindness, Deafness, Delicate Metabolism, Dependency, Dwarfism, Epilepsy, Fat, Gigantism, Hard of Hearing, Hemophilia, Hunchback, Lame, Mute, Night Blindness, No Depth Perception, One Arm, One Eye, One Hand, Quadriplegic, Terminally Ill, Tourette's Syndrome, Unfit, Very Unfit, Weak Immune System.

Skills

Primary Skills are taught intensively during training. *Secondary* and *Optional Skills* are taught less intensively, less than universally, or learned during active service, so inexperienced soldiers often have few or none of them. All "/TL" skills (p. 205) are TL6. Skills are listed in the following format:

Skill Name **(Difficulty)** *Relative Level* ***[Point Cost]***-Actual Level

Skills Required for Higher Ranks

Most templates assume Military Rank 0. These skills, at these minimal levels, are expected of those with higher Military Rank, and the points to purchase the skills almost always will have to be found outside the template investment:

	Military Rank						
Skill	***1***	***2***	***3***	***4***	***5***	***6***	***7-8***
Administration	9	11	10	12	12	12	12
Intelligence Analysis	–	–	–	–	9	10	12
Leadership	9	12	9	11	12	12	13
Orienteering*	10	12	10	12	13	13	13
Savoir-Faire (Military)	9	10	10	11	12	13	13
Tactics	10	12	9	12	12	12	12
Operations	–	–	–	9	11	12	12
Strategy	–	–	–	–	–	9	12

* Substitute Navigation for naval or aviation careers.

Background Skills

Most WWII soldiers enjoyed regular civilian lives before enlisting. The templates do not allot points for civilian background skills, but these should not be ignored for characters whose back story includes adult years out of uniform.

In a 100-point campaign centered on U.S. soldiers, for instance, the GM may want to rule that the players must first spend up to 25 points on background skills (plus any supporting advantages) before purchasing a template. Almost any skill could be purchased as a background skill, but GMs and players may want to observe the following very broad guidelines:

U.S. Background Skills: Along with the widest variety of possible backgrounds, U.S. citizens enjoy the broadest civilian access to skills that will prove useful in the military. Driving (Automobile), Guns (Rifle), and Mechanic are common skills. Piloting (Single-Engine Prop) isn't uncommon.

British Background Skills: Previous experience will vary widely in British society, with the occasional university professor who has mastered ancient Greek serving as a private. Useful army skills will be uncommon for everyone except the titled upper class, who will usually have some level of Guns (Shotgun), decent Riding (Horse), Area Knowledges for parts of Europe, and perhaps Driving (Automobile) or Piloting. Useful naval skills (Boating, Navigation, etc.) will be common.

German Background Skills: Many of Hitler's troops were raised to be soldiers, either through the Nazis' youth and labor programs or as part of the aristocratic old guard. Despite this, the Nazi-trained soldier will possess few or no military skills prior to entering service. He usually will possess significant athletic skills, such as Jumping and Acrobatics, which may prove

of use. Climbing and Skiing are particularly common. The GM may also allow German characters to apply points allotted to background skills to improving DX or HT, instead, but this should only be done after the military template is purchased.

Soviet Background Skills: Those in the populous northwest, primarily ethnic Russians, will often possess Agronomy and a professional skill for factory work. Few modern skills will be common, though Driving (Construction Equipment) won't be all that rare. Those in the south and southeast may display skills more suited to a military existence, possibly including Guns (Rifle), Riding (Horse), Stealth, Survival (Plains), and a bit of Tactics (Guerrilla) in bandit-infested areas.

Japanese Background Skills: Very rarely will any army skills except Bicycling be learned outside military service, though some skills useful in the navy – Boating, in particular – won't be uncommon. Civilian skills for most Japanese will include Agronomy or Gardening, those related to commercial fishing, or those related to factory work. In addition, many Japanese will have invested in artistic skills such as Poetry or Calligraphy. Judo will be fairly common, Karate a bit less so.

Using the Templates

Once a template has been purchased, the player may customize it. Options for customization per nation of service are described in each template's *Customization Notes*. NCOs and officers will need to purchase the additional skills on p. 70. Finally, the player may spend any remaining character points. The template does not influence how these points are spent.

If the template has fewer than -40 points in disadvantages *not* counting its Duty, additional disadvantages may be taken, up to this limit. The only restrictions on extra disadvantages are described under *4F* on p. 70. Five quirks may be taken as well.

Better and Worse Soldiers

The ***GURPS*** mass-combat system (see pp. CII112-129) rates troops as raw, green, average, seasoned, veteran, or elite. The templates in this book mostly represent average (50-, 55-, and 60-point templates) and seasoned (65- and 75-point templates) individuals. These guidelines can help create troops of lower or higher quality:

Raw: These troops possess Soldier-9 or less, and average 25 or fewer points, reflecting poor (or no) training. Most templates are higher than 25 points, so features will need to be cut to reflect raw troops. First, if template IQ is higher than 10, reduce it by 1. Then, lower Soldier skill to 9. Delete all points for optional skills. Then, reduce or delete all secondary skills. For further cuts, reduce any template DX of 11+ by 1, then reduce the *National Advantages* point total. Raw troops should not be based on a template greater than 60 points.

Green: Soldiers of this quality have Soldier-10 or -11 and average 26-49 points, indicating average training but little or no experience. If built on a higher-point template, reduce the template cost per *Raw* troops, above.

Average: These are solid troops with Soldier-12 or -13 averaging 50-64 points. Most of the templates illustrate these combatants, who have either good training or average training with a small amount of combat experience.

Seasoned: These soldiers boast Soldier-14 and average 65-79 points. They either have received excellent training or have extensive combat experience. If built on a lower-point template, first add the necessary points to Soldier skill. Then add Combat Reflexes, if not already present. Spend the next 10 points on improving existing skills or adding optional ones. Any remaining points can be spent freely on improving attributes, adding advantages, or improving the skill set.

Veteran: Troops of this quality have seen a great deal of combat and learned from it. They possess Soldier-15 and average 80-94 points. Few templates will mandate soldiers of this caliber; build them on a smaller template, then improve the character as described for *Seasoned*, above.

Elite: The best of the best, elite soldiers combine top talent, experience, and training, boasting Soldier-16 or higher and averaging 95+ points. Build them as per *Veteran*, above.

These guidelines don't produce the most efficient soldiers in terms of ***GURPS*** point values. Rather, they are intended to model a realistic path of improvement. For efficiency, purchase Combat Reflexes if not already possessed, increase DX to 14 and IQ to 13 as points allow, then purchase Luck if possible.

Note that a trooper's general "quality" isn't quite so easily defined as this. Any elite unit may include an "old hand" of only 40-50 points who has Soldier-16+ and all basic skills at appropriate levels. Conversely, average soldiers will include some 100-point characters who simply haven't invested in Soldier-14+. In general, Soldier skill determines troop quality, with the average point totals being no more than a rough guide as to what quality of character will have that level of skill.

When using the mass-combat system, substitute Soldier skill for Tactics in determining Battle skill. Also use it as base Morale (see p. CII116) with any modifiers that would apply to Will (Fearlessness, Strong Will, Weak Will, etc.).

Rifleman

50 points

As World War II dawned, many theorists believed the rifleman had become obsolete. Tanks would steamroll him or aerial bombing transform him into a helpless target. Though most generals did not take such an extreme view, consciously or not most nations did downplay the importance of infantry. With so many shiny new weapons to explore, the best recruits went into aviation, electronic warfare, or armor. Infantry captains and sergeants often had to deal with lieutenants showing poor potential and privates of questionable literacy. These nations learned that infantry still played a dominant role on the WWII battlefield. No other arm could defend nearly so well; in urban areas, entrenched infantry often proved unbeatable. Quality infantry also could attack successfully, though without armor's speed.

All countries found themselves critically short of riflemen late in the war. The United States had trained too few and the Soviet Union wasted too many. Germany and Japan both had recognized infantry's importance from the outset, but lacked the population bases to replace their large losses.

WWII riflemen endured short, miserable lives. U.S. riflemen suffered a mortality rate second only to bomber crews, and unlike the aviators lived out most of their wartime service in mud and unwashed clothes that had turned stiff and black. The usual routine consisted of numbing marches with 60-80-lb. packs, infrequent and barely edible meals, digging whenever they stopped, battling foot disease . . . and eventually stopping a bullet or shell fragment.

Attributes: ST 11 [10]; DX 11 [10]; IQ 11 [10]; HT 11 [10].

Advantages: Fit [5] and 25 points in *National Advantages* (see p. 68).

Disadvantages: Extremely Hazardous Duty [-20] and -30 points in *National Disadvantages* (see p. 69).

Basic Skills: Camouflage (M/E) IQ [1]-11; Climbing (P/A) DX-1 [1]-10; First Aid (M/E) IQ-1 [1/2]-10; Gunner (Machine Gun) (P/A) DX [1]-11*; Guns (Light Auto) (P/E) DX+1 [1]-12*; Guns (Rifle) (P/E) DX+2 [2]-13*; Hiking (P/A – HT) HT-1 [1]-10; Jumping (P/E) DX-1 [1/2]-10; Knife (P/E) DX [1]-11; Soldier (M/A) IQ+1 [4]-12; Spear (P/A) DX-1 [1]-10; Stealth (P/A) DX-1 [1]-10; Throwing (P/H) DX-2 [1]-9; Traps (M/A) IQ-1 [1]-10.

Secondary Skills: Armoury (Small Arms) (M/A) IQ-1 [1]-10; Brawling (P/E) DX+1 [2]-12; Demolition (M/A) IQ-1 [1]-10; Engineer (Combat) (M/H) IQ-2 [1]-9; NBC Warfare (M/A) IQ-2 [1/2]-9; Orienteering (M/A) IQ-1 [1]-10; Scrounging (M/E) IQ-1 [1/2]-10; Survival (any) (M/A) IQ-1 [1]-10; Swimming (P/E) DX [1]-11.

Optional Skills: Spend 4 points on any of Bicycling, Guns (Flamethrower, Grenade Launcher, LAW, or Pistol), or Motorcycle (all P/E); Boating, Driving (Automobile or Construction Equipment), Gunner (Cannon or Mortar), or Riding (Horse) (all P/A); Carousing (P/A – HT); Skiing (P/H); Area Knowledge (any), Cooking, Savoir-Faire (Military), or Telegraphy (all M/E); Administration, Electronics Operation (Communications), Forward Observer, Freight Handling, Gambling, Intimidation, Mechanic (Gasoline Engine), Streetwise, or Teamster (all M/A); or Animal Handling or Explosive Ordnance Disposal (both M/H).

* Includes +1 for IQ.

Customization Notes: The following broad guidelines can help customize riflemen by nationality.

U.S.: Driving, optional Gunner and Guns specializations, Gambling, and Mechanic were very common. Bicycling, Skiing, and Teamster were not. A typical U.S. unit contained roughly equal proportions of raw to seasoned soldiers.

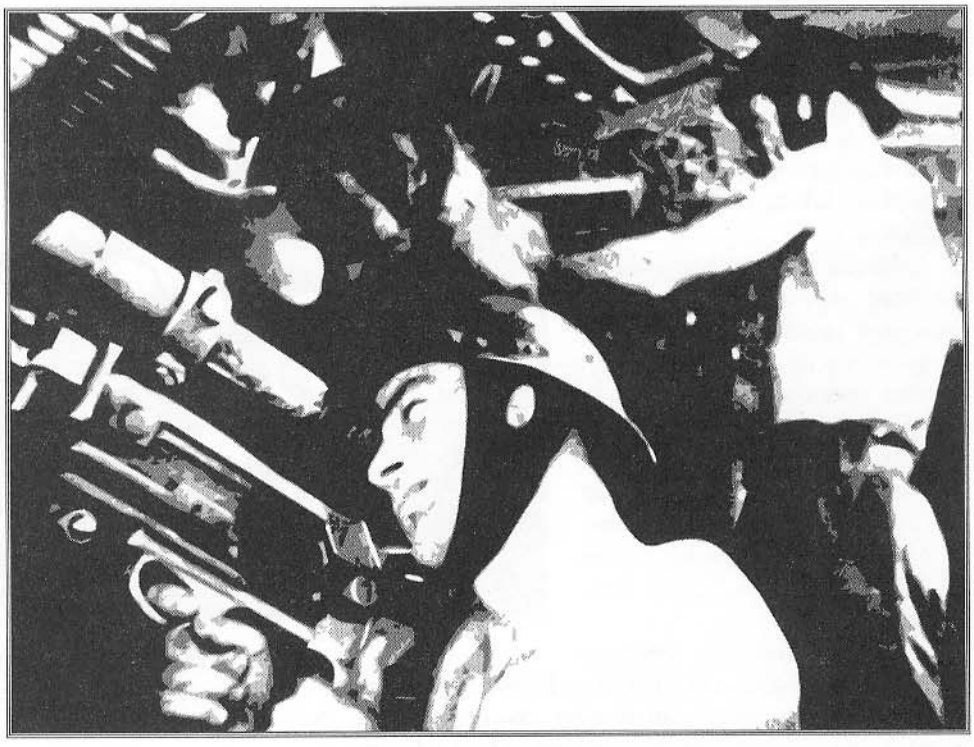
British: No skills were truly uncommon; units that began the war relying upon Bicycling or Riding ended it Driving. The Fit advantage may not have been quite as universal as in other armies. The British fielded a high proportion of small veteran or elite units. Larger formations usually were average or seasoned.

Germans: Bicycling, Motorcycle, and Teamster were quite common skills. Driving was not. Guns (LAW) became a common skill in 1944. Early German units entered combat as average or seasoned troops, with many reaching veteran status. Late-war units often were green or even raw and lacking the Fit advantage.

Soviets: Training was spotty, so even basic skills often were missing; however, Camouflage and Stealth were often high. Technical skills (Mechanic, Electronics Operation, etc.) were rare, as was Guns (LAW). Early units were green or raw. So were many later units, but front-line troops were average or seasoned.

Japanese: These soldiers usually would have ST 10 and HT 12. Bicycling would be common. Judo can substitute for Brawling. Guns skills sometimes were fairly low, while Spear would be high. Early units were average or seasoned, but quality declined later. Most NCOs and officers will have Katana; add it to the optional skills.

Armor Crewman — 50 points



This template encompasses the crews of tanks and related fighting vehicles. Armored-car troops will select Driving (Automobile) rather than Driving (Tracked).

Armor crewmen of all nations were expected to be aggressive. German panzer commanders routinely tore into enemy positions without a clear idea of what lurked behind the next ridge. Americans in their medium tanks sometimes played the mouse to a heavy German tank's cat, skirting around the panzer's flanks to try for a shot to the thin rear armor. Losing one's tank in the course of seeking out the enemy held no stigma – senior commanders expended their armor like so many rounds of ammunition.

Most tankers begin their service as the gun loader, feeding ammunition to the main weapon and assisting the driver in routine maintenance. The first promotion was to driver, who also held primary responsibility for keeping the tank running. The next step us was main gunner, then commander. The main gunner often would have Military Rank 1 and the commander usually was Rank 2 or higher. Players may want to keep this promotion schedule in mind when creating inexperienced crewmen. Many WWII tanks also had a fifth crew position, a radio operator who also fired a hull-mounted machine gun.

WWII armor required a great deal of maintenance. The pre-startup checklist for the driver rivaled that used on aircraft. Engines often endured for only a few hundred miles, and tracks often suffered routine breakdowns. The tankers kept busy with this work, but support crews performed the lion's share, working at night after following the tanks all day.

Attributes: ST 11 [10]; DX 11 [10]; IQ 11 [10]; HT 11 [10].

Advantages: Fit [5] and 25 points in *National Advantages* (see p. 68).

Disadvantages: Extremely Hazardous Duty [-20] and -30 points in *National Disadvantages* (see p. 69).

Basic Skills: Armoury (Vehicular) (M/A) IQ [2]-11; Driving (Automobile or Tracked) (P/A) DX [2]-11; Electronics Operation (Communications) (M/A) IQ-1 [1]-10; First Aid (M/E) IQ-1 [1/2]-10; Gunner (Cannon) (P/A) DX [1]-11*; Gunner (Machine Gun) (P/A) DX [1]-11*; Guns (Light Auto) (P/E) DX [1/2]-11*; Guns (Rifle) (P/E) DX [1/2]-11*; Hiking (P/A – HT) HT-2 [1/2]-9; Knife (P/E) DX [1]-11; Mechanic (Gasoline Engine) (M/A) IQ-1 [1]-10; Soldier (M/A) IQ+1 [4]-12; Spear (P/A) DX-2 [1/2]-9; Throwing (P/H) DX-2 [1]-9.

Secondary Skills: Camouflage (M/E) IQ [1]-11; Brawling (P/E) DX [1]-11; Demolition (M/A) IQ-1 [1]-10; Engineer (Combat) (M/H) IQ-2 [1]-9; Jumping (P/E) DX-1 [1/2]-10; NBC Warfare (M/A) IQ-2 [1/2]-9; Orienteering (M/A) IQ-1 [1]-10; Scrounging (M/E) IQ-1 [1/2]-10; Stealth (P/A) DX-1 [1]-10; Survival (any) (M/A) IQ-1 [1]-10; Traps (M/A) IQ-1 [1]-10.

Optional Skills: Spend 4 points on any of Guns (Pistol), Motorcycle, or Swimming (all P/E); Boating, Climbing, or Riding (Horse) (all P/A); Carousing (P/A – HT); Area Knowledge (any), Cooking, Savoir-Faire (Military), or Telegraphy (all M/E); Administration, Armoury (Small Arms), Forward Observer, Gambling, Intimidation, or Streetwise (all M/A); or Explosive Ordnance Disposal (M/H).

* Includes +1 for IQ.

Customization Notes: The following broad guidelines can help customize armor crewmen by nationality.

U.S.: These crewmen often possessed high Mechanic skill, and sometimes had notable Gunner (Rocket Launcher) and Forward Observer skills. Usually, they were average troops.

British: Not particularly noted for their Mechanic or Armoury skills, these troops usually were average with a few seasoned units. They often employed Engineer (Combat) skill, given the high percentage of engineer tanks that they fielded.

Germans: Panzer crews occasionally displayed remarkable Gunner skills, and usually were seasoned or better troops. NCOs and officers usually had high investments in Tactics.

Soviets: Electronics Operation (Communications) was rare early in the war, and never universally known. Other basic skills often were poor. Early units were green. Most late units were average with a few seasoned exceptions.

Japanese: These troops were more likely to have ST 10 and HT 12. They usually were green units. Few officers possessed high Tactics skill; they tended to charge straight ahead.

Artilleryman

50 points

This template includes the crews of traditional indirect-fire artillery, lighter pieces such as mortars, antitank guns, and antiaircraft guns. While their job is less glamorous than others, artillerymen did most of the killing on WWII's battlefields.

Antitank crews served right on the front edge of defensive positions, and antiaircraft crews often set up not too far behind them. Indirect-fire crews usually worked in the "rear" – but in the rear *of* the fighting, not *behind* it. Given that they were a favorite target of air strikes and enemy penetrations, even these gun crews qualify for the full -20 points in Extremely Hazardous Duty.

For most crewmen, serving a big gun was an exercise in brute labor. Emplacing the weapon, feeding it heavy shells and powder charges, moving the weapon – all required stout arms and strong backs. Despite the fact that most crew positions required relatively little skill, most artillerymen received training in the finer details of aiming and firing their pieces. Combat often whittled gun crews down to half strength or less, so artillerymen had to be prepared to take any fallen comrade's place.

WWII combatants tried to insert artillery units *everywhere*; often, the difference between winning and losing in a difficult environment came down to who could get in a big gun to support their infantry. Mortar crews were common among parachute units, with even some light artillery dropped. Mountain troops often had attached artillerymen, equipped with special pieces that broke apart into convenient mule loads.

Attributes: ST 12 [20]; DX 10 [0]; IQ 11 [10]; HT 11 [10].

Advantages: Fit [5] and 25 points in *National Advantages* (see p. 68).

Disadvantages: Extremely Hazardous Duty [-20] and -30 points in *National Disadvantages* (see p. 69). Veteran artillerymen may always take Hard of Hearing [-10] as part of their *National Disadvantages*.

Basic Skills: Armoury (Artillery) (M/A) IQ-1 [1]-10; Camouflage (M/E) IQ [1]-11; Engineer (Combat) (M/H) IQ-2 [1]-9; First Aid (M/E) IQ-1 [1/2]-10; Gunner (Cannon) (P/A) DX+1 [2]-11*; Gunner (Machine Gun) (P/A) DX [1]-10*; Gunner (Mortar) (P/A) DX+1 [2]-11*; Guns (Light Auto) (P/E) DX [1/2]-10*; Guns (Rifle) (P/E) DX [1/2]-10*; Hiking (P/A – HT) HT-2 [1/2]-9; Knife (P/E) DX [1]-10; Soldier (M/A) IQ+1 [4]-12; Spear (P/A) DX-2 [1/2]-8; Throwing (P/H) DX-2 [1]-8.

Secondary Skills: Brawling (P/E) DX [1]-10; Climbing (P/A) DX-1 [1]-9; Demolition (M/A) IQ-1 [1]-10; Forward Observer (M/A) IQ-1 [1]-10; NBC Warfare (M/A) IQ-2 [1/2]-9; Orienteering (M/A) IQ-1 [1]-10; Scrounging (M/E) IQ-1 [1/2]-10; Survival (any) (M/A) IQ-1 [1]-10; Swimming (P/E) DX [1]-10; Teamster (M/A) IQ-1 [1]-10.

Optional Skills: Spend 4 points on any of Guns (Pistol), Jumping, or Parachuting (all P/E); Armoury (Small Arms), Driving (Automobile, Construction Equipment, or Tracked), Gunner (Rocket Launcher), Riding (Horse), or Stealth (all P/A); Carousing (P/A – HT); Skiing (P/H); Area Knowledge (any), Cooking, Savoir-Faire (Military), or Telegraphy (all M/E); Administration, Electronics Operation (Communications), Gambling, Mechanic (Gasoline Engine), Streetwise, or Traps (all M/A); or Explosive Ordnance Disposal or Mathematics (M/H).

* Includes +1 for IQ.

Customization Notes: The following broad guidelines can help customize artillerymen by nationality.

U.S.: Driving skill was very common. Crews almost always possessed high Gunner and Electronics Operation (Communications) skills. Officers had high Operations skill for coordinating various batteries in landing their rounds rapidly and at once (time-on-target strikes). U.S. crews usually were seasoned or veteran.

British: Driving skill was fairly common. Crews usually were average with a few seasoned units.

Germans: Crews attached to panzer units had Driving skill; the vast majority used Teamster. They often had high Forward Observer and Orienteering skill, for pre-targeting points that enemy troops were likely to soon occupy. Crews usually were average with a few seasoned units.

Soviets: Driving skill was very rare. Units usually were green or average, but often there were a *lot* of them. Many will have high infantry skills, for manning antitank guns, or specialize in Gunner (Rocket Launcher) for rocket artillery.

Japanese: These crews were more likely to possess ST 11 and HT 12. They often possessed strong Combat (Engineer) and Climbing skills for moving guns in difficult terrain. They usually were average or seasoned units.

Marine — 65 points

Most WWII combatants fielded a naval infantry or marine force intended to specialize in the amphibious assault of coasts – a valuable but extremely costly undertaking.

Given the high casualties that troops wading into fire usually take, most marine forces had to train their men to very high standards, attempting to instill a near disregard for their own deaths. More than in other services, officers were expected to lead from the front, risking their own lives to display the importance of missions that often bordered on the suicidal.

As part of the process of infusing men with this much pride and courage, many marine organizations pay more attention to their service culture and history than rival arms. In U.S. service, while many draftees felt no loyalty or devotion to the Army, relatively few Marines did not bond into the tightly knit corps, even those who would later criticize it. The Royal Marines also maintained an elite, fraternal atmosphere.

Marines often know relatively little about defensive warfare – not only do their tactics stress the offensive, but they usually spend little time manning lines. (Soviet Marines are a notable exception, proving particularly dogged on defense.)

Where a regular infantry soldier could expect to spend long days living in the dirt and mud of a foxhole, most marines spent equivalent amounts of time sweating in the hold of a troop ship. The average U.S. Marine actually saw less combat than the average U.S. Army rifleman – but the combat that he did experience tended to be more intense.

Attributes: ST 11 [10]; DX 12 [20]; IQ 11 [10]; HT 11 [10].

Advantages: Fearlessness +1 [2], Fit [5], and 25 points in *National Advantages* (see p. 68). Marines may always take additional levels of Fearlessness [2/level] as part of their *National Advantages*.

Disadvantages: Extremely Hazardous Duty [-20] and -30 points in *National Disadvantages* (see p. 69).

Basic Skills: First Aid (M/E) IQ-1 [1/2]-10; Gunner (Machine Gun) (P/A) DX [1]-12*; Guns (Light Auto) (P/E) DX+1 [1]-13*; Guns (Rifle) (P/E) DX+3 [4]-15*; Hiking (P/A – HT) HT-1 [1]-10; Jumping (P/E) DX-1 [1/2]-11; Knife (P/E) DX [1]-12; Soldier (M/A) IQ+3 [8]-14; Spear (P/A) DX [2]-12; Stealth (P/A) DX-1 [1]-11; Throwing (P/H) DX-2 [1]-10; Swimming (P/E) DX [1]-12.

Secondary Skills: Brawling (P/E) DX+1 [2]-13; Climbing (P/A) DX-1 [1]-11; Demolition (M/A) IQ-1 [1]-10; Orienteering (M/A) IQ-1 [1]-10; Scrounging (M/E) IQ [1]-11; Survival (Island/Beach) (M/A) IQ-1 [1]-10; Traps (M/A) IQ-1 [1]-10.

Optional Skills: Spend 3 points on any of Guns (Flamethrower, Grenade Launcher, LAW, Pistol, or Shotgun) (P/E); Boating, Driving (Automobile or Construction Equipment), Gunner (Cannon or Mortar), or Powerboat (all P/A); Carousing (P/A – HT); Camouflage, Cooking, Savoir-Faire (Military), or Telegraphy (all M/E); Administration, Armoury (Small Arms), Electronics Operation (Comm), Forward Observer, Gambling, Intimidation, Mechanic (Gasoline Engine), NBC Warfare, or Streetwise (all M/A); or Engineer (Combat) or Explosive Ordnance Disposal (both M/H).

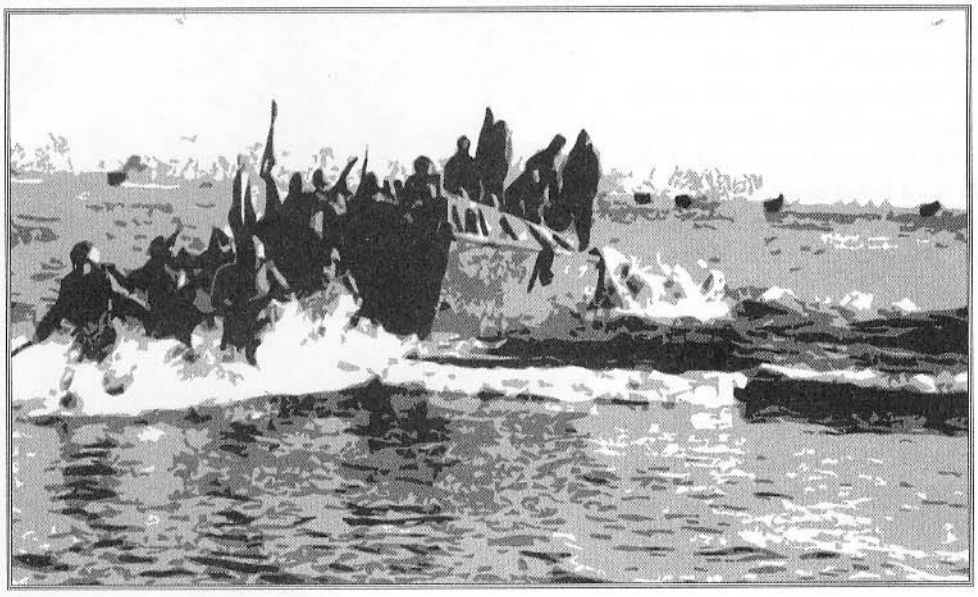
* Includes +1 for IQ.

Customization Notes: The following broad guidelines can help customize marines by nationality.

U.S.: The "Leathernecks" or "Devil Dogs" often possessed high Fearlessness. Those few in service during the '30s often fought small actions around the world for years prior to 1941; they might form the core of veteran units. Late in the war, they often utilized Guns (Flamethrower) and (Shotgun). Leathernecks usually were seasoned or veteran, with a few elite units.

British: They often possessed high Fearlessness, though they were less likely to charge straight ahead than their U.S. counterparts. They often displayed remarkable expertise in Guns (Rifle). Usually they were seasoned or veteran units.

Germans: Often sailors that the Kriegsmarine no longer needed by 1944 or so, these "Marines" would lack many template skills. These usually were green units, not really fit for front-line combat.



Soviets: They usually were very proficient in Guns (Light Auto). Most would substitute Survival (Urban) for Survival (Island/Beach), as they performed few amphibious operations but came to excel at close-quarters urban fighting. Usually they were seasoned, with a few veteran units.

Japanese: Usually, these troops will have ST 10 and HT 12. They substitute Karate (P/H) for Brawling (P/E). Though these troops often put up fierce resistance, many foes regarded them as lesser opposition than regular Japanese infantry, perhaps reflecting lack of defensive prowess. Usually they would qualify as average or seasoned units.

Recon Trooper 60 points

While reconnaissance planes and signals intelligence could help, ground commanders ultimately had to depend on their own troops to scout out the enemy. Most units from battalions on up had a specialized and independent reconnaissance element.

Infantry performed most recon missions. Early in the war, motorcycles and horses often provided transport. Motorcycles proved unsuitable, though cavalry scouts remained in use throughout the conflict. Mechanized units usually mounted riflemen in halftracks to support their armored cars in recon. Infantry divisions simply sent men out on foot.

Recon required expertise in many of the traditional infantry skills. The job basically consisted of advancing in front of the friendly lines until someone started shooting. Surviving more than a few encounters of this sort required mastery of cover and concealment, a sharp eye to detect unconcealed enemy units before they detected the recon forces, and luck. Recon units often took very heavy casualties, because all else being equal, forces waiting in concealment detect moving forces first.

In theory, all combatants expected their reconnaissance units to display an aggressive spirit, engaging and defeating the enemy once they came into contact. In practice, a unit light enough to serve as effective scouts usually didn't carry enough heavy weapons to overcome an entrenched enemy. Most commanders were content to have their recon units find and identify the enemy, then withdraw in good order.

Attributes: ST 11 [10]; DX 11 [10]; IQ 12 [20]; HT 11 [10].

Advantages: Fit [5] and 25 points in *National Advantages* (see p. 68). Recon troopers may always take Acute Vision [2/level] and Alertness [5/level] as part of their *National Advantages*.

Disadvantages: Extremely Hazardous Duty [-20] and -30 points in *National Disadvantages* (see p. 69).

Basic Skills: Camouflage (M/E) IQ [1]-12; Climbing (P/A) DX-1 [1]-10; First Aid (M/E) IQ-1 [1/2]-11; Guns (Light Auto) (P/E) DX+2 [1]-13*; Guns (Rifle) (P/E) DX+3 [2]-14*; Hiking (P/A – HT) HT-1 [1]-10; Jumping (P/E) DX-1 [1/2]-10; Knife (P/E) DX [1]-11; Orienteering (M/A) IQ [2]-12; Soldier (M/A) IQ+1 [4]-13; Spear (P/A) DX-1 [1]-10; Stealth (P/A) DX [2]-11; Throwing (P/H) DX-2 [1]-9; Traps (M/A) IQ [2]-12.

Secondary Skills: Brawling (P/E) DX [1]-11; Demolition (M/A) IQ-1 [1]-11; Electronics Operation (Communications) (M/A) IQ-1 [1]-11; Engineer (Combat) (M/H) IQ-2 [1]-10; Forward Observer (M/A) IQ-1 [1]-11; NBC Warfare (M/A) IQ-2 [1/2]-10; Survival (any) (M/A) IQ-1 [1]-11; Swimming (P/E) DX-1 [1/2]-10.

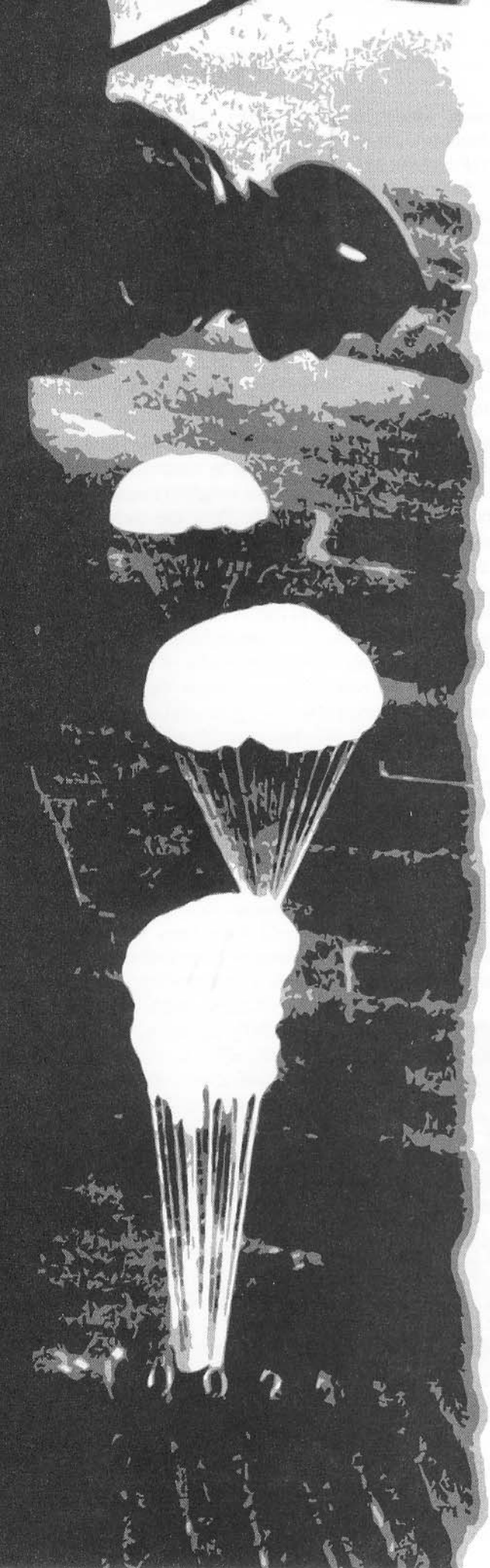
Optional Skills: Spend 3 points on any of Bicycling, Guns (LAW or Pistol), or Motorcycle (all P/E); Driving (Automobile), Gunner (Cannon, Machine Gun, or Mortar), or Riding (Horse) (all P/A); Carousing (P/A – HT); Skiing (P/H); Area Knowledge (any), Savoir-Faire (Military), or Telegraphy (all M/E); Armoury (Small Arms) or Gambling (both M/A); or Explosive Ordnance Disposal (M/H).

* Includes +2 for IQ.

Customization Notes: Customize per *Rifleman*, p. 72, with units averaging one level of quality higher.

Soviet and Japanese recon troops could make use of Night Vision, since they specialized in night operations. German and Japanese recon troops probably possessed higher combat skills, as they were deployed in force and were expected to engage the forces they found.

Forward observers would use this template, greatly increasing their namesake skill. For armored reconnaissance troops, the armor crewman template on p. 73 may be a better choice.



Paratrooper 65 points

Beginning in the 1930s, various nations began experimenting with delivering infantry units behind enemy lines via parachute. The Soviets conducted the first and largest experiments, and the Germans the first and most spectacular wartime operations on a large scale.

Both nations scaled back on paratroop operations during the war, because live combat unveiled a major flaw in deploying via parachute: The drop scatters the troops hither and thither, so that men from different units end up clumped together and thoroughly disorganized. Almost helpless for crucial minutes after the drop, even the best paratroops took hours to become an effective fighting force as they trekked to their rally points and regrouped. Given the expense of training and transport, it was a costly way to wage war, given any effective defense on the ground.

The western Allies continued to use paratroops throughout the war, despite frequently learning the same lessons.

Given the realities of paratroop warfare, the best paratroops possessed a high individual initiative. They never knew when they would find themselves alone, missing crucial equipment, and with large enemy units between them and the nearest support.

Attributes: ST 11 [10]; DX 12 [20]; IQ 12 [20]; HT 11 [10].

Advantages: Fit [5] and 25 points in *National Advantages* (see p. 68).

Disadvantages: Extremely Hazardous Duty [-20] and -30 points in *National Disadvantages* (see p. 69).

Basic Skills: First Aid (M/E) IQ-1 [1/2]-11; Guns (Light Auto) (P/E) DX+2 [1]-14*; Guns (Rifle) (P/E) DX+3 [2]-15*; Hiking (P/A – HT) HT-1 [1]-10; Jumping (P/E) DX [1]-12; Knife (P/E) DX [1]-12; Parachuting (M/E) IQ+1 [2]-13; Soldier (M/A) IQ+2 [6]-14; Spear (P/A) DX-1 [1]-11; Stealth (P/A) DX-1 [1]-11; Throwing (P/H) DX-2 [1]-10.

Secondary Skills: Camouflage (M/E) IQ-1 [1/2]-11; Climbing (P/A) DX-2 [1/2]-10; Brawling (P/E) DX [1]-12; Demolition (M/A) IQ-1 [1]-11; Gunner (Machine Gun) (P/A) DX [1/2]-12*; Orienteering (M/A) IQ-1 [1]-11.

Optional Skills: Spend 3 points on any of Guns (Grenade Launcher, LAW, or Pistol) or Swimming (both P/E); Gunner (Cannon or Mortar) (P/A); Carousing (P/A – HT); Scrounging, Savoir-Faire (Military), or Telegraphy (all M/E); Administration, Armoury (Small Arms), Electronics Operation (Communications), Forward Observer, Gambling, Intimidation, NBC Warfare, Survival (any), or Traps (all M/A); or Engineer (Combat) or Explosive Ordnance Disposal (both M/H).

* Includes +2 for IQ.

Customization Notes: The following broad guidelines can help customize paratroopers by nationality.

U.S.: Usually they possessed Gunner (Mortar) and Electronics Operation (Communications) from the optional skills. Paratroops most often were seasoned with a few veteran units.

British: They usually possessed Gunner (Mortar) and Guns (LAW) from the optional skills, and were usually seasoned units.

Germans: Ironically, the Fallschirmjäger are more likely to possess Driving and other transport skills than regular infantry, but are not always skilled in Parachuting! Usually, they are seasoned or veteran units.

Soviets: Though less erratic than for line infantry, Soviet paratroop training could still leave out even basic skills. Usually, they were average or seasoned units.

Japanese: They usually possessed ST 10 and HT 12 and were average or seasoned units.

Combat Engineer — 60 points

Many of the tough jobs that regular infantry and armor could not take on fell to the combat engineer. Their responsibilities included almost civilian concerns, such as building bridges, laying roads, and constructing permanent installations. They also included some of the toughest combat assignments, such as blowing up barbed-wire and antitank emplacements, burning out pillboxes, laying or removing mines (often under direct enemy fire), or even destroying tanks at close quarters using magnetic mines.

No engineer unit specialized in all of the above roles. Some were better at building and some better at breaking. All could expect to perform their duties under fire, however.

Engineers required a variety of equipment, most of it bulky and heavy. Though they tended to carry considerably more weight into combat than the average rifleman, they still could not bring along the right gear for every contingency. Part of commanding an engineer unit included forecasting the assignments ahead and outfitting the men to match the mission.

Given all the tools of their trade, combat engineers were more likely to be motorized than regular infantry. This usually meant trucks, but sometimes halftracks were provided.

Attributes: ST 11 [10]; DX 11 [10]; IQ 12 [20]; HT 11 [10].

Advantages: Fit [5] and 25 points in *National Advantages* (see p. 68). Combat engineers may always take Fearlessness [2/level] as part of their *National Advantages*.

Disadvantages: Extremely Hazardous Duty [-20] and -30 points in *National Disadvantages* (see p. 69).

Basic Skills: Camouflage (M/E) IQ [1]-12; Climbing (P/A) DX-1 [1]-10; Demolition (M/A) IQ [2]-12; Engineer (Civil or Combat) (M/H) IQ-1 [2]-11; Explosive Ordnance Disposal (M/H) IQ-1 [2]-11; First Aid (M/E) IQ-1 [1/2]-11; Guns (Rifle) (P/E) DX+2 [1]-13*; Hiking (P/A – HT) HT-1 [1]-10; Jumping (P/E) DX-1 [1/2]-10; Knife (P/E) DX [1]-11; Soldier (M/A) IQ+1 [4]-13; Spear (P/A) DX-1 [1]-10; Stealth (P/A) DX [2]-11; Throwing (P/H) DX-1 [2]-10; Traps (M/A) IQ [2]-12.

Secondary Skills: Brawling (P/E) DX [1]-11; Gunner (Machine Gun) (P/A) DX [1/2]-11*; Guns (Flamethrower) (P/E) DX+2 [1]-13*; NBC Warfare (M/A) IQ-2 [1/2]-10; Swimming (P/E) DX [1]-11.

Optional Skills: Spend 3 points on any of Guns (Grenade Launcher, LAW, Light Auto, or Pistol) (P/E); Boating or Driving (Automobile or Construction Equipment) (both P/A); Carousing (P/A – HT); Scrounging, Savoir-Faire (Military), or Telegraphy (all M/E); or Administration, Armoury (Small Arms), Electronics Operation (Communications), Gambling, Mechanic (Gasoline Engine), Orienteering, Streetwise, Survival (any), or Teamster (all M/A).
* Includes +2 for IQ.

Customization Notes: The following broad guidelines can help customize combat engineers by nationality.

U.S.: Engineer distribution was weighted toward bridge-builders rather than pillbox-busters. Thus, the average engineer might have been light on combat skills such as Gunner, Guns, and Stealth, etc., but would have had high technical skills such as Driving, Engineer, and Mechanic. These would be average troops for the most part.

The U.S. Navy fielded a Construction Battalion – popularly called the Seabees – that broke most of the enlistment rules to include the best civilian engineers they could find. These men, some in their 60s, saw a great deal of action in the Pacific, and could be loosely based on this template.

British: They often possessed their own specialized armor (though at times this was manned by regular armor units), so Driving (Tracked) and Gunner (Cannon and Machine Gun) should be added to the optional skills. Usually they were average troops, with a few seasoned units.

Germans: The Wehrmacht fielded a high percentage of combat engineers, intended to break open fortified lines or strongpoints. Their skills would have been very heavily weighted toward combat, particularly Demolition, Explosive Ordnance Disposal, and Guns (Flamethrower). Survival (Urban) would have been fairly common. These were usually seasoned troops, with a few veteran units.

Soviets: Demands on these troops varied, but they were usually practicing Camouflage and Engineer (Combat). They would usually be average troops.

Japanese: These soldiers were more likely to possess ST 10 and HT 12. Japan's combat engineers represented their best specialized infantry arm, and they would usually be at least seasoned units, equally skilled in the arts of fighting and fortifications.

Sniper — 65 points

Ever since the first days of gunpowder, military values had stressed individual marksmanship. The Second World War began no differently. Almost all soldiers entered the fighting armed with bolt-action rifles, accurate but slow-firing weapons that placed a premium on careful aiming and first-round hits. The Wehrmacht even taught its troops to take a moment to relax and catch their breath each time they emptied their rifle, after every five shots.

Soldiers who showed extraordinary potential for marksmanship were trained for a more demanding role – that of the sniper. Working alone or (more usually) in two-man teams of sniper and spotter, these specialists would infiltrate into enemy territory, then attack from long rifle range. (Anything nearer than 200 yards would be getting too close, while 500 yards would represent the far extreme for snipers of moderate skill.)

The sniper's trade consisted of far more than expert shooting. The job required superb fieldcraft – primarily Stealth, with some aid from Camouflage and Area Knowledge – to get within striking range, and even better fieldcraft to get back *out*. Even a sniper of Military Rank 0 might have considerable Tactics skill, in order to best judge when to shoot and, more importantly, when to leave the scene before other enemy forces flanked the sniper or artillery came to bear.

Snipers usually enjoyed freedom of action out of proportion to their rank. As small, independent units attached to higher commands, they often received minimal supervision. When handing out assignments, their commanders rarely told the snipers exactly *how* to get the job done. Figuring that out, after all, was the sniper's special skill.

Attributes: ST 11 [10]; DX 12 [20]; IQ 12 [20]; HT 11 [10].

Advantages: Fit [5] and 25 points in *National Advantages* (see p. 68). Snipers may always take Acute Vision [2/level] as part of their *National Advantages*.

Disadvantages: Extremely Hazardous Duty [-20] and -30 points in *National Disadvantages* (see p. 69).

Basic Skills: Armoury (Small Arms) (M/A) IQ-2 [1/2]-10; Camouflage (M/E) IQ [1]-12; Climbing (P/A) DX-1 [1]-11; First Aid (M/E) IQ-1 [1/2]-11; Guns (Rifle) (P/E) DX+4 [4]-16*; Hiking (P/A – HT) HT-1 [1]-10; Jumping (P/E) DX-1 [1/2]-11; Knife (P/E) DX [1]-12; Soldier (M/A) IQ+2 [6]-14; Spear (P/A) DX-1 [1]-11; Stealth (P/A) DX [2]-12; Throwing (P/H) DX-2 [1]-10; Tactics (Infantry) (M/H) IQ-2 [1]-10; Traps (M/A) IQ-1 [1]-11.

Secondary Skills: Brawling (P/E) DX [1]-12; Gunner (Machine Gun) (P/A) DX+1 [1]-13*; Guns (Light Auto) (P/E) DX+1 [1/2]-13*; Orienteering (M/A) IQ-1 [1]-11.

Optional Skills: No points are allocated for these, but extra points may go to Guns (Pistol) or Swimming (both P/E); Skiing (P/H); Scrounging (M/E); Demolition, Forward Observer, Intimidation, NBC Warfare, Survival (any), or Tracking (all M/A); or Engineer (Combat) or Explosive Ordnance Disposal (both M/H).

* Includes +2 for IQ.

Customization Notes: Snipers generally were one level of troop quality higher than riflemen (see p. 72) of the same period, and further varied by nationality as follows.

U.S.: Technically, the United States fielded *considerably* more snipers than most other combatants, because one trooper in each Army squad usually was assigned a sniper rifle and more or less assumed the role. These "regular unit" snipers should use the rifleman template on p. 72, then increase Guns (Rifle) and perhaps Stealth, if points are available. The sniper template applies to specialist snipers, which the U.S. Army and Marines also fielded.

British: A commando force might include a large proportion of snipers, sometimes armed with their own preference in civilian hunting rifle.

Germans: These snipers may take Fearlessness as part of their *National Advantages*. Coldly analytical in such matters, the Wehrmacht often sacrificed its snipers as miniature rearguards, given that enemy drives of any size could be delayed for lengthy periods at the cost of a single German life.

Soviets: The Soviets fielded a surprising number of snipers, because the few draftees who could shoot prior to conscription often could shoot *well*. These individuals, presumably with hunting experience, might also possess strong civilian investments in Stealth, Tracking, and Survival (Arctic), and might be far better troops than the regular infantry that they support.

Japanese: These snipers were noted far more for their courage, often tying themselves in palm trees overlooking the enemy, than their marksmanship. Their training program did not have them practice shots past 300 yards. Camouflage skill might have been higher than Stealth.

Commando

75 points

WWII created the modern concept of special forces, though at the time these small units, intensively trained for difficult missions, were called commandos. (The term "special forces" applied to a larger group, essentially any infantry unit that wasn't part of their nation's standard formations.)

The British played the largest role in developing commando doctrine during WWII. Impatient for action, many of their commandos developed themselves into specialist assault units, often undertaking coastal raids on key German sites in France and Norway. Others specialized in long-range reconnaissance or precise parachute assaults. The Germans and U.S. military also took to the new style of specialist warfare with great enthusiasm.

Commandos led a risky life. The training often posed nearly as many hazards as combat. The actual missions, though fairly infrequent, usually pushed the edge of the reasonably accomplished. Given the risks, most units looked for only the best recruits that they could find, men who already outperformed their peers even before the additional training.

Taken on their own merits, commando missions contributed substantially to their countries' war efforts, though most commando units listed a few disasters among their string of victories. Evaluating commandos as part of the overall war effort, regular army veterans often complained that the programs decreased the overall effectiveness of an army, by draining the best talent from regular units routinely in combat to special units employed far less frequently.

Regardless, the commando school of warfare would continue to grow throughout and after the war.

Attributes: ST 11 [10]; DX 13 [30]; IQ 12 [20]; HT 11 [10].

Advantages: Fit [5] and 25 points in *National Advantages* (see p. 68). Commandos may always take Alertness [5/level] and Fearlessness [2/level] as part of their *National Advantages*.

Disadvantages: Extremely Hazardous Duty [-20] and -30 points in *National Disadvantages* (see p. 69).

Basic Skills: Camouflage (M/E) IQ-1 [1/2]-11; Climbing (P/A) DX-1 [1]-12; First Aid (M/E) IQ-1 [1/2]-11; Guns (Light Auto) (P/E) DX+2 [1]-15*; Guns (Rifle) (P/E) DX+2 [1]-15*; Hiking (P/A – HT) HT-1 [1]-10; Jumping (P/E) DX-1 [1/2]-12; Knife (P/E) DX [1]-13; Savoir-Faire (Military) (M/E) IQ-1 [1/2]-11; Soldier (M/A) IQ+2 [6]-14; Spear (P/A) DX [2]-13; Stealth (P/A) DX [2]-13; Throwing (P/H) DX-2 [1]-11; Traps (M/A) IQ-1 [1]-11.

Secondary Skills: Brawling (P/E) DX [1]-13; Demolition (M/A) IQ-1 [1]-11; Electronics Operation (Communications) (M/A) IQ-2 [1/2]-10; Gunner (Machine Gun) (P/A) DX+1 [1]-14*; Orienteering (M/A) IQ-2 [1/2]-10; Survival (any) (M/A) IQ-2 [1/2]-10; Swimming (P/E) DX-1 [1/2]-12.

Optional Skills: Spend 1 point on any of Guns (Flamethrower, Grenade Launcher, LAW, or Pistol) or Parachuting (both P/E); Boating, Driving (Automobile), or Gunner (Cannon or Mortar) (all P/A); Carousing (P/A – HT); Skiing (P/H); Area Knowledge (any), Scrounging, or Telegraphy (all M/E); Armoury (Small Arms), Forward Observer, Gambling, Intimidation, or NBC Warfare (all M/A); Engineer (Combat) or Explosive Ordnance Disposal (both M/H); or foreign languages (usually M/A).

* Includes +2 for IQ.

Customization Notes: Special forces varied widely not just by nationality, but by intended mission. Additional ***GURPS WWII*** sourcebooks will further illustrate these differences, but some basic notes include:

U.S.: These units – particularly Army Rangers – often emphasized constant training, finding room for calisthenics even aboard crowded troop ships. U.S. special forces may upgrade Fit to Very Fit [a net +10 points] as part of their *National Advantages*. They usually were seasoned or veteran troops.

British: The many commando units and other special forces often specialized in a particular form of transport, particularly Boating, Parachuting, or (more rarely) Driving (Automobile). British special operations often featured a high measure of sheer audacity; their special forces may even take Daredevil as part of their *National Advantages*. They would usually be seasoned or veteran troops, with some elite units.

Germans: Add Acting and Disguise to the optional skills. They sometimes collected troops fluent in an enemy language and issued them fake uniforms for particularly insidious operations. They usually would be seasoned or veteran units.

Soviets: The Red Army did not emphasize pure commandos. This template would best apply to a top-notch army unit operating in a resistance-fighter role, as many did after the Germans drove around (or through . . .) them in 1941 or '42. Usually, these would be seasoned troops, with a few veteran units.

Japanese: Usually, soldiers of this quality were simply seasoned to elite elements of more regular units (infantry, marines, or paratroops). Commandos as a distinct operational unit did not represent a large part of Japan's military planning.

Old-Guard Officer — 75 points

Prior to WWI, a thriving aristocracy dominated public affairs in most European countries. Though their overall influence declined dramatically after the Great War, their priorities continued to shape their countries' officer-training programs.

These programs – which often took on cadets as young as 8 years old – taught their subjects to be gentlemen, but gentlemen of a military nature whose conduct often would seem rigid, even a bit sinister, by modern standards. Though the Prussians tried to reform their system, severe abuse was common in all of these programs. The schooling systems also forced their cadets to master the military arts, and to take the greatest self-confidence in their mastery. Many graduates possessed a monumental self-assurance, which often proved quite attractive to lower ranks on the field of battle.

As WWII began, most combatants had old guards as the long-term, professional core of their officer corps. The coming years would finish destroying the aristocratic underpinnings of the old-guard system, making this their last hurrah.

Attributes: ST 11 [10]; DX 12 [20]; IQ 12 [20]; HT 11 [10].

Advantages: Fit [5]; Military Rank 3 [15]; Status 2 [5]; and 15 points in *National Advantages* (see p. 68). Old-guard officers may always take Charisma [5/level] and Fearlessness [2/level] as part of their *National Advantages*.

Disadvantages: Code of Honor (Extreme Officers') [-15]; Extremely Hazardous Duty [-20]; and -25 points in *National Disadvantages* (see p. 69).

Basic Skills: Administration (M/A) IQ [2]-12; Broadsword *or* Fencing (P/A) DX [2]-12; Guns (Pistol) (P/E) DX+2 [1]-14*; Guns (Rifle) (P/E) DX+2 [1]-14*; Leadership (M/A) IQ [2]-12; Operations (Land) (M/H) IQ-2 [1]-10; Orienteering (M/A) IQ [2]-12; Riding (Horse) (P/A) DX [2]-12; Savoir-Faire (Military) (M/E) IQ+1 [2]-13; Soldier (M/A) IQ+2 [6]-14; Tactics (Infantry) (M/H) IQ [4]-12.

Secondary Skills: Camouflage (M/E) IQ-1 [1/2]-11; Climbing (P/A) DX-1 [1]-11; Engineer (Combat) (M/H) IQ-2 [1]-10; Jumping (P/E) DX-1 [1/2]-11; NBC Warfare (M/A) IQ-2 [1/2]-10; Stealth (P/A) DX-1 [1]-11; Swimming (P/E) DX-1 [1/2]-11; Throwing (P/H) DX-2 [1]-10; Traps (M/A) IQ-1 [1]-11.

Optional Skills: Spend 3 points on any of Guns (Light Auto) (P/E); Boating, Driving (Automobile), or Gunner (Cannon, Machine Gun, or Mortar) (all P/A); Skiing (P/H); Hiking (P/A – HT); Area Knowledge (any) (M/E); Armoury (Small Arms), Demolition, Electronics Operation (Communications), Forward Observer, Gambling, Intimidation, or Survival (any) (all M/A); or foreign languages (usually M/A).

* Includes +2 for IQ.

Customization Notes: Even more than regular troops, old guard varied by nationality.

U.S.: Lacking a true aristocracy, and having maintained a tiny Army during the Depression, the United States did not possess a true "old guard" officer corps. Some West Point graduates, Patton most colorfully, aped the general aesthetic. U.S. old guards may take any Engineer specialty or other appropriate science skills, to represent the higher-than-normal academic focus at West Point.

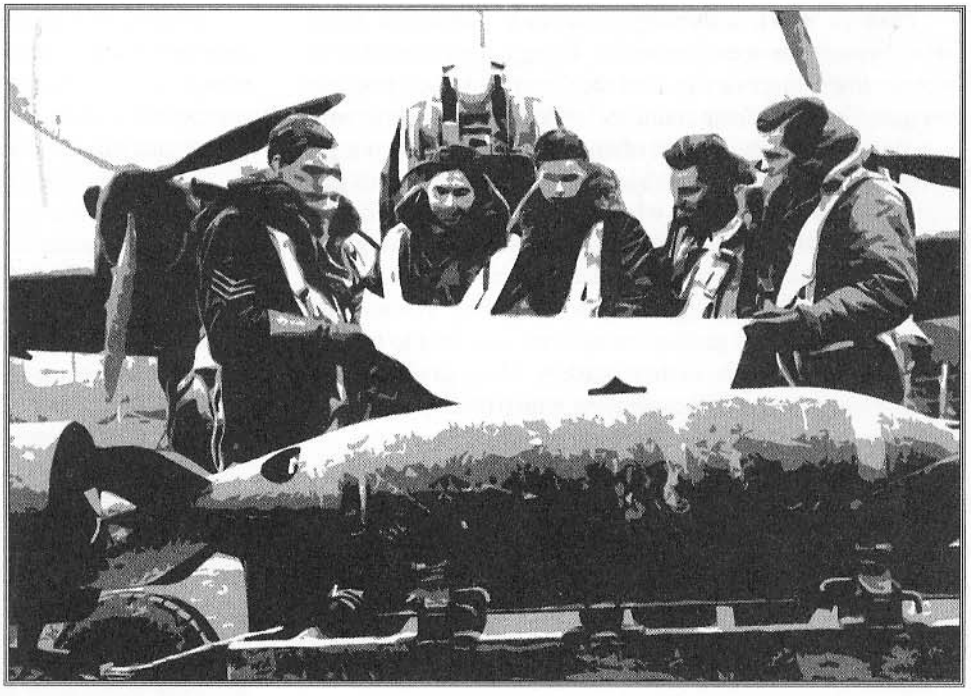
British: Old guards tended to be more reserved than their counterparts from other nations, though often displaying a dryly savage wit. Unfortunately, their reserve often disguised the less competent; British old guards often would be built on fewer points than this template, with even basic skills missing.

Germans: The Prussian system tended to produce competent men with even more competent egos. As part of their *National Advantages*, German old guards may take Legal Enforcement Powers [5 or 10] simply by presuming the right! (Roll a contest of Wills when dealing with the Gestapo, with the secret policeman receiving a +3.) Hitler hated them as a class, so any German old guard may take Enemy (Hitler, on 6 or less) [-20]. Secret (Homosexual) [-20] may have been more common than among the general populace, as well.

Soviets: The Soviets only have an *old* old guard. After WWI, the Communists tried to run their military without true officers. Stalin had many of the czar's old guard executed or exiled between the wars. A few survivors were summoned from their Siberian exiles as the Soviets increasingly added gold braid and authority to their officer corps during WWII. Enemy (Communists, on 6 or less) [-20] could be justified.

Japanese: Starvation and abuse were particularly severe in the Japanese academies, as these were seen as teaching stoicism. The academies also cultivated an even higher-than-usual racism. Japanese old guards substitute Katana for Broadsword or Fencing, and may include any Japanese martial arts skill or style from ***GURPS Martial Arts*** among their optional skills. Intolerance [-10] is nearly universal.

Bomber Crewman — 50 points



This template describes the pilots and other crew members for bombers, planes whose primary mission was to drop explosives on enemy ground or naval targets. Fighter planes often carried bombs as well, but their pilots will use the fighter pilot template on p. 85.

Bombers varied in size. The small ones were torpedo bombers, which usually carried a single torpedo and skimmed along the wavetops before launching it, or dive bombers, which usually carried one to three bombs and entered a steep dive toward the target for a relatively precise attack. These usually had two crewmen, a pilot and rear gunner.

Medium bombers usually carried a small assortment of bombs, though some were fitted to deploy torpedoes or use cannons against ground targets. They usually had four crewmen, a pilot, co-pilot, bombardier, and radio operator. Some had as few as two, others as many as six.

Heavy bombers carried a few more bombs than medium bombers, but were primarily designed to strike at very long range. These long flights gave the enemy plenty of time to attack heavy bombers, so they either operated at night or carried a large number of defensive weapons. Crews ranged from six to 10 men, with most of them machine gunners.

All bombers make vulnerable targets, and the Anglo-American heavy-bomber crews took some of the worst casualties of the war. During the height of their bombing campaign (see p. 25), American heavy-bomber crews had to fly only 30 missions. Statistically, this gave them an optimistically calculated 50% chance to survive their tour of duty.

Attributes: ST 11 [10]; DX 11 [10]; IQ 11 [10]; HT 11 [10].

Advantages: Fit [5] and 25 points in *National Advantages* (see p. 68).

Disadvantages: Extremely Hazardous Duty [-20] and -30 points in *National Disadvantages* (see p. 69).

Basic Skills: Aviation (M/A) IQ+1 [4]-12; First Aid (M/E) IQ-1 [1/2]-10; and *one* of these crew positions:

1. Piloting (Twin- or Multi-Engine Prop) (P/A) DX+2 [8]-13.
2. Navigation (M/H) IQ+2 [8]-13.
3. Electronics Operation (Comm) (M/A) IQ+3 [8]-14.
4. Gunner (Bombs or Torpedo) (P/A) DX+3 [8]-14.*
5. Gunner (Machine Gun) (P/A) DX+3 [8]-14.*
6. Mechanic (Propeller Plane Engine) (M/A) IQ+3 [8]-14.

Secondary Skills: Armoury (Vehicular) (M/A) IQ [2]-11; Brawling (P/E) DX [1]-11; Explosive Ordnance Disposal (M/H) IQ-3 [1/2]-8; Guns (Pistol) (P/E) DX+1 [1]-12*; Guns (Rifle) (P/E) DX+1 [1]-12*; Scrounging (M/E) IQ [1]-11; and invest 2 points in *each* of *two* crew-position skills other than the primary one [4]. *Exception:* An Electronics Operation (Communications) specialist (i.e., radio operator) should take Telegraphy as one of his 2-point secondary skills.

Optional Skills: Spend 7 points on any basic skill not already selected, or any of Bicycling, Guns (Light Auto), Knife, Motorcycle, Swimming, or Parachuting (all P/E); Driving (Automobile) or Gunner (Cannon) (both P/A); Carousing (P/A – HT); Area Knowledge (any), Savoir-Faire (Military), or Telegraphy (all M/E); or Administration, Electronics Operation (Sensors), Gambling, Meteorology, Photography, or Survival (any) (all M/A).

* Includes +1 for IQ.

Customization Notes: The flier's role should guide basic- and secondary-skill selection. A torpedo-bomber pilot might take Piloting (Twin-Engine Prop) with Gunner (Torpedo) and Navigation. A B-17 gunner might take Gunner (Machine Gun) with Mechanic and Electronics Operation.

Given the highly technical nature of their profession, air crews tend to vary less by nationality than other branches of the armed forces. Japanese crews will, as usual, be more likely to possess ST 10 and HT 12 than ST 11 and HT 11.

Pilots of dive or torpedo bombers usually must have at least Military Rank 2, more often Rank 3 or 4. Heavy bomber pilots usually have Military Rank 4 or 5, navigators and co-pilots Rank 3, and many of the other crewmen will have Rank 1 or 2. Any Rank higher than 0 also requires the skills described on p. 70.

As for the usual quality of bomber crews, see the *Customization Notes* for the fighter pilot template, p. 85, which for the most part also apply to bomber crews. A large exception is that few bomber crews became more than seasoned: They simply didn't live long enough to gain the experience, or were rotated to other duties if part of the Anglo-American heavy-bomber campaign based in England.

Fighter Pilot — 60 points

This template describes the pilots of fighter planes, which usually had a single engine and single crew position, and were primarily designed to shoot other planes down.

Piloting a fighter was seen as one of the most romantic ways to fight a war, so most countries had plenty of applicants from which to select trainees. Fighter pilots had to possess keen eyesight, superb reflexes, a hardy constitution (to withstand acceleration forces), and a small stature (generally 5'9" or less). Failure to meet any of these standards, except size, meant the applicant didn't get into training. A tall applicant *might* be able to Fast-Talk his way into a cramped fighter cockpit, but more often was shuffled off to bomber school.

Fighter tactics usually hinged upon who spotted whom first. The typical kill involved spotting an enemy plane at extreme range, maneuvering toward it at a combination of angle and elevation that made spotting difficult, then firing a lethal burst into the unsuspecting target at point-blank range. The best angle was from below and behind.

If both pilots spotted each other, aerial tactics became an intriguing calculus based upon the performance of their individual machines. Pilots flying agile planes would try to force close, turning combats. Those flying fast planes would try to make high-speed passes at the target, fly out of range, turn, and speed by again. Those with particularly sturdy planes (like many U.S. models) might *invite* onto their tail an opponent flying a fragile plane (like most Japanese models) – so that their wingman could line up that one, telling shot.

Fighter pilots had to be at least Military Rank 2, more often Rank 3-5. This already requires them to invest in Tactics skill (see p. 70), so this template doesn't include that skill. A prudent fighter pilot will invest in an even higher Tactics (Air-to-Air) skill than his rank requires, however.

Fighter pilots don't *have* to conduct themselves with great swagger, but like old-guard officers (see p. 83), they are both highly trained and trained to think highly of their training. The good ones almost always have very high self-confidence.

Attributes: ST 10 [0]; DX 13 [30]; IQ 11 [10]; HT 11 [10].

Advantages: Fit [5]; Military Rank 3 [15]; and 15 points in *National Advantages* (see p. 68). Fighter pilots may always take Acceleration Tolerance [10] and Acute Vision [2/level] as part of their *National Advantages*.

Disadvantages: Extremely Hazardous Duty [-20] and -30 points in *National Disadvantages* (see p. 69).

Basic Skills: Aviation (M/A) IQ+2 [6]-13; Electronics Operation (Communications) (M/A) IQ-1 [1]-10; Gunner (Bombs) (P/A) DX-1 [1/2]-12*; Gunner (Cannon) (P/A) DX-1 [1/2]-12*; Gunner (Machine Gun) (P/A) DX-1 [1/2]-12*; Navigation (M/H) IQ-2 [1]-9; Piloting (Single-*or* Twin-Engine Prop) (P/A) DX+2 [8]-15.

Secondary Skills: First Aid (M/E) IQ-1 [1/2]-10; Mechanic (Propeller Plane Engine) (M/A) IQ-1 [1]-10; Guns (Pistol) (P/E) DX+1 [1]-14*.

Optional Skills: Spend 5 points on any of Bicycling, Brawling, Guns (Light Auto or Rifle), Knife, Motorcycle, Swimming, or Parachuting (all P/E); Driving (Automobile) (P/A); Carousing (P/A – HT); Area Knowledge (any), Savoir-Faire (Military), or Telegraphy (all M/E); Administration, Armoury (Vehicular), Electronics Operation (Sensors), Gambling, Meteorology, Photography, or Survival (any) (all M/A); or Explosive Ordnance Disposal (M/H).

* Includes +1 for IQ.

Customization Notes: Fighter pilots of various nations generally were only differentiated by one factor – how good they were at shooting each other down.

U.S.: With the best training program in the world, U.S. pilots rarely entered service with less than the abilities described by this template, which are average bordering on seasoned. A high percentage of fighter pilots will be seasoned, with a few veteran and elite individuals.

British: These pilots were trained well, but not superbly, so most of them will be average. The small core of Battle of Britain veterans will be seasoned at a minimum, with many veteran or elite individuals.

Germans: As the war began, Germany had a seasoned air force, but the Battle of Britain killed many of these aviators. Given they were constantly flying missions against poor opposition, German aviators on the Eastern Front rapidly advanced to seasoned, with many veteran and elite units. On the Western Front, average units were more common.

Soviets: The Russians didn't so much train pilots as throw them into combat and find out who had a talent for killing. Most Soviet pilots were green and possessed a short life expectancy. Those few who survived were pooled into seasoned or veteran units.

Japanese: Beginning the war with a seasoned air force, the Japanese notably failed to replace their combat losses. Overall quality declined to average, then green, by 1944. Even the most elite pilots had a short life expectancy: At the first sign of serious trouble, Japanese fighter pilots usually would try to take out one last enemy by ramming. This bushido mindset eventually evolved into the suicidal *kamikaze* program, which primarily used raw pilots.

Sailor — 50 points

This general template illustrates the basic skill sets for personnel in a nation's navy, a service that had far more variety of specialization than any army or air force. GMs should feel free to add additional skills to the optional list as needed.

Other templates in this chapter can be altered slightly to represent naval variations of the same job. The fighter pilot template would require a less modest investment in Navigation, while the bomber crew template should be limited to dive- and torpedo-bomber skill sets in most cases. The Marines already fall under the naval command structure.

Attributes: ST 11 [10]; DX 10 [0]; IQ 12 [20]; HT 11 [10].

Advantages: Fit [5] and 25 points in *National Advantages* (see p. 68).

Disadvantages: Extremely Hazardous Duty [-20] and -30 points in *National Disadvantages* (see p. 69).

Basic Skills: Boating (P/A) DX [2]-10; First Aid (M/E) IQ-1 [1/2]-11; Powerboat (P/A) DX [2]-10; Sailor (M/A) IQ [2]-12; Savoir-Faire (Military) (M/E) IQ-1 [1/2]-11; Seamanship (M/E) IQ [1]-12; and *one* of:

Commanding Officer: Shiphandling (M/H) IQ [4]-12 with Meteorology (M/A) IQ [2]-12 and Navigation (M/H) IQ [4]-12.††††

Ship's Surgeon: Physician (M/H) IQ [4]-12 with Diagnosis (M/H) IQ-1 [2]-11 and Surgery (M/VH) IQ-1 [4]-11.††††

Gunnery Officer: Gunner (Cannon, Depth Charge, or Torpedo) (P/A) DX+3 [4]-13* with Electronics Operation (Comm) (M/A) IQ-1 [1]-11; Electronics Operation (Sensors) (M/A) IQ-1 [1]-11; Explosive Ordnance Disposal (M/H) IQ-1 [2]-11; Forward Observer (M/A) IQ [2]-12.†††

Navigator: Navigation (M/H) IQ+1 [6]-13 with Meteorology (M/A) IQ [2]-12 and Shiphandling (M/H) IQ-1 [2]-11.†††

Chief Engineer: Engineer (Vehicles) (M/H) IQ [4]-12 with Armoury (Vehicular) (M/A) IQ [2]-12; Mechanic (Ocean-going vessel) (M/A) IQ [2]-12; Shipbuilding (M/H) IQ-1 [2]-11.††

Petty Officer: Armoury (Vehicular) (M/A) IQ-1 [1]-11; Brawling (P/E) DX+1 [2]-11; Gunner (Cannon, Depth Charge, or Torpedo) (P/A) DX+2 [2]-12*; Explosive Ordnance Disposal (M/H) IQ-2 [1]-10; Freight Handling (M/A) IQ [2]-12; Mechanic (Ocean-going vessel) (M/A) IQ-1 [1]-11; Scrounging (M/E) IQ [1]-12.†

Ordinary Seaman: Armoury (Vehicular) (M/A) IQ-1 [1]-11; Brawling (P/E) DX+1 [2]-11; Carpentry (M/E) IQ [1]-12; Climbing (P/A) DX [2]-10; Gunner (Cannon, Depth Charge, or Torpedo) (P/A) DX+2 [2]-12*; Freight Handling (M/A) IQ-1 [1]-11; Mechanic (Ocean-going vessel) (M/A) IQ-1 [1]-11.

Secondary Skills: Guns (Pistol) (P/E) DX+1 [1/2]-11*; Guns (Rifle) (P/E) DX+1 [1/2]-11*; Knife (P/E) DX [1]-10.

Optional Skills: Spend 10 points on improving any basic or secondary skill, or purchasing any of Guns (Light Auto) or Swimming (both P/E); Driving (Automobile or Construction Equipment) or Gunner (Machine Gun or Rocket Launcher) (both P/A); Carousing (P/A – HT); Area Knowledge (Ocean or Ports of Call), Cooking, Scrounging, or Telegraphy (all M/E); Cartography, Demolition, Electronics Operation (Communications or Sensors), Gambling, Hard-Hat Diving, Intimidation, NBC Warfare, Streetwise, or Survival (Island/Beach) (all M/A); or Engineer (any), Intelligence Analysis, Law, or Traffic Analysis (all M/H).

* Includes +2 for IQ.

† through ††††: Must have one level of Military Rank per dagger, with all skills required for that Rank (see p. 70).

Customization Notes: The following guidelines illustrate some national characteristics of naval crews.

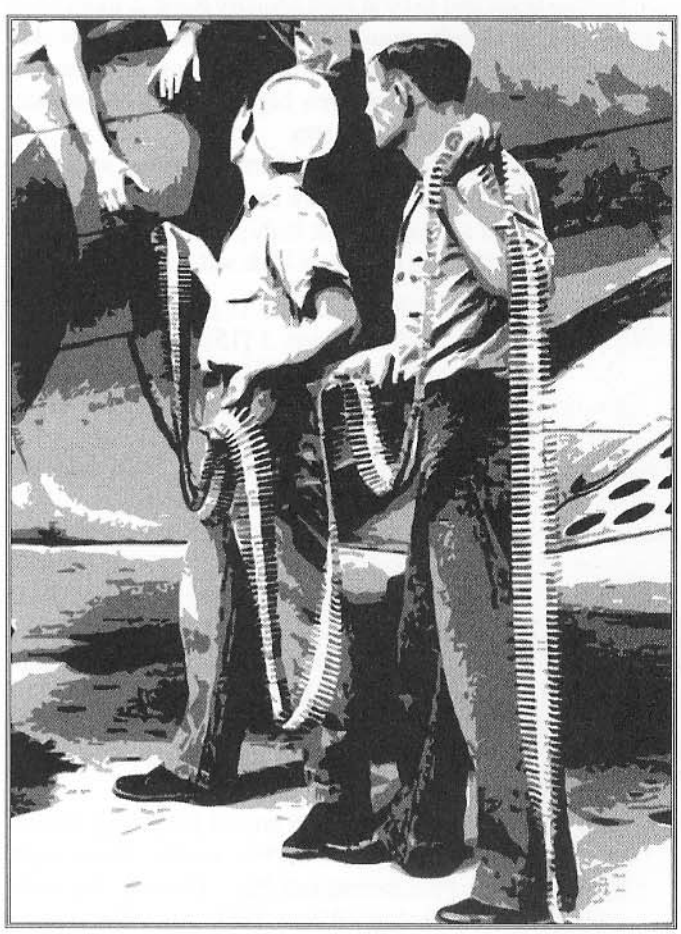
U.S.: Surface units were average to seasoned. Submariners were usually seasoned with a few veteran units.

British: Guns (Light Auto) was relatively common among these sailors, who also enjoyed one of the few regular supplies of alcohol in the war, though not enough to abuse regularly. The Royal Navy was a seasoned force with a few veteran units.

Germans: Surface units usually were green or average, while the U-boat crews were seasoned with a few veteran units.

Soviets: The navy played a very small role in the Great Patriotic War. Crews were green with a few average units.

Japanese: Many crucial crewmen may qualify for Night Vision, given the excellent grooming of lookouts to lead ships into action during darkness. (Until late 1943 or so, Japanese lookouts often outperformed U.S. radar in difficult vision conditions.) The Japanese Navy overall was a seasoned force with a few veteran units. Submarine crews leaned toward average, while destroyer crews leaned toward seasoned or veteran quality, with special skill in night fighting.



Resistance Fighter — 50 points

WWII's total warfare usually involved civilians as victims, but it also created resistance groups, who tried to be more predator than prey.

Also called partisans, guerrillas, and freedom fighters, resistance groups usually consisted of civilians in occupied nations, often without formal military training, who banded together in secret to hoard weapons and resist the invader. Units ranged in size from a handful of brave souls to 1,000 or more disciplined defenders with some military schooling, even uniforms. They sprang up in every country that Germany and Japan occupied.

Resistance fighters lived their lives a hair's breadth from capture – and both Germany and Japan killed almost all of the guerrillas that they caught. For those new to the work, the first step consisted of contacting like-minded individuals and groups, because the larger the resistance network the more effective it could become. The next step was to procure equipment, with weapons and radios both most essential and hardest to obtain. Then, the resistance fighter needed at least minimal training in subterfuge and some military skills. Finally, the network, however large it had become, could begin planning useful operations. The group risked detection by occupying forces at every step in this evolution.

Resistance fighters could strike effectively, because the modern warfare of WWII required extensive infrastructure, which always possessed points of weakness. Soviet partisans could disable the thousand of miles of rails that supplied the Wehrmacht in Russia almost anywhere along their length. The French Maquis could disable the locomotive assigned to move a panzer division by replacing its lubricant with an abrasive. Norwegian resistance fighters could cripple irreplaceable facilities contributing to Germany's atomic research.

Despite the successes described above, and many more, resistance fighters most contributed to the war effort by tying down millions of troops in policing occupied lands. Though these forces and their equipment usually were second-rate, they might have contributed more on the front lines.

Resistance groups *often* fought among themselves, because different groups represented distinct political beliefs, united only in their opposition to the Axis invader. Communist factions bullied their brethren in France, while Communists and their counterparts waged full-scale internal wars in eastern Europe. Jewish guerrillas had to be nearly as wary of their fellow resistance fighters as the Germans themselves. Non-Communist groups in eastern Europe often turned around and fought the Soviets after the Germans had left.

The Soviet Union extensively supported its internal resistance, and later Communist partisans in eastern Europe. Late in the war, the Anglo-Americans also supplied resistance groups, and often integrated their activity into covert operations.

Attributes: ST 10 [0]; DX 11 [10]; IQ 12 [20]; HT 12 [20].

Advantages: A total of 25 points in *National Advantages* (see p. 68) or appropriate civilian advantages.

Disadvantages: Enemy (Occupying forces, on a 6 or less) [-20] and -30 points in *National Disadvantages* (see p. 69).

Basic Skills: Agronomy (or other civilian skill) (M/A) IQ [2]-12; Area Knowledge (Home Region) (M/E) IQ+1 [2]-13; Armoury (Small Arms) (M/A) IQ-1 [1]-11; Camouflage (M/E) IQ+1 [2]-13; Guns (Rifle) (P/E) DX+2 [1]-13*; Scrounging (M/E) IQ [1]-12; Soldier (M/A) IQ [2]-12; Stealth (P/A) DX [2]-11; Throwing (P/H) DX-2 [1]-9; Traps (M/A) IQ-1 [1]-11.

Secondary Skills: Climbing (P/A) DX-2 [1/2]-9; Demolition (M/A) IQ-1 [1]-11; First Aid (M/E) IQ-1 [1/2]-11; Knife (P/E) DX [1]-11; Orienteering (M/A) IQ-1 [1]-11; Survival (usually Woodlands) (M/A) IQ-1 [1]-11.

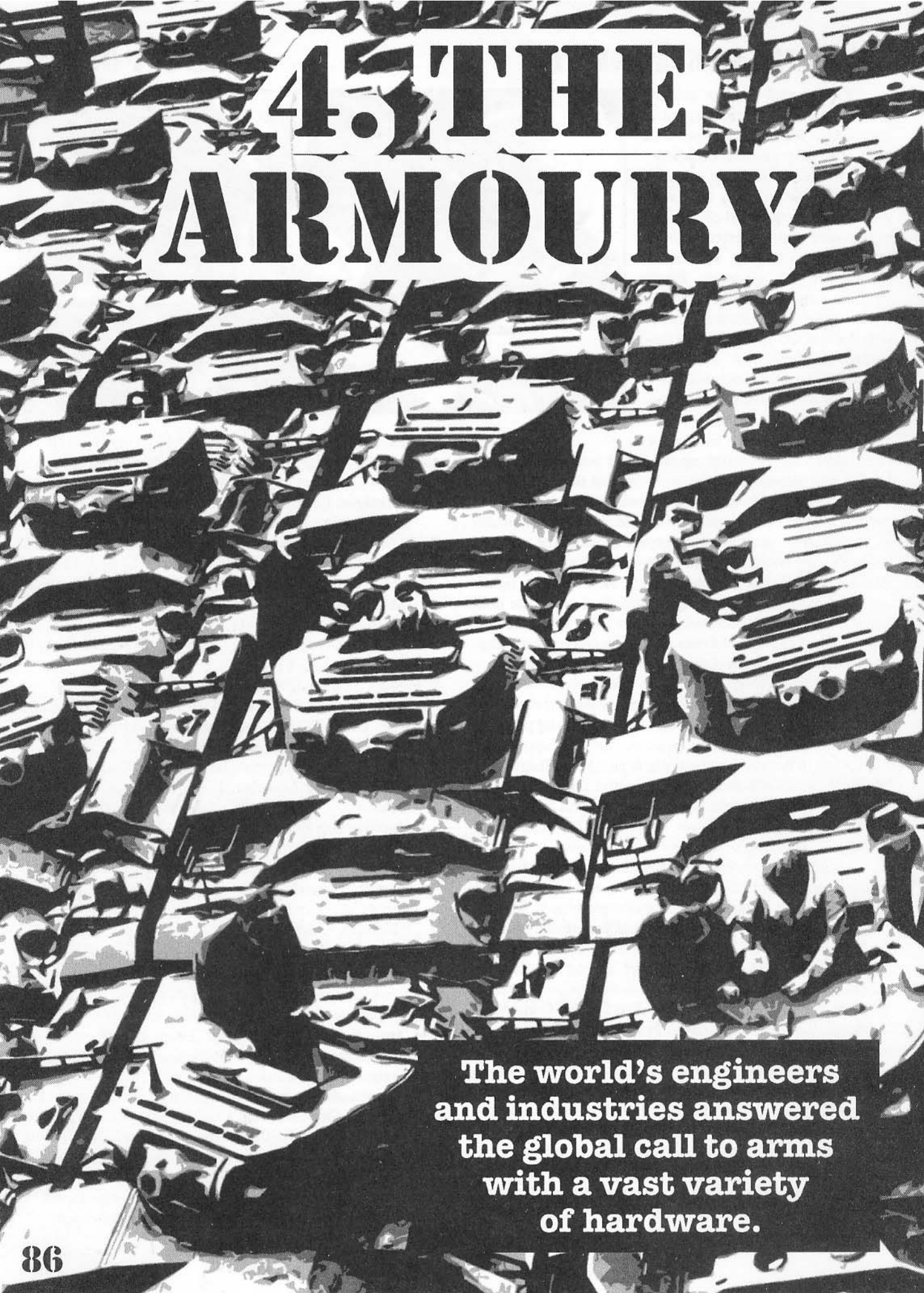
Optional Skills: Spend 5 points on any of Bicycling, Brawling, Guns (Grenade Launcher, LAW, Light Auto, or Pistol), Motorcycle, or Swimming (all P/E); Boating, Driving (Automobile), Gunner (Cannon, Machine Gun, or Mortar), or Riding (Horse) (all P/A); Hiking (P/A – HT); Cooking or Telegraphy (both M/E); Electronics Operation (Communications), Intimidation, NBC Warfare, Streetwise, or Teamster (all M/A); or Explosive Ordnance Disposal (M/H).

* Includes +2 for IQ.

Customization Notes: Most of the major combatants did not field resistance units, with the exception of the Soviet Union, which boasted untold thousands of them. In the Soviet case, partisans were nearly as likely to consist of former Red Army forces as homegrown groups of patriots. These resistance fighters might use the rifleman (see p. 72), or even the commando template (see p. 80), rather than this one.

Most resistance groups were green or average units. For green units, reduce this template to 35 points by reducing IQ to 11, Soldier skill to 10, Camouflage to 11, and Stealth to 10, then removing the Demolition and Orienteering skills.

Freedom fighters in Japanese-held territories might have limited literacy and a low native TL. This template should be heavily modified if used to represent an island tribesman.



4. THE ARMOURY

The world's engineers and industries answered the global call to arms with a vast variety of hardware.

This chapter describes a broad variety of military and civilian equipment for WWII adventurers, statistics on the most common small arms used in the war, and a sampling of the military vehicles to be encountered.

When they differ, these equipment statistics should be used in lieu of those found in ***GURPS Basic Set*** or elsewhere.

To design historical vehicles not found in this chapter, or completely original vehicle concepts, see Chapter 5.

PERSONAL GEAR

The GM will have to rule when the following equipment is available to civilians or soldiers in his campaign.

Numbers in parentheses are the hit locations covered by armor; see p. B211.

Clothing

Belt – Heavy leather. $0.75, 0.2 lbs.

Boots (15-16) – PD 2, DR 2. $10, 4 lbs.

Boots, Arctic (15-16) – PD 2, DR 2, for wear with arctic clothing. $25, 8 lbs.

Clothing, Arctic (6, 8-14, 17-18) – PD 0, DR 2, +5 to HT to resist cold. $50+, 15 lbs.

Clothing, Formal – A tailored suit or tuxedo. $25+, 4 lbs.

Clothing, Ordinary – A modest suit or other everyday wear. $12+, 4 lbs.

Clothing, Swimwear – Trunks and shirt, or modest one-piece. $8+, neg.

Clothing, Winter (6, 8-14, 17-18) – PD 0, DR 1, +2 to HT vs. cold. $25+, 8 lbs.

Fedora – Stylish felt hat. $8, 1 lb.

Field Jacket – Heavy, lined, with many pockets. $15, 4 lbs.

Firefighter's Suit – Coat, hooded helmet, and trousers give overall DR 10 vs. heat or fire. $20, 10 lbs.

Gloves, Shooting (7) – PD 1, DR 1. $5, 0.5 lbs.

Gloves, Winter (7) – PD 1, DR 1. Leather, lined. $5, 1 lb.

Gloves, Work (7) – PD 1, DR 1. $2, 0.5 lbs.

Goggles – DR 1 for eyes, $5, neg.

Leather Jacket (6, 8-10, when zipped up 17-18) – PD 1, DR 1, issued to air crews. $15, 4 lbs.

Hat, Women's – Many styles. $3+, 1 lb.+

Poncho – Rubberized, +4 to Holdout. $3, 2 lbs.

Raincoat – Heavy duty, +4 to Holdout. $7, 6 lbs.

Senninbari – Some Japanese wore this "good luck belt of 1,000 stitches" under their uniform. A red sash, it was supposed to repel enemy fire, provide luck, or bestow courage. In some settings, it might even work. The GM should price according to abilities; weight is negligible.

Shirt – Civilian or military. $1+, 1 lb.

Shoes (15-16) – PD 1, DR 1. $8, 2 lbs.

Snow Suit – White cotton camouflage worn over uniform. $1, 2 lbs.

Socks – Six pairs. $1, 1 lb.

Sunglasses – DR 1 for eyes. $10, neg.

Sweater – Thick wool. $10, 3 lbs.

Trenchcoat – Light rain gear, gives +4 to Holdout. $10, 3 lbs.

Trenchcoat, Leather (6, 8-14, when buttoned up 17-18) – PD 1, DR 1. Oiled leather serves as light rain gear and is +4 to Holdout skill. $25, 6 lbs.

Underwear – Style can vary quite a bit. $0.25, 0.5 lbs.

Uniform, Military – Cotton or wool pants and shirt, field or service cap, boots, socks, underwear. $15+, 8 lbs.

Windcheater – Light jacket. $20, 3 lbs.

Armor and Related

Breastplate, Concealable (9-10, 17-18) – PD 4, DR 10, covers the front only. A few Japanese infantry wore a non-concealable version. $75, 12 lbs.

Flak Jacket (9-10, 17-18) – Some Japanese infantry units were issued these bulky vests. PD 2, DR 4. $15, 9 lbs.

Flak Vest, Aircrew (9-10, 17-18) – U.S. issue. PD 4, DR 7. $50, 20 lbs.

Gas Cape – German-issue, a specially treated poncho that limits gas damage to wearer's skin. $20, 2 lbs.

Gas Mask (5) – PD 1, DR 2, takes 20-DX seconds to put on, -4 to all Sense rolls, -8 when shooting. $15, 3 lbs.

Heated Suit (6, 8-14, 17-18) – PD 1, DR 1. Worn under clothes and plugged into vehicle, adds up to 40°. $40, 4 lbs.

Helmet, British (3-4) – The wide brim offsets -1 in vision penalties for rain or bright light. PD 2, DR 4. $7, 4 lbs.

Helmet, Crash (3-4) – PD 2, DR 3 leather with goggles and headset, often worn by tank crews. $40, 4 lbs.

Helmet, German (3-4) – Line infantry wore this PD 4, DR 4 M1935 helm. ($6, 4 lbs.) A few reserves still wore the larger M1916, which weighed the 5 lbs. cited for the '35 on p. B211.

Helmet, Flight (3-4) – PD 2, DR 2 leather with goggles, headphones, and oxygen-mask fittings, worn by aviators of most nations. $45, 3 lbs.

Helmet, Japanese (3-4) – Much like U.S. helmet, but made of cheap, brittle metal. PD 3, DR 3. $1, 4 lbs.

Helmet, Soviet (3-4) – Use *U.S.* statistics.

Helmet, U.S. (3-4) – The 3-lb. M-1 helmet had PD 3, DR 4 when worn with its 1-lb. PD 2, DR 1 liner. A knit cap also was worn beneath it. $3, 4 lbs.

Leather Flight Suit (6, 8-14, 17-18) – PD 1, DR 2, heavy sheepskin parka and pants for bomber crews; +3 to HT to resist cold. A few German mountain troops wore a sheepskin coat with the same statistics. $35, 15 lbs.

Field Gear

Backpack – Canvas or light leather, holds up to 2 cf or 100 lbs. $10, 3 lbs.

Backpack, Mountain – Large, with pack frame. Holds up to 3 cf or 150 lbs. $25, 8 lbs.

Battery, A Cell – Holds 10 kWs, non-rechargeable. $0.10, 0.2 lbs.

Battery, D Cell – Holds 13 kWs, non-rechargeable. $0.15, 0.3 lbs.

Battery, Camp – Holds 400 kWs, rechargeable. $5, 10 lbs.

Battery, Motorcycle – Holds 600 kWs, rechargeable. $8, 15 lbs.

Binoculars, Military 8× – +3/+5 to vision, with leather case. $100, 4 lbs.

Binoculars, Military 15× – +4/+7 to vision, with leather case. $200, 6 lbs.

Blanket, Wool – Very warm. $2, 4 lbs.

Blanket, Flannel – Veterans use it and a body bag as a sleeping bag. $0.35, 2 lbs.

Body Bag – Full-length zipper and tiedowns. $0.50, 2.5 lbs.

Canteen – Holds 1 quart (2 lbs.) of water; has cup and cover. $1, 1 lb.

Cigarette Lighter – A Zippo. $1, neg.

Climbing Gear – Rock hammer ($2, 4 lbs.) and iron spikes with carabiners ($0.10 and 0.5 lbs. each).

Compass – Gives +1 to Orienteering, usable at night. $5, neg.

Converter – Runs battery-driven devices off household current or vice versa. $10, 0.7 lbs.

Cricket – A toy noise-maker used for identification. $0.05, neg.

Entrenching Tool – Small folding shovel that also can serve as a pick. Uses Axe/Mace skill -2 in combat, doing swing-1 cutting. $2, 3 lbs.

Flashlight, Small – 15' beam, small battery lasts 2 hours. $1, 0.5 lbs.

Flashlight, Large – 30' beam, large battery lasts 5 hours. $2, 1 lb.

Flashlight, Lens Filters – Change color of beam for signaling. $1, neg.

Generator, Handcranked – Provides 0.01 kWs per turn with one operator; can recharge batteries. $5, 10 lbs.

Grapnel – Supports 300 lbs. $5, 4 lbs.

Handcuffs – ST 18. $10, 1 lb.

Lantern, Kerosene – Illuminates 15' radius, burning a pint of fuel every six hours. $12, 5 lbs.

Life Jacket – Holds up as much as 350 lbs., can be blown up by mouth if necessary. $10, 6 lbs.

Life Jacket Accessory Kit – Bag with 1-hour light, whistle, and shark repellent; the shark rolls vs. HT-3 to ignore. $45, 5 lbs.

Lockpicks – $5, neg., or +1 to skill for $50.

Map Case – Waterproof. $5, neg.

Maps – Military-issue set. $50+, 2 lbs.

Matches – Water- and windproof set of 50 in a waterproof case. $0.15, neg.

Mess Kit, Group – Frying pan, bowl, pot, and group utensils. $3, 5 lbs.

Mess Kit, Personal – Plate, can opener, fork, knife, cup, and spoon. $1, 2 lbs.

Mirror – Used for hygiene or signaling, with cloth cover. $1, neg.

Mosquito Netting – Keeps away flying insects, improving sleep and odds of avoiding disease. $2, 3 lbs.

Mussette Bag – Canvas, holds 20 lbs. or 0.5 cf, hooks to web gear. $3, 1 lb.

Notebook – Waterproof cover, with pen and pencil. $0.75, 1 lb.

Packboard – Used to carry heavy items; worn like a backpack. $3, 4 lbs.

Parachute – Used to survive jumping out of an aircraft. It takes 25-DX seconds to exit the craft unless in an open or external seat. The chute opens after 80 yards of falling, then descends at 5 yards per second. U.S. version with reserve chute is $100, 30 lbs. All others have no reserve; $70, 25 lbs. German chutes use only one riser anchored at paratroop's back (rather than one at each shoulder), giving a -4 to Parachuting skill.

Personal Basics – Soap, razor, toothbrush, notebook, pencil, handkerchief, wallet, ID disc or dog tags, paybook and other papers. $5, 1 lb.

Rappelling Rope, 200' – Holds 600 lbs. $20, 10 lbs.

Rappelling Harness – Allows quicker and easier climbing. $10, 4 lbs.

Road Flare – Burns for 30 minutes, +2 to Vision rolls to see it. $1, 1 lb.

Sleeping Bag – Standard type. $20, 8 lbs.

Sleeping Bag, Heavy – +5 to HT rolls in cold weather. $50, 15 lbs.

Sleeping Pad – Insulation and padding for extra comfort. $3, 5 lbs.

Snorkeling Gear – Mask, snorkel, and fins (+1 Move in water). $3, 6 lbs.

Snowshoes – Improves Move, but only in deep snow. $5, 5 lbs.

Snow Skis – Includes poles and bindings. Improves Move on snow. $16, 8 lbs.

Stove, Camp – Burns a pint of gas in four hours, boils 1 quart of water in five minutes. $5, 1 lb.

Telescope, ×15 – +4/+7 to vision, with a small tripod. $45, 10 lbs.

Tent, Two-Man – Two shelter halves with poles and stakes, usually split between two men. A shelter half also can serve as a poncho. Most versions also can make larger tents by combining more shelter halves. $20, 9 lbs.

Thermos Bottle – Keeps 1 pint hot for 24 hours, or cold for 72. $1, 2 lbs.

Towel – Always useful. $0.35, 1 lb.

Trip-wire, 100' – Thin steel wire that can hold up to 100 lbs. $1, 0.3 lbs.

Typewriter – Manual. $50, 10 lbs.

Water Basin, Folding – Rubberized canvas bowl holds two quarts. $1, neg.

Wind-Up Alarm Clock – Loud. $2, 1 lb.

Wristwatch, Military – Wind-up, water-resistant, luminous dial. $5+, neg.

Food

A-Ration (Fresh Food) – Includes meat, vegetables, fruit, etc. $0.35, 2.4 lbs.

Bread and Ham – 1-lb. loaf of bread and 1 lb. ham. Goes bad quickly, but makes three meals. $0.30, 2 lbs.

C-Ration, U.S. – Includes a can of pork and beans, spaghetti, or one of 10 other entrees ($0.75, 0.75 lbs.); small can with candy, chocolate bar, instant drink, and jam and crackers ($0.50, 0.75 lbs.); and an accessory packet with cigarettes, matches, toilet paper, gum, sugar, salt, and cream ($0.75, 0.5 lbs.). Total per meal is $2, 2 lbs.

D- (or Iron) Ration – One concentrated meal (chocolate, oats, sausage, etc.) for emergency use. $1, 0.5 lbs.

K-Ration, U.S. – Meal with accessories in a waterproof box, marked Breakfast, Dinner, or Supper. $2, 1 lb.

Rice, Uncooked – Each meal is $0.05, 0.7 lbs., but requires 1 pint of water to cook it and should be eaten with canned supplements at $0.55, 1.2 lbs per meal. Troops living on rice alone suffered from beriberi; see p. CII167.

Weapon Accessories

Cartridge Belt – Holds 25 rounds, worn on waist or shoulder. $1.50, 0.5 lbs.

Condom – Keeps weapon muzzle dry, among other uses. Five for $1, neg.

Gun Cleaning Kit – Fits any small arm. $5, 3 lbs.

Gun Cleaning Kit, Small – Fits a specific model of small arm. $2, 1.5 lbs.

Gun Scabbard – Rifle-sized holster, worn by person or horse. $10, 3 lbs.

Holster, Military – -2 to Fast-Draw due to flap, with pouch for one or two spare magazines. $5, 0.5 lbs.

Holster, Police – A standard holster with no flap. $5, 0.3 lbs.

Holster, Shoulder – -1 to Fast-Draw, also holds two magazines. $5, 1 lb.

Rifle Scope, 2× to 3.5× – +1 Acc for braced, aimed shots; +1/+2 to vision or +2/+3 at 3× or 3.5×. $10, 1 lb.

Rifle Scope, 4× – +2 to Acc for aimed shots, +1 if not braced; +2/+3 to vision. $25, 1.5 lbs.

Rifle Scope, 8× – +3 to Acc for aimed shots, +1 if not braced; +3/+5 to vision. $50, 2 lbs.

Rifle Scope, 10× – +3 to Acc for aimed shots, +1 if not braced; +3/+6 to vision. $75, 2.5 lbs.

Scope, Spotting, 50× – +5/+10 to vision rolls. $25, 4 lbs.

Sling, Jungle – Padded, adjustable sling that keeps weapon readied as the user hikes. $5, 0.5 lbs.

Suppressors – See pp. CII33-34, 36. A typical pistol silencer would be $25, 1 lb. A SMG silencer might be $75, 3 lbs. if detachable, +1.5 lbs. if fixed.

Web Gear – Belt and suspenders with plenty of pouches and fasteners for ammo clips, canteens, etc. $3, 5 lbs.

Storage

Ammo Can – DR 2 metal, holds 1 cf or 50 lbs. $0.20, 5 lbs.

Duffel Bag – Heavy duck cloth, holds 4 cf or 120 lbs. of gear. $3, 2 lbs.

50-Gallon Drum – DR 2, holds 7.5 cf or 450 lbs. $2, 54 lbs.

Ice Box – Holds 10 lbs. of ice and 1 cf of cargo; ice lasts one day. $5, 20 lbs.

Jerry Can – DR 3, holds 0.8 cf (5 gallons) or 45 lbs. $0.50, 8.8 lbs.

Medical Chest – DR 4 waterproof metal chest with lock, holds 2.5 cf or 50 lbs. $25, 20 lbs.

Safe – Holds 2.5 cf, has PD 4, DR 40 and combination lock. $50, 350 lbs.

Storage Chest or Trunk – DR 2 wood, holds 5 cf or 100 lbs. $5, 20 lbs.

Suitcase – DR1, holds 3 cf or 70 lbs. $3, 11 lbs.

Water Pail – DR 2, holds 0.5 cf (3 gallons) or 25 lbs. $0.15, 3 lbs.

Explosives and Related

Bangalore Torpedo – TNT-packed 5' tube used to clear a 2'-wide path through barbed wire and antipersonnel mines; can be linked together and usually issued in lots of 10. Does 6d×18 per 5' tube. $35, 13 lbs.

Contact Wire, 500' – Wire on a hand spool, used with plunger and detonator caps to set off explosives. $5, 3 lbs.

Detonator Caps, 50 – Used to set off explosive charges, each does 1d-3 damage itself. $10, 2 lbs.

Detonator, Trip – Has 3-yard tripwire. Requires Vision -3 roll if Camouflage roll is made. $0.25, neg.

Dynamite, Military – A waterproof stick of TNT doing 6d×2. $2, 1 lb.

Exploder, 10-Cap – Twisting handle sets off up to 10 detonator caps. $10, 8 lbs.

Exploder, 30-Cap – Plunging the handle sets off up to 30 caps. $50, 15 lbs.

Fuse, 30' Spool – Burns 1' in 30 seconds, even underwater. Hearing -2 roll to find it. $2, 1 lb.

Metal Detector – Has 1-hex reach and provides a +4 to Traps skill to detect *metallic* mines within 12" of surface. $150, 9-lb. pack and 6.5-lb. probe.

Plastic Explosive – Military explosive doing 6d×3 damage per pound. $9.

Satchel Charge – A knapsack with 20 lbs. of TNT (6d×40) and a 15-second ring-pull fuse. $60, 24 lbs.

Tools & Heavy Gear

Cargo Net – 10' × 10'. $3, 13 lbs.

Chain, 20' – Breaking strength of 6.5 tons. $15, 60 lbs.

Cot – Folding Army issue. $5, 25 lbs.

Crowbar 30" – Pry tool treated as a hammer (p. CII20) in combat. $2, 4 lbs.

Cutting Torch – Does 1d+3 per turn, treating DR as hit points, not armor, as long as torch is constantly applied. Burns 30 seconds per gas bottle; spares $5, 15 lbs. each. $50, 30 lbs.

Field Kitchen – Kitchen gear for 20 men, with serving and preparation utensils, etc. $50, 80 lbs.

Fire Extinguisher – Large, containing 20 1-second bursts. $30, 20 lbs.

Flashlight – 50' beam, runs for 2 hours on two flashlight batteries. $1, 1 lb.

Flashlight, Dynamo – 15' beam, powered by hand pump. $5, 1 lb.

Fueling Pump – One person manually transfers 20 gallons per minute; includes a 6' hose. $50, 30 lbs.

Fueling Pump, Motorized – Transfers 100 gallons per minute, has a 12' hose, burns 1 gallon of gas per hour. $50, 120 lbs.

Hydraulic Jack – Lifts 10 tons. $15, 60 lbs.

Tool Kit – Must specify if for Armoury, Electronics, Engineer, or Mechanic skill. Allows any repair at no penalty. Electronics kits are $120, 100 lbs. and take up 1.4 VSPs as cargo; all others are $80, 300 lbs., 2.7 VSPs.

Tool Kit, Small – Must specify as for *Tool Kit*. Major repairs take a -2 penalty. Electronics kits are $90, 10 lbs.; all others are $60, 20 lbs.

Pick/Mattock – Improves digging speed. $0.90, 6 lbs.

Saddle and Tack – Outfits one cavalry horse. $75+, 50 lbs.

Saddlebags – Hold 20 lbs. $10, 3 lbs.

Saw – Does 0.5 points of damage per turn, treating any DR under 7 as hit points, not armor. DR 5+ material will soon ruin the blade. $2, 1.5 lbs.

Saw, Commando – As *Saw*, except 0.25 hits per turn and requires both hands. Flexible blade also serves as wire garrote (p. CI134). $0.30, 0.1 lbs.

Shovel – Speeds up digging. $1, 4.5 lbs.

Spotlight – 200-yard beam, batteries last two hours. $50, 10 lbs.

Swiss Army Knife – Makes minor repairs at -3, major repairs at -5. $5, neg.

Tent, Large – Sleeps 50 to 100, takes up 40 cf stored. $100, 1,000 lbs.

Tent, Medium – Can sleep 20 to 50, takes up 20 cf stored. $50, 500 lbs.

Tire Pump – Uses engine compression to inflate tires by inserting into spark-plug opening. $3, 2 lbs.

Two-Wheeled Cart – Transports loads up to 350 lbs. $2, 15 lbs.

Welder – Fuses steel or cast iron. $200, 350 lbs. Welding rods are $5, 20 lbs. per 100.

Wire Cutters – Useful for demolition, signal, and engineer duties. $2, 3 lbs.

Melee Weapons

Bayonets – See p. 193. Most of these were large knives. A few qualified as small knives. Some Soviet and many Japanese models would count as short-swords. A rifle with fixed bayonet is used at Guns -1 or Spear -1.

Swords – A few cavalry officers continued to carry sabers; treat as thrusting broadswords. Some Japanese NCOs and many officers carried a katana (p. 193) into combat – even armor troops riding in cramped tanks.

Medical

Ammonia, 5 Capsules – Inhalant gives HT roll to revive a stunned or unconscious person. $0.25, neg.

Amphetamines, 30 Pills – In fairly common use; see p. CII163. $5, 0.1 lbs.

Foot Powder, 1 Can – Gives +2 to resist trenchfoot or other fungus; lasts one week. $0.85, 0.3 lbs.

Penicillin, 5 Packets – As for *Sulfa Powder* but very rare until 1943. Also cures existing infections in 1d days (2d days if the patient critically fails a HT roll). $25, 0.2 lbs.

Sulfa Powder, 5 Packets – Sprinkled on a wound, this prevents an infection unless the First Aid or Physician roll critically fails. Only available to Anglo-American forces. $1, 0.2 lbs.

Sulfa, 30 Tablets – As for *Powder*, but taken orally. $2, 0.1 lbs.

Aspirin, 100 Tablets – Good for minor pain and hangovers. $0.45, 0.4 lbs.

Malarial Pills, 30 – One-month supply gives +2 to avoid malaria, but each morning roll vs. HT+2 or have nausea/vomiting. $5, 0.1 lbs.

Morphine, 5 Syrettes – See p. CII166. $5, neg.

Plasma Kit, Serum – Good for one use, with tubing and needle, provides +1 to First Aid all by itself. $4, 4 lbs.

Salt Tablets, 30 – Two a day provide a +1 to HT rolls against dehydration or Fatigue loss due to heat. $1, 0.1 lbs.

Water Purification Tablets, 50 – Purify 1 quart each. $0.25, 0.2 lbs.

Aid Kits

Doctor's Aid Kit – As *Medic's* kit, plus +2 to Surgery, with Physician and Diagnosis at no penalty. $30, 15 lbs.

First-Aid Kit, Basic – +1 to First Aid; includes two large compress bandages, five packs of sulfa powder, and bottle of 30 sulfa tablets. $3, 2 lbs.

First-Aid Kit, Medic's – +2 to First Aid; as two *Basic* kits, plus five each ammonia capsules and morphine syrettes, 30 salt tablets, and a plasma serum kit. $10, 10 lbs.

Surgical Kit – Allows Surgery skill at no penalty. $7, 2 lbs.

Communications & Electronics

Camera, 35mm – Extra film is 32 shots, $1, neg. $50, 3 lbs.

Camera, Spy – Takes 50 shots on microfilm, +4 to Holdout. $250, 0.2 lbs.; film $5, neg.

Cipher Machine – Can convert text to cipher or vice-versa. $1,000+, 8 lbs.

Communications Wire – A mile of phone line on a spool, with a harness to strap it on a signal trooper's back when reeling out or chest when reeling in. Wire was rated by how far it could carry a field-phone conversation: *5-mile-range wire:* $15, 35 lbs. *14-mile-range wire:* $25, 55 lbs. *20-mile-range wire:* $60, 130 lbs.

Developer Kit – Develops 1 photo per minute, needs complete darkness and red light. $30, 40 lbs.

Field Phone – Telephone for use with communications wires, which must be routed through a switchboard that runs the whole process. $15, 3 lbs.

Megaphone – +5 to hear user if pointed within 30° of listener. $4, 3 lbs.

Movie Camera – 8mm, with an 8-minute reel (spares $5, 1 lb. each). $50, 2 lbs.

Movie Projector – $100, 15 lbs.

Phonograph – Plays 10"-12" records (each $0.50, neg.). $15, 15 lbs.

Radio, Backpack – Medium receiver and transmitter with 360-kWs of batteries (good for 1 hour if transmitting constantly, but all radios may extend endurance by up to 10 if mostly used to listen) in DR 3 case. $25, 25 lbs.

Radio, Suitcase – Medium receiver and transmitter with 360-kWs of batteries (good for 1 hour) in DR 3 case, plus telegraph key – all hidden in a standard suitcase. $40, 38 lbs.

Radio, Walkie-Talkie – Small receiver and transmitter with 18-kWs battery (good for 30 minutes) in DR 3 case. Historically only available to U.S. troops, and not common with them. $6, 4.5 lbs.

Radio, Civilian – Medium receiver in DR 3 case, runs on household current. $5, 3.5 lbs.

Recorder, Reel-to-Reel – Rarely seen audio recorder and microphone. $100, 15 lbs. Extra 15-minute reels (made of wire) are $5, 2 lbs.

Telegraph Key – For using Morse code via phone line or radio. $5, 3 lbs.

Police and Spy Tools

Climbing Spikes – +2 to some Climbing rolls. Also used by mountain troops and Japanese snipers. $5, 1 lb.

Criminology Kit – Portable forensics lab. $300, 6 lbs.

Fingerprint Test Kit – $20, 5 lbs.

Knockout Drops – See *Barbiturates* under *Medical* supplies.

Stethoscope – Gives +3 to disarm some explosives. $100, 1 lb.

Truth Serum – Case with hypo and 10 doses of narcoanalytic drug. $5, 3 lbs.

Costs and Expenses

Food, Drink, Sundries

Beer	$0.10
Bottle of Alcohol, Fine	$5+
Bottle of Alcohol, Cheap	$1.25
Bottle of Alcohol, Good	$2
Candy Bar	$0.05
Cigar	$0.50
Cigarette, Pack	$0.05-10
Club cover charge	$0.50
Eye Glasses	$10
Hardback Books	$2+
Hot Bath and Massage	$2
Magazine	$0.05
Meal, Fine	$5+
Meal, Average	$0.20-50
Movie	$0.50
Paperback Books	$0.25
Playing Cards	$0.50
Plug of Tobacco	$0.05
Prostitute	$2+
Shave and a Haircut	$0.30
Soda Pop	$0.05

Expenditures and Fees

Aviation Gas, per gallon	$0.18
Gasoline, per gallon	$0.15
Diesel, per gallon	$0.13
U.S. Civilian Automatic Weapon License, per gun	$200
Hospital Stay, per day	$15-50
Cab Fare, per mile	$0.05
Ship Stateroom, per day	$30
Mechanic, per hour	$1

Lodging

Home, 3 bedroom	$3,800
Hotel, Flop, per night	$1
Hotel, Average, per night	$5
Hotel, Fine, per night	$20
Seedy Room, per month	$12
Studio Flat, per month	$25
Nice Office, per month	$30
Seedy Office, per month	$10

SMALL ARMS

The following descriptions and tables cover some common small arms used in WWII. Many of these also appear in ***GURPS High-Tech***, which provides additional background information. Larger weapons are described in Chapter 5.

Reloading Small Arms

Most small arms use a magazine, clip, belt, or loose rounds.

Magazines are boxes that hold the ammo and are attached to the weapon. Reloading takes three seconds: one to remove the old magazine, one to ready the new one, and one to insert it in the weapon.

Clips are small metal devices that hold several rounds of ammunition, usually by the butts. Usually, the ammo is stripped off the clip as it is inserted into the weapon; other clip designs go in the weapon then eject as the last round is fired. Either way, reloading takes three seconds: one to ready the new clip and two to insert or strip it into the weapon.

Belts are a flexible chain of cloth or metal links with each link holding one round of ammo. Loading a new belt into a weapon takes at least three seconds, but almost all belts of a given design can attach to one another. Therefore, the loader for a belt-fed weapon usually can link the front end of a fresh belt to the back end of the current belt while the gunner is firing, essentially giving the weapon no reload time.

Single rounds are simply loose ammunition, used to feed some larger weapons and revolvers. It takes one second to break open the weapon. This automatically ejects the spent casing on most single-shot weapons, but for revolvers another second must be taken to eject the ammunition currently in the weapon. (Presumably, these rounds have all been fired, but unfired rounds will be ejected, too.) Then the shooter must spend one second per round to insert new ammo. One more second of action will close the weapon and prepare it for firing. Thus, reloading the standard six-shot revolver takes nine seconds.

All of the above times assume that the ammunition to be loaded is at hand. Reloading empty magazines, clips, or cloth belts takes one second per round. Metal belts are designed to disintegrate in use, and are not reloaded. Fast-Draw (Magazine) and Speed-Load (see p. B52) can reduce reload times.

Weapon Tables Format

The following tables use this format:

Weapon: The most common name for the weapon followed by the name for its ammo in U.S. usage at the time. Unless otherwise noted, ammunition with the same diameter but different names does *not* interchange.

Malf: See p. 201.

Dam: See p. 192. A number in parentheses is an armor divisor; divide DR by that amount before applying damage. A number in brackets is fragmentation; see pp. 202-203. A "-" after the damage means halve all damage that penetrates DR, while a "+" means multiply all damage that penetrates DR by 1.5. Also, armor-piercing rounds with a modifier of (2) halve damage to living things that penetrates DR.

SS, Acc, 1/2D, Max, Wt., RoF, Shots, Rcl: See pp. 200-201.

AWt.: The weight of a standard reload for the weapon, whether several loose rounds or a single magazine, clip, or belt. The weapon *Wt.* already includes a full load of ammo.

Min: LAWs have this minimum range, in yards.

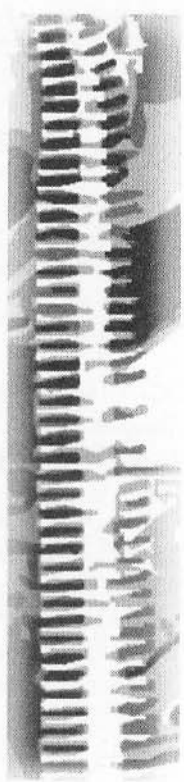
ST: The minimum ST to avoid recoil penalties (p. 201). "B" means a bipod is standard (if fired prone, +1 Acc, -2 ST). "T" means a tripod is used (if attached and weapon is fired from sitting or prone position, ignore ST minimum; if not, -2 Acc).

Hold: The Holdout-skill modifier to conceal the weapon.

Ammo Table

See p. CII38 for loose-round weights. This book uses period names for ammo (except that 7.92mm Mauser was called 8mm Mauser in the U.S.). The following table provides their modern metric names, for use with other references.

7.62mm Tokarev	7.62×25mm
7.62mm Nagant	7.62×39mmR
.32 ACP	7.65×17mmSR
.380 ACP	9×17mm
.38 S&W	9×20mmR
8mm Nambu	8×21mm
9mm Parabellum	9×19mm
.45 ACP	11.43×23mm
12g	12 gauge 2.75"
6.5mm Arisaka	6.5×50mmSR
7.5mm MAS	7.5×54mm
.30 Carbine	7.62×33mm
7.62mm Russian	7.62×54mmR
.30-06	7.62×63mm
.303 British	7.7×56mmR
7.7mm Arisaka	7.7×58mm
7.92mm Kurz	7.92×33mm
7.92mm Mauser	7.92×57mm
7.92mm Pz 39	7.92×95mmB
.50 BMG	12.7×99mm
12.7mm Russian	12.7×108mm
.55 Boys	13.9×99mmB
14.5mm Russian	14.5×114mm
20mm Japanese	20×125mm



Small Arms Table

Semiautomatic Pistols – Use Guns (Pistol) Skill

Weapon	Malf	Dam	SS	Acc	1/2D	Max	Wt.	AWt.	RoF	Shots	ST	Rcl	Hold	Cost
Browning Model 1910, .380 ACP	Crit.	2d	10	1	125	1,500	1.3	0.3	3~	7+1	8	-1	+1	$30
Browning HP 35, 9mm P.	Crit.	2d+2	10	3	150	1,900	2.4	0.5	3~	13+1	9	-1	-1	$80
Colt M-1911A1, .45 ACP	Ver.	2d+	10	2	175	1,700	3	0.6	3~	7+1	10	-2	-1	$30
Tokarev TT-33, 7.62mm Tokarev	Crit.	2d+1-	10	2	140	1,800	2.1	0.4	3~	8+1	10	-1	-1	$25
Broomhandle Mauser, 7.62mm T.	Crit.	2d+1-	11	3	140	1,800	2.8	0.3	3~	10	10	-1	-2	$40
Luger P 08, 9mm Parabellum	16	2d+2	9	4	150	1,900	2.4	0.5	3~	8+1	9	-1	-1	$50
Walther PPK, .32 ACP	Crit.	2d-1-	10	2	100	1,300	1.5	0.2	3~	7+1	7	-1	+1	$75
Walther P 38, 9mm Parabellum	Crit.	2d+2	10	3	150	1,900	2.4	0.4	3~	8+1	9	-1	-1	$35
Nambu 14 Shiki, 8mm Nambu	16	2d	10	2	130	1,600	2.2	0.2	3~	8+1	8	-1	-1	$15
Nambu 94 Shiki, 8mm Nambu	15	2d	11	1	130	1,600	1.6	0.2	3~	6+1	8	-1	+0	$5
Beretta Mod 1934, .380 ACP	Crit.	2d	10	2	125	1,500	1.5	0.3	3~	7+1	8	-1	+1	$40

Revolvers – Use Guns (Pistol) Skill

Weapon	Malf	Dam	SS	Acc	1/2D	Max	Wt.	AWt.	RoF	Shots	ST	Rcl	Hold	Cost
Enfield No. 2 Mk I, .38 S&W	Crit.	2d-1	10	2	120	1,600	1.8	0.2	3~	6	8	-1	-1	$20
S&W M-1917, .45 ACP	Crit.	2d+	10	2	175	1,700	2.6	0.4	3~	6	10	-2	-1	$30
Nagant M-1895, 7.62mm Nagant	Crit.	2d-1-	10	2	150	1,900	2	0.25	3~	7	8	-1	-1	$20

Shotguns – Use Guns (Shotgun) Skill

Weapon	Malf	Dam	SS	Acc	1/2D	Max	Wt.	AWt.	RoF	Shots	ST	Rcl	Hold	Cost
Browning Automatic, 12g	Crit.	4d	11	5	25	150	9	0.9	3~	5+1	12	-2	-7	$50
Winchester Model 1897, 12g	Crit.	4d	11	5	25	150	7.8	0.9	3~	5+1	13	-4	-6	$45

Rifles, Assault Rifles, and Antitank Rifles – Use Guns (Rifle) or (Light Auto) Skill

Weapon	Malf	Dam	SS	Acc	1/2D	Max	Wt.	AWt.	RoF	Shots	ST	Rcl	Hold	Cost
Lee-Enfield No. 4 Mk I, .303 Br.	Crit.	6d+2	14	10	1,000	3,800	10	1	1	10+1	12	-2	-6	$30
Boys Mk I, .55 Boys	Crit.	12d+2 (2)	20	11	1,300	5,500	38	2	1/2	5+1	16B	-2	-13	$75
Mosin-Nagant 1891/30, 7.62mm R.	Crit.	7d	15	11	800	3,900	9.8	0.4	1/2	5+1	11	-2	-6	$25
Tokarev SVT-40, 7.62mm R.	Crit.	7d	14	11	800	3,900	9.3	0.7	3~	10+1	11	-2	-6	$80
PTRS-41, 14.5mm Russian	Crit.	15d+1 (2)	20	10	1,400	6,000	49	2.7	1	5+1	17B	-2	–	$180
Springfield M-1903, .30-06	Crit.	7d+1	14	11	1,000	4,600	9.3	0.3	1/2	5+1	12	-3	-6	$35
M-1 Garand, .30-06	Crit.	7d+1	14	11	1,000	4,600	10	0.5	3~	8	12	-3	-6	$100
M-1 Carbine, .30 Carbine	Crit.	3d+2-	12	8	300	2,100	5.5	0.5	3~	15+1	9	-1	-5	$50
Karabiner 98k, 7.92mm Mauser	Crit.	7d	14	11	1,000	4,000	8.9	0.3	1/2	5+1	12	-3	-6	$35
Gewehr 43, 7.92mm Mauser	Crit.	7d	14	11	1,000	4,000	10.3	0.6	3~	10+1	12	-3	-6	$90
FG42, 7.92mm Mauser	Crit.	6d+1	14	10	800	4,000	12.4	1.8	15*	20+1	13B	-3	-6	$300
Sturmgewehr 44, 7.92mm Kurz	Crit.	5d+1	12	8	600	3,100	13.4	2	8*	30+1	10	-2	-6	$70
Panzerbüchse 39, 7.92mm Pz39	Crit.	13d-1 (2)	17	12	1,200	5,400	28	0.3	1/3	1	12B	-2	-11	$135
Arisaka 99 Shiki, 7.7mm A.	Crit.	6d+2	13	10	1,000	3,900	9.1	0.3	1/2	5+1	11	-2	-6	$30
Kokura 97 Shiki, 20mm Japanese	Crit.	6d×3 (2)	20	12	1,400	6,000	114	11	6	7+1	30B	-2	–	$375
MAS Mle 36, 7.5mm MAS	Crit.	6d+2	13	10	1,000	3,900	8.1	0.5	1/2	5+1	12	-2	-6	$30

Submachine Guns – Use Guns (Light Auto) or (Rifle) Skill

Weapon	Malf	Dam	SS	Acc	1/2D	Max	Wt.	AWt.	RoF	Shots	ST	Rcl	Hold	Cost
Lanchester Mk I, 9mm P.	Crit.	3d-1	10	7	160	1,900	11.9	2.3	9*	50	10	-1	-5	$100
Sten Mk II, 9mm Parabellum	16	3d-1	10	6	160	1,900	7.6	1.4	9*	32	10	-1	-4	$10
Owen Mk I, 9mm Parabellum	Ver.	3d-1	10	6	160	1,900	10.7	1.4	10*	33	10	-1	-6	$40
M-1A1 Thompson, .45 ACP	Crit.	2d+1+	11	7	190	1,750	12.2	1.6	11*	30	11	-3	-5	$70
M-3 "Greasegun," .45 ACP	Crit.	2d+1+	10	6	190	1,750	10.2	2.2	8	30	11	-3	-4	$45
PPS-43, 7.62mm Tokarev	Crit.	3d-1-	10	6	160	1,900	8.6	1.3	11	35	10	-1	-4	$50
PPSh-41, 7.62mm Tokarev	Crit.	3d-1-	10	6	160	1,900	11.7	4	15*	71	10	-1	-5	$65
MP38 or 40, 9mm Parabellum	Crit.	3d-1	10	6	160	1,900	10.4	1.5	8	32	10	-1	-4	$70
KP31 "Suomi," 9mm Parabellum	Ver.	3d-1	11	7	200	1,900	15.6	4.5	15*	70	10	-1	-5	$150
Kokura 100 Shiki, 8mm Nambu	Crit.	2d+1	10	6	140	1,600	9.7	1.1	8	30	9	-1	-5	$45
Beretta Mod 38A, 9mm P.	Crit.	3d-1	10	6	160	1,900	11	1.7	10*	40	10	-1	-5	$80

Machine Guns – Use Guns (Light Auto) on Bipod or Gunner (Machine Gun) on Tripod

Weapon	Malf	Dam	SS	Acc	1/2D	Max	Wt.	AWt.	RoF	Shots	ST	Rcl	Cost
Lewis Mk I, .303 British	16	7d	18	10	500	3,800	31	4.2	9	47	13B	-1	$100
Bren Mk II, .303 British	Crit.	7d	17	11	1,000	3,800	25.9	2.8	8*	30	13B	-1	$120
Vickers Mk I, .303 British	Crit.	7d	20	11	1,000	3,800	54/103	13.5	8	250	23T	-1	$300
M-1918A2 BAR, .30-06	Crit.	7d+1	17	11	1,000	4,600	21	1.6	6/9	20	13B	-2	$50
Browning M-1917, .30-06	Crit.	7d+1	20	14	1,000	4,600	54/109	15	10	250	26T	-1	$300
Browning M-1919A4, .30-06	Crit.	7d+1	20	12	1,000	4,600	46/60	15	8	250	19T	-1	$250
Browning M-2HB, .50 BMG	Crit.	13d+1+	20	16	1,500	7,400	116/161	32	8*	105	39T	-1	$1,000
DP, 7.62mm Russian	Crit.	7d	17	10	800	3,900	26.3	6.2	10	47	13B	-1	$90
SG-43, 7.62mm Russian	Crit.	7d	20	10	800	3,900	50/80	20	11	250	18T	-1	$250
DShK-38, 12.7mm Russian	Crit.	13d+1+	20	15	1,500	7,400	103/361	24.2	10	50	38T	-1	$800
MG34, 7.92mm Mauser	Crit.	7d	19	10	1,000	4,000	29/81	3	15*	50	13T	-1	$400
MG42, 7.92mm Mauser	Crit.	7d	19	10	1,000	4,000	28/74	3	20	50	13T	-2	$300
Nambu 11 Shiki, 6.5mm Arisaka	16	6d	19	6	600	3,000	20	1.5	8	30	11B	-1	$100
99 Shiki, 7.7mm Arisaka	Crit.	6d+2	19	8	1,000	3,900	26.2	3	13	30	11B	-1	$125
ZB vz. 26 or 30, 7.92mm Mauser	Crit.	7d	17	10	1,000	4,000	23.1	0.9	9*	20	12B	-2	$120
FM Mle 1924/29, 7.5mm MAS	Crit.	6d+2	17	10	1,000	3,900	24	3.6	8*	25	13B	-2	$150

Mortars – Use Gunner (Mortar) Skill

Weapon	Malf	Damage	SS	Acc	Ind.	Wt	AWt	RoF	Cost
M-2, 60mm	Crit.	5d [6d]	20	5	2,000	42	3	1/3	$800
107-GVPM-38, 107mm	Crit.	6d×7 [10d]	20	6	6,900	376	17.7	1/5	$1,500
120-PM-38, 120mm	Crit.	6d×12 [10d]	20	6	6,600	617	35.3	1/6	$2,000
leGrW 36, 50mm	Crit.	3d [4d]	17	5	570	31	2	1/3	$850
sGrW 34, 81mm	Crit.	6d×2 [6d]	20	6	2,650	137	7.8	1/4	$400
89 Shiki, 50mm	16	2d+1 [4d]	17	4	700	10.3	1.8	1/3	$100

Light Antitank Weapons – Use Guns (LAW) Skill

Weapon	Malf	Dam	SS	Acc	Min	1/2D	Max	Wt.	AWt.	RoF	Shots	Cost
PIAT	Crit.	4d×2 (10)	18	6	10	110	370	34.6	3	1/10	1	$80
M-1 "Bazooka," 2.36"	Crit.	6d×2 (10)	16	9	8	100	650	16.7	3.4	1/5	1	$100
Panzerfaust 30	Crit.	6d×3 (10)	14	4	10	30	400	11.2	–	1	1	$20
Raketenpanzerbüchse 43	Crit.	5d×3 (10)	17	9	10	150	750	27.5	7.2	1/5	1	$70

Hand Grenades

Weapon	Damage	Wt.	Fuse	Hold
No. 36 "Mills Bomb"	2d-1 [2d]	1.7	4 or 7	0
Mk II "Pineapple"	2d-2 [2d]	1.3	4	0
Mk IIIA2	6d	1	4	0
AN-M-8, HC Smoke	Special	1.5	2	-1
M-15 WP	2d [2d]	2	4	-2
F-1	2d-3 [2d]	1.3	4	0
RG-42	2d+1 [2d]	1	4	0
RPG-43	6d (10)	2.7	0	-4
RPG-6	8d (10) [2d]	2.5	0	-4
Molotov Cocktail	Special	~3	0	-4
Stielhandgranate	4d+1	1.3	4	-3
Geballte Ladung	6d×5	4.7	4	-5
Panzerwurfmine	6d×2 (10)	3	0	-4
91 Shiki	2d-2 [2d]	1.2	8	0
RG-34	2d+2	0.8	0	0

Malf is Crit. and Cost $10 for hand grenades.

Mines

Weapon	Damage	Wt.	Cost
Bouncing	4d×4 [6d]	9	$30
Vehicular	6d×22	20	$20
Wooden	6d×6 [6d]	9	$12

Rifle Grenades

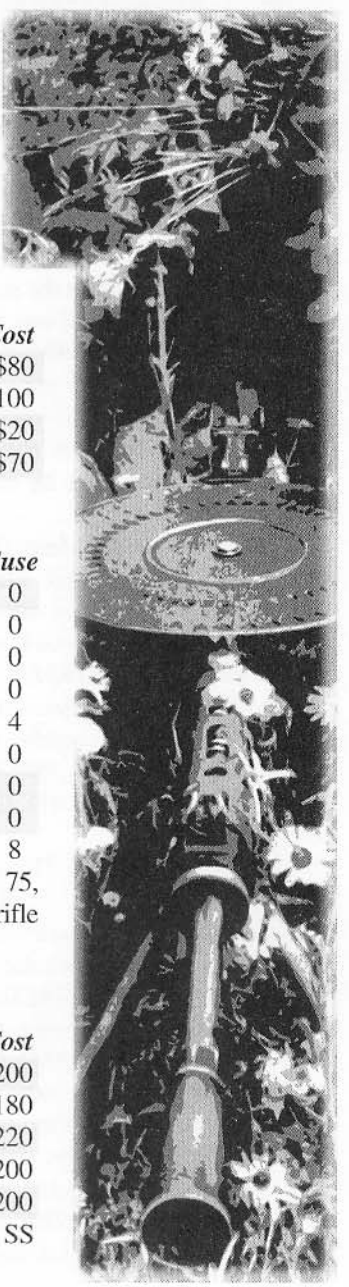
Weapon	Damage	Max	Wt.	Fuse
No. 68	1d+2 (10)	200	1.8	0
M-17	2d-2 [2d]	180	1.6	0
M-9A1	8d (10)	240	1.3	0
M-19A1	2d-2 [2d]	200	1.5	0
M-191, 2, 3	Special	50	1.3	4
M-22	Special	200	1.3	0
GewSprGr30	1d [2d]	330	0.7	0
grGewPzGr	6d (10)	330	0.9	0
99 Shiki	2d-2 [2d]	100	1.7	8

Malf is Crit., SS 16, Acc 0, 1/2D 75, Holdout -4, and cost $20 for all types of rifle grenade.

Flamethrowers

Weapon	Max	Wt.	Shots	Cost
No. 2 Mk I Lifebuoy	40	64	10	$200
M-1A1	50	70	10	$180
ROKS-2	50	50	6	$220
Flammenwerfer 41	35	40	10	$200
100 Shiki	30	55	10	$200

Malf. is Crit., Damage is 3d/second, SS is 14, RoF 1, and Rcl -3 for all varieties.



Weapon Descriptions

Each weapon has the year that the *general* model (not specific mark) debuted (not necessarily entered service) in parentheses behind its name, unless its name already incorporates the year (often just the last two digits). Japanese years are translated.

Semiautomatic Pistols

Officers and troops other than regular infantry often carried a pistol for self-defense.

Browning Model 1910: Though never officially distributed, this compact pistol saw widespread service. A .32 ACP version did 2d-1 damage with 1/2 Dam 100.

The even smaller (1 lb., +2 to Holdout) Model 1906 fired .25 ACPs doing 1d- damage, 1/2D 50, and Max 1,000.

Browning HP 35: The British upgraded some troops to the High Power during the war.

Colt Model 1911A1: The standard U.S. service pistol, the M-1911A1 upgrade debuted in 1926.

Tokarev TT-33: The Soviets upgraded to this pistol during the war, though the transition wasn't complete by 1945.

"Broomhandle" Mauser (1896): Though never an official sidearm, this German weapon showed up in the hands of German, Spanish, and Chinese troops. A special holster could attach to it for use as a shoulder stock. With the 1-lb. stock, use Guns (Rifle) and both hands to add 5 to Acc.

The Mauser also came in a full-auto version; use Guns (Machine Pistol) without the stock, or Guns (Light Auto) with it. RoF was 14*; Rcl was -5 with the stock or -7 without it.

Older Mausers use clips; some built after 1930 use magazines, which can also be fed with the older Mausers' clips. Only magazine Mausers may have an extra round in the chamber.

Luger Pistole 08: Many Germans still carried the sleek Luger after the P38 replaced it as their official sidearm in 1939. Allied troops greatly prized it as war booty.

Walther PPK (1931): A common sidearm for German officers, this compact weapon also would nicely serve secret agents. An uncommon .380 APC version did 2d damage, with 1/2D 125 and a 6-round magazine.

Walther Pistole 38: The official German sidearm, this quality pistol and its PPK cousin had a pin to remind the user whether a round was chambered without jacking open the slide.

Nambu 14 Shiki (1925): This crude imitation of the Luger was the most common Japanese sidearm.

Nambu 94 Shiki (1934): One of the worst pistol designs of the war, this weapon could discharge any time that it was bumped hard. It also shot poorly when the user actually intended to fire it. Early on, only tank and air crews carried the Type 94, but usage spread to many other troops by 1945.

Beretta Modello 1934: Despite critical weapon shortages, the Italians rarely reduced the quality of their pistol production. This weapon's fine finish and excellent design made it a popular war trophy. The Italian air force and navy carried the Modello 35 in .32 ACP (see *Walther PPK*).

Revolvers

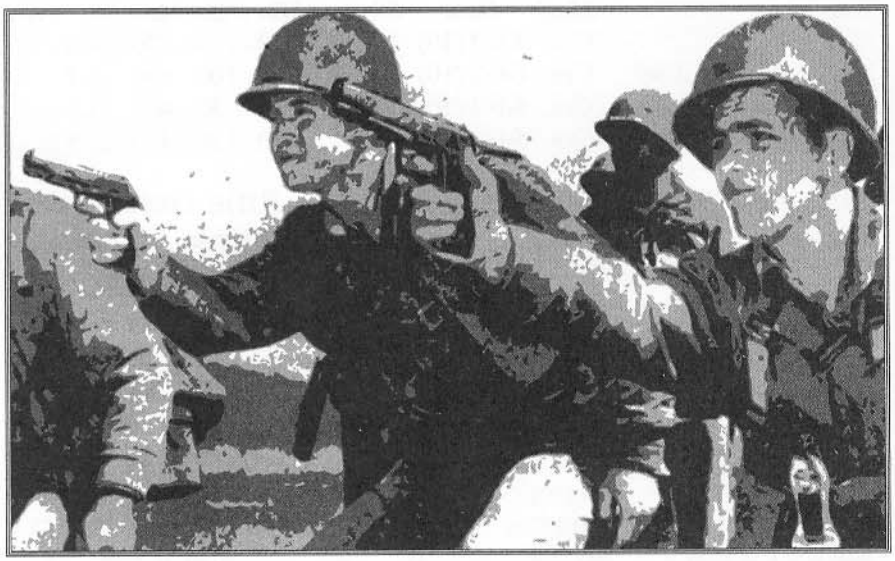
Despite the popularity of semiautomatics, revolvers still played a prominent role as a defensive weapon in WWII.

Enfield No. 2 Mk I (1926): A scaled-down version of the classic Webley 0.455-caliber service pistol, this served as the primary British sidearm under this name or as the Webley Mk IV. Usually worn on a lanyard, most versions also had the hammer filed off to prevent snagging, so manual cocking took 3 seconds. Firing this, or any other double-action revolver, without first cocking it imposes a -2.

The stats also serve for the Smith & Wesson .38, which saw widespread British and U.S. usage.

Smith & Wesson M-1917: Also made by Colt, this fired the rimless .45 ACP round. It employed two three-round clips to hold the rounds in the chamber. These speeded up reloading; use normal revolver rules, but the clips count as only two "rounds." British Home Guard and Royal Navy units often used this weapon, as did U.S. military police.

Nagant M-1895: The "Gas-Seal" featured a seven-shot cylinder that loaded through a side-gate, meaning that ejecting the empties took 1 second *per round*, not total. The strange cartridges and sliding cylinder mated during firing, allowing the pistol to use a suppressor. (No other revolver can.) Soviets and Eastern European forces often carried this weapon.



Shotguns

See p. 201 for shotgun benefits.

Browning Automatic (1903): The British preferred this semiautomatic for jungle fighting in the Pacific. Unlike its pump counterpart, the semiauto Browning could be repeatedly fired with one hand, though at high recoil penalties (p. CII67). If fired from the hip, the Browning would not chamber another shell properly on a 16+; the firer would have to take 1 second to chamber the next round manually.

Winchester Model 1897: The U.S. Marines preferred their classic pump shotgun to semiautomatics.

Rifles

Rifles served as the basic infantry weapon of WWII. Everyone in uniform had at least passing familiarity with them.

Lee-Enfield No. 4 Mk I (1941): The primary British and Commonwealth weapon, this bolt action was very easy to operate, doubling the usual RoF. It used box magazines, but also could be fed from 5-round stripper clips (0.4 lbs. each).

A shortened version, the No. 5 Mk I (1945), weighed 7.2 lbs. but suffered reduced performance (6d damage, Acc 9, 1/2 Dam 700, Max 3,000, Recoil -3). Its sights also wandered. Firing the weapon under controlled conditions to fine-tune the sights (called zeroing) made them Acc 9, but after every 5d shots Acc dropped by -1 (to a minimum of 5) until the sights were zeroed again.

Other versions of the Lee-Enfield existed, but they all basically emulated the No. 4 or No. 5.

Boys Mk I (1937): Thickening tank armor quickly outmoded this British antitank rifle after its debut in the late 1930s. The recoil punished all but the strongest gunners when fired from the bipod (which was actually a monopod on early versions). The British often mounted the Boys on vehicles, giving it an Acc of 13. The Germans used some captured samples and somehow the U.S. Marines ended up with a batch of them.

Mosin-Nagant Model 1891/30: This served as the primary Soviet firearm. The bolt action was a bit complicated. The bayonet usually was left fixed to the rifle, despite the resulting -1 to Guns skill. The bayonet's point also served as a sort of screwdriver for field-cleaning the rifle.

Tokarev SVT-40: The Soviets couldn't produce enough of these semiautomatics to meet demand. Veteran units or NCOs might use these. The Germans deployed all of them that they could capture.

A few offered selective fire (RoF 8*) as the AVT-40; recoil became -3 in full-automatic fire and Malf dropped to 16.

PTRS-41: Though obsolete as an antitank weapon, this rifle stayed in Soviet service throughout the war for use against light vehicles, troops defending buildings, and even aircraft. The earlier PTRD-41 was identical except that it fired single shots (0.5 lbs. each) and had Acc 11. The Germans captured thousands of PTRD-41s, and put a few to use themselves.

Springfield M-1903A1: A well-made 1929 upgrade to a 1906 Mauser variant, this served the U.S. military until the Garand began replacing it in quantity as the war began. It was found everywhere as a civilian arm or U.S. military assistance. The Army retained it as their sniper weapon, usually fitted with a scope for specialist snipers, but without one for squad snipers.

M-1 Garand (1932): First issued in 1936, the Garand didn't become the predominant U.S. rifle until 1942. It then gave the average U.S. Army squad an unmatched firepower. The Garand clip was loaded along with the ammo, then sprang out of the rifle as the last round was fired.

A recent trend has been to criticize the distinct sound that the clip made while ejecting, arguing that it informed nearby opponents that the firer had just emptied his weapon. Historically, the noise and engagement ranges typical of combat made this risk incalculably slight.

M-1 Carbine (1941): The U.S. military intended for this carbine to replace pistols as sidearms. Instead, millions of G.I.s and Marines with perpetually Garand-bruised shoulders adopted it as their primary firearm.

In 1945, the selective fire M2 (RoF 12*) and 30-round magazine were introduced. In full auto, the M2's Malf dropped to 16. Most troops who had the option upgraded to it.

Karabiner 98k (1935): This principal German infantry weapon was an unspectacular but well-designed bolt-action Mauser. China, Czechoslovakia, Iran, Poland, Rumania, Spain, Turkey, and Yugoslavia used the 98k or minor variants, and the rifle was chambered in many alternate calibers.

Gewehr 43: This rare German weapon sometimes was fitted with 4× telescopic sights and used as a sniper rifle.

Fallschirmjägergewehr 42 (1943): This unique weapon compressed an LMG's performance into a rifle-size weapon. This made it too light to effectively fire rifle rounds in full auto; Recoil is -4 if the bipod is not used for full-auto, or -3 for semiautomatic fire. The large muzzle flash would merit a +1 to spot the firer. On early models, the puny bipod folds the wrong way, giving it 1 chance in 6 of collapsing during each turn of full-auto fire. (It takes 2 seconds to redeploy.) German paratroops received a few of these in the middle of the war, but production was discontinued when the manufacturing expense to make them came to light.

Sturmgewehr 44 (1943): The first assault rifle, this German innovation was rushed into troopers' hands initially as the Maschinenpistole 43. At first, only elite forces on the Eastern Front received them, but by 1945 any Germans might be using them.

Panzerbüchse 39: This antitank rifle used an oversized cartridge to propel a tungsten-cored bullet of normal rifle size that contained a tiny amount of tear gas (too little to worry about in game terms). The PzB39 soon became obsolete, but didn't completely phase out until about 1943.

Arisaka (and Nambu) 99 Shiki (1939): Early versions of this slender weapon were very well made; late-war production devolved to low-quality materials, then single-shot design, then black powder. (After that, bows firing explosive arrows were being considered as front-line weapons . . .)

An explosive round was issued, doing 6d-1 but adding a 1d-4 HE effect, multiplied by 5 if within flesh, and taking an armor divisor of 0.5. The round gave the rifle Malf 14 and would detonate if dropped on a hard surface.

Many units still carried the prewar Arisaka 38 Shiki in 6.5mm: Dam 6d, Acc 8, 1/2D 600, Max 3,000.

Kokura 97 Shiki (1937): Two men could serve this heavy antitank rifle, but the Japanese usually assigned four to carry it – and the gear just to carry it added some 20-40 lbs. to weight, depending on which portions the troops discarded. Though never common, the Type 97 was used throughout the war. Its bipod and monopod effectively performed as a tripod, greatly reducing the considerable recoil.

An optional 18-lb., 15 DR shield could be installed, protecting the gunner from frontal fire.

A few German units used a similar weapon, the 128-lb. Swiss-made PzB 785 (RoF 1) with a 10-shot, 17.5-lb. magazine.

Fusil MAS36: Some front-line French units carried this rifle in 1940, and some Free French continued to favor it over Anglo-American arms. Overall, the French army used dozens of models and makes, most of them obsolete.

Submachine Guns

SMGs enjoyed a rising popularity for close-quarters fighting, where quality of fire took a back seat to quantity. Most SMGs fire from an open bolt, meaning that an extra round cannot be placed in the chamber as with rifles. Some used drum magazines, which imposed a -2 to the user's Stealth skill because their ammo load rattled when jostled.

Many SMGs, particularly those with older designs, had the unfortunate habit of firing if struck hard while cocked.

Lanchester Mk I (1941): A beautiful weapon of gleaming brass and burnished walnut, the Lanchester served exclusively with the British Royal Navy. Using Guns (Rifle) for semiautomatic fire, Acc improved to 8; however, many Lanchesters fired only in full automatic.

The world's first SMG, the German WWI-era Bergmann MP18, and its successor the MP28 had virtually identical statistics and could still be found in use.

Sten Gun Mk II (1941): The "stench gun" looked like a novice welder tossed it together from spare plumbing parts. The crude British design was cheap and easy to manufacture, so many got made. The poorly designed and manufactured magazine caused the low Malf rating. Veteran Sten gunners who could pick through a supply of magazines for the best ones could raise their weapon's Malf to Crit.

The 9.2-lb. Mk IIS incorporated a good suppressor on the barrel, but it quickly lost function during full-auto fire. It also got very hot, but a protective sleeve protected the firer.

Owen Mk I (1942): The Australians kept this distinctive SMG with its top-mounted magazine for their own use in the Pacific jungles. It very rarely jammed.

M-1A1 Thompson (1942): The "Tommy gun" already had gained fame as a favorite gangster and FBI weapon in the United States, as well as with IRA guerrillas in Ireland. This military model was greatly simplified from those early civilian models. It could only use 20- or 30-round (1.6-lb.) box magazines.

The British issued the earlier M-1928A1 Thompson with its distinctive vertical foregrip and drum magazine. The Cutts compensator on the barrel reduced Rcl to -2. The M-1928A1 weighed 15.7 lbs. with a 50-round drum or 19.3 lbs. with the 8.5-lb. 100-round drum, but could use the box magazines, instead. In semiautomatic fire, Acc increased to 8.

M-3 "Greasegun" (1943): Even the simplified military Thompson cost too much to mass-produce. Tank crews and Marines often used this simple but rugged alternative.

PPS-43: The PPS-43 was an upgraded variant of the PPS-42, an exceedingly simple weapon born during the siege of Stalingrad. It featured a folding stock.

It was adopted by the Finns as the KP44 in 9mm P; Damage 3d-1, weight with a 70-round, 3.1-lb. drum was 9.5 lbs.

PPSh-41: The "burp gun" symbolized the aggressive, close-quarters spirit that the Red Army tried to maintain, so the Soviets cranked out millions of PPShs and often armed whole regiments with little more than it and hand grenades.

The PPSh-41 was of famously crude design and required only the most basic maintenance. It also could use a 1.4-lb. 35-round box magazine.

MP38 and 40: The fact that Hugo Schmeisser never worked on the "Schmeisser" is almost as well known as the weapon itself. A no-frills stamped-metal design, the Maschinenpistole 38 introduced weapon-making to mass production. The later MP38/40 and MP40 were virtually identical to it.

Guerrillas and Allied troops employed every MP38/40 they could obtain, because it was reliable, low-maintenance, and looked deadly. Proving that familiarity breeds contempt, Germans on the Eastern Front were the only soldiers likely to discard one. When and if they could acquire a PPSh-41, many of them preferred the Soviet SMG. The Soviets, meanwhile, were tossing aside their PPShs when an MP40 turned up . . .

KP31 "Suomi": The Finns produced what may have been the finest 9mm SMG ever made. Machined from solid metal and uncannily accurate, the Suomi served in the Scandinavian countries, Poland, and Switzerland, and appeared in some quantities in the Spanish Civil War, Polish campaign, and especially the Winter War. The weapon also used 1.3-lb., 30-round and 2.3-lb., 50-round box magazines.

Kokura 100 Shiki (1940): The Japanese knew they needed an SMG, but simply could not produce enough of this weapon. Only paratroops were likely to carry it.

Beretta Modello 1938 A: This Italian SMG was of modest, even outdated, design, but the masterful craftsmanship invested in it caused it to become highly sought after.

Machine Guns

The MGs in this book usually use a metallic belt, though HMGs often use cloth belts. Almost all MGs can use a belt of the other type if that's what is available.

Lewis Mk I (1914): Of WWI fame, this distinctive gun with its fat barrel shroud and pan magazine continued to arm some second-line British units. Unloading it requires a roll against Guns (Light Auto) +2 to avoid accidental discharge.

Bren Mk II (1938): The primary LMG of British and Commonwealth troops, the Bren was a simple and rugged weapon (+2 to Armoury rolls for repairs).

Indian troops used the Vickers-Berthier Mk III, an LMG that resembled the Bren, but had many differences internally (no Armoury bonus, perhaps a penalty if the gunsmith thinks it's a Bren clone). Use the same statistics, except Wt 27.2.

Vickers Mk I (1912): A classic water-cooled MMG, the Vickers continued to serve British forces throughout WWII. The weight includes 7 lbs. (about 3.5 quarts) of water. All water-cooled MMGs could fire for long, uninterrupted periods without overheating, but the Vickers displayed remarkable endurance, with some having fired 120,000 rounds nonstop.

The Germans still had some MG08 guns in reserve service, basically identical except chambered in 7.92mm Mauser (see *MG34* for Dam, Acc, 1/2D, and Max) with Wt 44/62, RoF 7. The Soviets used Maxims chambered in 7.62mm Russian.

M-1918A2 BAR: Technically, the BAR was an automatic rifle, meant to only partially fill the LMG role but allow shooting from the hip, on the move. Theorists disliked the weapon; the troops used all of them they could find. The BAR had no semiautomatic setting, but could fire full-auto at two rates: slow and slower. Regardless, the average BAR gunner would spend more time reloading than shooting, thanks to the inadequate capacity of the weapon's 20-round magazines. The M-1918A2 was issued to U.S. troops in 1940.

The 16-lb. M-1918, sent to England, had no bipod. The Poles used the BAR in 7.92mm Mauser (7d, Max 4,000).

Browning M-1917: This U.S. MMG used 8.4 lbs. of water to cool the barrel for uninterrupted fire.

Browning M-1919A4 (1934): Using a shrouded, shorter barrel instead of water-cooling, this became the primary U.S. MMG. In 1943, a shoulder stock and bipod were added to create an ungainly LMG dubbed the M-1919A6; use the same statistics except Acc 11, weight 47.5 lbs. Few served in WWII.

Browning M-2HB (1933): Designed as an antitank and antiaircraft weapon, this large-bore 1938 upgrade of the M-2 was a favorite of U.S. soldiers. It had become obsolete as an antitank round and at best underpowered for AA duties. This didn't keep G.I.s from mounting M2s on anything that would take the recoil's abuse – and many things that would not . . .

DP (1928): The Degtyarev Pakhotny obrazets 1928g served as the basic Soviet LMG, found anywhere the Red Army had been. It used a pan magazine mounted on its top.

SG-43: After losing many older arms in the German invasion, the Soviets introduced this MMG in 1943, using a very heavy barrel rather than water jacket to allow uninterrupted fire. The mount was a two-wheeled cart rather than tripod; treat as a tripod for firing, but it usually was easier to relocate.

DShK-38: The Soviets primarily used this as a light antiaircraft gun. Like the SG-43, it mounted on a cart.

MG34: The Germans used this as their primary LMG on its integral bipod, or as their primary MMG on its tripod. The 50-round belt could be placed in a drum (+2 lbs.) for ease of handling, or linked to additional belts, but not both at once. The gun also could use a beltless, 7-lb. drum carrying 75 rounds; it took 30 seconds to switch from using the drum to belts or back.

MG42: The Maschinengewehr 34 was an expensive weapon. In 1942, the Germans debuted the MG42, using cheap manufacturing while improving on the MG34. An Armoury roll could convert it to use the 34's 75-round drums.

The 34 and 42 used nearly identical tripods that could be raised for antiaircraft fire and included a +1 Acc scope.

Nambu 11 Shiki (1922): This LMG served the Japanese throughout their Chinese campaigns and WWII. Its unique hopper magazine employed the stripper clips for the infantry rifle then in use, but often broke down in action.

In 1936, the Japanese introduced the 96 Shiki, basically the same weapon using a 30-round, top-mounted magazine, instead. Treat as the Type 11, except that Malf was Crit.

The Italians also depended on a 6.5mm, hopper-fed LMG, the Breda Modello 30, which didn't work any better than the Type 11. The Breda had the same statistics as the Type 11, except it weighed 23.8 lbs., held 20 rounds, and fed the hopper with its own 20-round clip rather than rifle clips. The two 6.5mm rounds did not interchange between weapons.

Type 99 (1939): This basically upgraded the 96 Shiki (see above) to the larger rifle caliber used most often in the war.

The Types 11, 96, and 99 could mount the shortsword-sized bayonet designed for Japanese service rifles. They often mounted a 2.5× scope, as well.

ZB vz. 26 or 30: An innovative Czech design that spawned the Bren and many other period LMGs, the ZB vz. 26 and nearly identical vz. 30 could be encountered throughout Eastern Europe, in China, and in German hands.

Fusil Mitrailleur Modele 1924/29: The French patched together component designs from successful weapons to create this, their primary LMG of WWII. True to French arms-making, early versions often blew up in action, but the weapon worked reliably by the time that the war began. It also was called the Châtellerault Mle 24/29.

Mortars

Most mortars can break down for easier transport. For simplicity, assume this becomes three loads (tube, bipod, and baseplate), each at one-third of the weapon's weight.

As an exception to the general rule, the listed weight is *empty* weight.

M-2 (1940): Available rounds for this U.S. mainstay included HE (as listed), WP (as HE, plus continuing burn damage per the M-15 WP, p. 98), and illuminating (eliminates darkness penalties in 400-yard radius for 32 seconds).

107-GVPM-38: The Soviets designed this to support mountain troops. It had a wheeled carriage for towing by a mule or could be broken down into pack loads.

The British version, the 4.2-inch Mortar, had Ind 4,100, Wt 1,320, and AWt 20.

The U.S. designed the rifled 4.2-inch Chemical Mortar for its namesake purpose (21-yard radius with smoke rounds), but also fielded HE rounds for it (same statistics except Ind 4,400, Wt 330, AWt 32).

120-PM-38: The Germans simply copied this Soviet design and fielded it themselves as the GrW 42, but never in the numbers that the Soviets enjoyed. Smoke rounds (27-yard radius) also were available.

leGrW 36: The Germans only fielded an HE round for this 50mm weapon. Encumbered with a great number of aiming aids of marginal utility, the mortar weighed far more than it should have.

The Soviet version, the PM 40 (same stats except Ind 875, Wt 20.5, AWt 1.9), ended up in frequent German usage.

sGrW 34: Many nations fielded an 81mm mortar as the backbone of their infantry heavy weapons. This German model was particularly dependable. The usual ammo included HE (as listed) and smoke (12-yard radius) rounds. A special airburst (pp. 202-203) HE round sometimes was available, but it was expensive and rare.

The U.S. counterpart, the M-1, had Ind 3,300 and AWt 6.9. The French Brandt Mle 27/31 had Ind 2,100 and AWt 7.2.

The Soviets fielded an 82mm mortar, the 82-BM-41 (same statistics except Ind 3,400, Wt 99.2, AWt 7.5), that could use captured 81mm ammo (at Acc 4) but could not have its own ammo turned upon itself.

89 Shiki (1929): The Japanese fielded this unusual 50mm mortar in great numbers. It consisted of nothing but a short tube, on an arm, with a small curved buttplate on the other end. U.S. troops came to call it the "knee mortar" because the buttplate appeared as if designed to be braced against a kneeling man's thigh. Firing the mortar from that position would shatter the thighbone . . .

The 89 Shiki was rifled, giving it an impressive range with the HE round listed for it. It also could fire the 91 Shiki hand grenade (see p. 98), but only with Acc 1 out to 190 yards. Also issued were smoke rounds (5-yard radius), signal rounds,

and WP rounds (damage as for the 91 Shiki but doing continuing burn damage as the M-15 WP, below).

The British fielded the smoothbore 2" Mortar Mk II (same stats except Ind 500, Wt 9, AWt 2.3), with HE, smoke (5-hex radius), and flare (lights up 150-yard radius for 30 seconds) rounds.

Light Antitank Weapons

PIAT (1942): The British used this spring-driven launcher to fire 89mm antitank rounds throughout the war. The massive spring was supposed to cock itself after each shot, but unless well braced it failed to do so. That required the firer to manually cock its 200-lb. resistance, thus the low RoF.

M-1 "Bazooka" (1942): This introduced an effective new approach to man-portable tank-killing technology. Basically a 4.5'-long tube, it fired a rocket-propelled 60mm HEAT grenade. The later M9 had the same statistics, but broke into two sections for easier carrying.

Raketenpanzerbüchse 43: The Germans wasted no time in copying the bazooka concept, fielding their version by 1944, popular called the Panzerschreck. It had an 88mm bore, doing more damage. The rocket left the tube still burning – 1 point of damage to each of firer's left arm, left hand, and face; a gas mask can serve as face protection while any DR 1+ clothing protects the hand and arm. The later RPzB 54 featured a shield to prevent this damage: total Wt 31.5.

Panzerfaust 30 (1942): This one-shot weapon consisted of a rocket-propelled HEAT grenade on a simple launch tube. The first version debuted in late 1942, the Faustpatrone 30 (klein), doing 6d×2 (10) and weighing 7 lbs. Later on the Panzerfaust 60 (1/2D 60, 15 lbs.) improved effective range.

Hand Grenades

Most grenades were high explosive, with or without a fragmentation component; see pp. 202-203 for effects.

Many WWII fragmentation grenades used a serrated fragmentation body, giving the famous "pineapple" appearance. This improved the grip (providing a roll vs. DX to avoid any "dropped weapon" critical miss), but actually degraded fragmentation. A serrated grenade should do no more than 1d-1 fragmentation attacks outside the hex in which it explodes. Roll for the closest targets first, and quit rolling if the maximum number of attacks is reached.

Grenade fuses were cut by hand in the factory. Hangovers, the need for a restroom break, or plain boredom could affect delay time. When it matters, roll 3d for each grenade with a delay fuse. On a 3 subtract 3 seconds from delay time, on a 4 subtract 2, on a 5 subtract 1, on a 16 add 1, on a 17 add 2, and on an 18 add 3. Veterans took the risk of their target having time to pick up the grenade and throw it back, rather than hold one with a burning fuse.

Shaped-charge grenades were thrown in a special fashion, at -2 to Throwing skill. Those who didn't know this took an additional -4 when trying to use one.

No. 36 "Mills Bomb" (1918): The British used this serrated grenade throughout the war. Unlike most grenades, these were issued unfused. The troopers had to unscrew the bottom plug and insert one of two different fuses. A non-Commonwealth soldier flinging Mills Bombs from a freshly opened crate should be amazed by the frequency of duds . . .

Mk II "Pineapple" (1936): Though better grenades were issued, this remained the U.S. mainstay throughout the war.

Mk IIIA2 (1939): This was a chunk of TNT in a cardboard case with the standard pull-ring and lever fuse.

AN-M-8, HC Smoke (1940): This doesn't explode, but burns for 100-150 seconds, filling a 3-yard radius with dense white smoke. The grenade gets hot as it burns and might ignite easily flammable materials.

M-15 WP (1940): This fragmentation grenade spews chunks of white phosphorus rather than metal. Anyone hit by a fragment will take a further 1d damage each second for 20 seconds, but only until the affected body part is crippled if the fragment hit a limb. A bystander can remove the fragment with a DX roll; the victim may try himself but subtracts damage taken to that point from DX unless he has High Pain Threshold.

The grenade also creates smoke as for the AN-M-8, above, and ignites flammables in the same radius. Immersing WP does not extinguish it; burying it works.

F-1 (1938): The Soviets used this serrated grenade.

RG-42: This next-generation Soviet grenade was not serrated, but was not always available after its 1942 debut.

RPG-43: This shaped-charge antitank grenade debuted in Soviet service in 1943.

RPG-6 (1944): This improved on the RPG-43, and the new sleeve even made it the rare shaped-charge round that also had a useful fragmentation effect.

Molotov Cocktail: These homemade devices consisted of a bottle filled with gasoline (thickened or not) with a rag tied around it. The rag was lit, the bottle thrown, and it cracked open, igniting the gas upon contact. Treat as one shot from a flamethrower (see p. 99).

Stielhandgranate 24 "Potato Masher:" The classic German grenade, this took 2 seconds to ignite the fuse by unscrewing the base of the handle and pulling on the cord inside. The bulky handle gave a +2 to Throwing skill. A 0.3-lb. fragmentation sleeve could be added, giving [2d] fragmentation damage.

Geballte Ladung (1940): An improvised antitank weapon, this consisted of six Stielhandgranate heads tied around a complete grenade. The bundle was then tossed or dropped onto the relatively thin armor of a tank's upper deck.

Panzerwurfmine (1943): Some Wehrmacht veterans preferred this shaped-charge grenade even after HEAT rocket launchers became their standard antitank weapon in late 1943.

91 Shiki (1931): The Japanese used this serrated grenade. The fuse was started not by releasing a lever, but by slamming it against something hard, like a helmet or stone wall.

RG-34: The Czechs designed this compact grenade about 1934, but it was not in common use.

Mines

Mines often posed more of a threat than all other enemy arms. WWII's combatants laid millions of them. Every soldier in Europe could expect to encounter them. The Pacific combatants used them less frequently, but didn't ignore them.

Planting a mine can take as little as 5 seconds to arm one and drop it in a weed-filled ditch, to 2 minutes to gouge a hole

in loose earth then fill it again after laying the mine, to an hour to rig an intricate booby trap with multiple trip and pull wires attached to objects near the mine. The GM should apply a modifier of -5 to +5 to the minelayer's Traps roll, improving as he puts more time into placing the weapon.

The amount by which he makes the roll serves as a penalty to first detect, then disarm, the mine. Advancing very slowly (1 yard every 2 seconds) and probing with a bayonet will give a +1 to Traps rolls to detect the mine. A thin, hollow metal tube with a sharpened point ($1, 0.7 lbs.) can serve as an effective mine detector – the noise it makes after dropping it from a few inches above the earth is telling. Apply a +2 to detect mines. Metal detectors provide powerful but limited aid; see p. 89.

These generic mines make up a very limited sample; following books in the ***WWII*** line will provide more examples.

Bouncing Antipersonnel: Takes 1d seconds to spring up after being triggered, then bursts in the air; see pp. 202-203.

Vehicular: Designed to knock out armored vehicles, these could be set to ignore up to 400 lbs.

Wooden: Once metal detectors came into common use, these nonmetallic antipersonnel mines began appearing in large numbers. The wood casing somewhat limits fragmentation.

Flamethrowers

Flamethrowers strike fear in their intended targets; the GM may require a Fright Check (see p. 197) or apply a penalty to an existing check for troops facing one. On the other hand, soldiers using flamethrowers will attract a huge percentage of enemy fire, on top of the hazard they face by needing to get very close to their targets . . .

Double PD vs. flamethrowers. All flamethrowers reduce target DR to one-fifth normal unless it's sealed (see p. 130). A struck target continues to burn, taking 1d each for 10d seconds, with DR protecting as above. Only complete immersion in water or similar measures will put out the flame.

Flamethrowers usually fire "hot shots" of lit fuel. Increase the burn damage to 1d+1 per turn if the target was hit with a "cold shot" of unlit fuel, which was then allowed to soak in at least 3 seconds prior to being ignited by a hot shot or another flame source.

No. 2 Mk I Lifebuoy (1942): The British produced these with a distinctive donut-shaped tank. The Lifebuoy suffered from the same electrical-ignition problems as the *M1A1*, below.

M-1A1 (1943): This used thickened fuel to improve on the range of the M1 (Max 30). Both used an electric-ignition system that often failed, requiring users to ignite the fuel stream with matches or similar makeshift fare.

ROKS-2 (1941): The Soviets camouflaged the tanks of this weapon to appear like a backpack, and the flame gun to appear like a rifle; opponents must make a Vision roll to identify the flamethrower under combat conditions. The ROKS-3 functioned the same but used uncamouflaged tanks. Max becomes 40 if thickened fuel is not available.

Flammenwerfer 41: This German weapon used 10 9mm blanks to ignite the fuel, firing one with each pull on the fuel lever. It fired cold shots only if the blanks were all spent.

100 Shiki (1940): The ignition system performed identically to the German system.

Rifle Grenades

All major forces issued rifle grenades to their infantry. The U.S. military took to them in particular.

Using a rifle grenade required attaching a special launcher to the muzzle of one's rifle, LMG, or antitank rifle. This took 5 seconds. Most varieties then required that a blank or otherwise special round be loaded into the rifle. The grenade was then placed on the launcher and fired using Guns (Grenade Launcher), usually at Acc 0.

Launchers usually fit a specific weapon. Cup launchers, usually rifled, used bullet-shaped grenades while spigot launchers inserted into the tail of a rocket-shaped grenade ($5, 0.8 lbs. if spigot or 1.7 lbs. if cup). Spigot launchers usually had range bands; the farther down the grenade was seated, the farther it would fly.

No. 68: The first shaped-charged projectile ever issued, the British fired this using a blank cartridge from a cup discharger. An ineffective round, the No. 68 was discontinued in 1941.

M-17 (1939): This was the Mk II "Pineapple" on a stick. U.S. forces fired this and all their rifle grenades from a spigot launcher using blank rounds.

M-9A1 (1940): This performed fairly well against tanks.

M-19A1 (1944): Treat damage from this U.S. white phosphorus round as for the M-15 hand grenade (p. 98).

M-191, -192, and -193 (1940): These U.S. illumination rounds came in yellow (M-191), green (M-192), or red (M-193). The range is how far *up* they would fly.

M-22 (1940): Treat as the AN-M-8 smoke grenade (p. 98) except that available colors are red, violet, green, or yellow.

Gewehrsprenggranate 30mm: The German *Schiessbecher* was a cup discharger that usually used a rifle round with a wooden bullet to propel grenades such as this HE version.

A bubble sight ($35, 0.4 lbs.) could be attached to the rifle to give the grenade Acc 1, but was not issued often.

Grosse Gewehrpanzergranate: German units with nothing better on hand kept using this inadequate antitank round throughout the war.

91 Shiki (1931): The Japanese used a distinct discharger for almost all of their rifle grenades, both in spigot and cup styles. This modified hand grenade used a spigot, as did their smoke round (treat as the M22, above, except only white smoke was available).

Their shaped-charge round used a cup launcher and had the German statistics, above.

Rather than use blanks, they propelled the grenades using regular rifle rounds or special rounds with wooden bullets. (When U.S. troops came across these wooden bullets, they decided that they were a fiendish device to inflict particularly grievous wounds. The legend persists to this day.)

THE MOTOR POOL

The following pages describe a few of the vehicles commonly encountered in WWII campaigns. Additional vehicles will be detailed in upcoming ***GURPS WWII*** books, but those GMs or players who don't want to wait should feel free to design them themselves using the rules in Chapter 5.

Vehicles Key

The military vehicles in this section are presented in the following format:

Descriptive Text

Each vehicle writeup begins with general descriptive text, which usually includes some of the finer details of using the vehicle, such as fuel consumption, turret rotation speeds, etc.

Subassemblies

This lists the chassis and each subassembly, with any options applied to each, followed by the size modifier to see or target that particular structure. Note that the remainder of the writeup will use this structure name or an abbreviation in brackets to indicate the placement of other components. For instance, [OM 1] means the item in question is housed in the subassembly designated Open Mount 1 in this passage. If no placement is described, the item is assumed to be in the body of the vehicle.

Powertrain

This describes the vehicle's engines and transmission (if any), fuel tankage, and batteries carried either as motive power sources or simply to turn over the engine.

Occupancy (Occ)

This describes where and how the vehicles seats its occupants. (Again, unless otherwise designated, all crew stations are assumed to be in the body.) A "CS" is a crew station while a "PS" is a passenger station. An "SR" would indicate standing room used as makeshift passenger space. An "X" prefix means the station is exposed, while an "M" prefix means the station is a motorcycle seat. Long-term accommodations such as bunks will be covered in the descriptive text. Note that all vehicles in this chapter assign a crew station to their gun loaders, even though they don't have to (see p. 141), to give them a place to sit when not actually performing their job.

Cargo

This heading includes *all* empty space within the vehicle, which almost always will be design "waste" space rather than a true cargo hold of some sort. Unless specific cargo space is assigned under *Equipment* (see below), assume that the largest single item that this space could hold would be just 10% as big as it is. For instance, a vehicle with 27 VSPs of empty space not truly dedicated to a cargo hold could not fit another crew station, because its single largest "nook" would be only 2.7 VSPs in size. The remainder of the space is scattered about the vehicle in other "crannies" of similar size. Unless the vehicle is specifically designed to haul cargo, the GM should feel free to place these restrictions on any empty space.

Armor

This lists the armor values on each face of each vehicular structure as PD value followed by DR value. (Note that motive subassemblies will always have uniform values on all facings unless the GM is using design rules beyond the scope of this book; that value is still repeated for each facing simply as a convenience.) A "W" following the armor value denotes that it is wooden. An "S" denotes that it includes DR 15 of standoff armor (pp. 140-141). Any special notes are below the armor values.

Weaponry

This lists each weapon (or set of identical weapons), its placement, and its ammunition stores. Any special notes are below the listings. See pp. 133-135 for weapon statistics.

Equipment

This lists each structure with general equipment installed, followed by the equipment within it. See pp. 136-140 for descriptions of general equipment.

Statistics

Size gives the length, width, and height of the vehicle. *Payload* is the weight of a standard load of fuel, personnel, ammunition, and cargo. *Lwt.* is loaded weight. *Volume* is the amount of space the vehicle would take up if stored within another (presumably larger) vehicle. *Maint.* describes either the maintenance interval in hours (p. 144) or the number of men required to keep up maintenance working eight-hour shifts on a long-occupancy vehicle. *Cost* is the vehicle cost, rounded – note that a "retail" price for the vehicle might be much higher; this figure does not include a profit margin, if any.

HT measures how robust the vehicle is; see p. 144. *HPs* measures the hit points of each structure; see p. 156.

gSpeed, etc. provide the vehicle's performance characteristics in each of its routine modes of travel; see pp. 145-149. Special characteristics for each mode are described under the general statistics line.

Design Notes

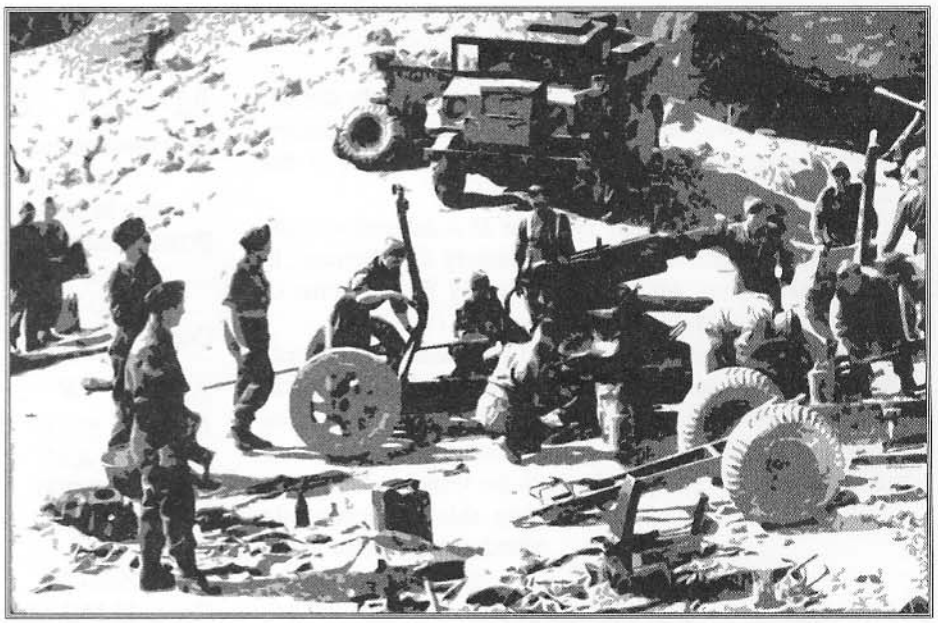
To facilitate usage of these vehicles as examples for the Chapter 5 design process, these notes indicate where components were purchased and then modified to historical values, or where any particularly notable "fudging" of calculated data to historical values had to take place.

Variants

While the description covers the general vehicle type, the statistics are for one particular variant. This section describes some or all of the other subtypes of the vehicle, with appropriate supporting statistics if the variant is much more complex than swapping one component for another.

ARTILLERY

The following is a brief selection of artillery pieces. Additional examples are easily designed in Chapter 5.



76.2mm Field Gun

This is the Soviet 76.2mm Model 1942 field gun, but it would serve equally as well for many of the 75mm or 76.2mm light artillery pieces in use by virtually everyone. It is towed into action, primarily by horses during the early war years, or behind a wheeled or tracked "prime mover" later. Ammunition is stored on the prime mover, or can be placed in a stowage box on the carriage (design as a small superstructure on p. 127). Normal crew would be about five, mostly extra loaders.

The Model 1942 also served as an antitank gun; it used the same ammo as the gun mounted on late T-34s (p. 105).

Subassemblies: Very Small Wheeled chassis +2; two wheels +1.
Powertrain: none; towed.
Occ: – Cargo: 11

Armor	F	RL	B	T	U
Body:	0/0	0/0	0/0	0/0	0/0
Wheels:	3/5	3/5	3/5	3/5	3/5

Weaponry

76.2mm Medium Tank Gun [Body:F] (0 rounds).

Equipment

Body: Universal mounting for 76.2mm gun.

Statistics

Size: 10'8"×6'×7' *Payload:* – *Lwt:* 1.2 tons
Volume: 18 *Maint:* 105 hours *Cost:* $3,650

HT: 12. HPs: 85 Body, 28 each Wheel.

gSpeed: * *gAccel:* * *gDecel:* * *gMR:* 1.25 *gSR:* 2
Ground Pressure High. 1/6 Off-Road Speed.
* Use towing vehicles statistics after adding towed weight.

105mm Field Gun

This is encountered nearly as often as the 75mm artillery pieces. Usually, the crew is about 12, though three men could maintain a normal rate of fire for a short period.

Subassemblies: Very Small Wheeled chassis +2; two wheels +1.
Powertrain: none; towed.
Occ: – Cargo: 1

Armor	F	RL	B	T	U
Body:	0/0	0/0	0/0	0/0	0/0
Wheels:	3/5	3/5	3/5	3/5	3/5

Weaponry

105mm Medium DP Gun [Body:F] (0 rounds).

Equipment

Body: Indirect-fire mounting for 105mm gun.

Statistics

Size: 10'10"×6'×7' *Payload:* – *Lwt:* 2.2 tons
Volume: 18 *Maint:* 60 hours *Cost:* $11,000

HT: 9. HPs: 85 Body, 28 each Wheel.

gSpeed: * *gAccel:* * *gDecel:* * *gMR:* 1.25 *gSR:* 2
Ground Pressure High. 1/6 Off-Road Speed.
* Use towing vehicles statistics after adding towed weight.

37mm Antitank Gun

This weapon would be deployed just about everywhere with infantry of all nations, who can push it about by hand if need arises. Vehicles as small as a jeep (p. 106) work perfectly well as its prime mover. Two to four men form the crew.

Subassemblies: Motorcycle chassis +0; two wheels -1.
Powertrain: none; towed.
Occ: – Cargo: 0

Armor	F	RL	B	T	U
Body:	4/25	0/0	0/0	0/0	0/0
Wheels:	3/5	3/5	3/5	3/5	3/5

Weaponry

37mm Medium Tank Gun [Body:F] (0 rounds).

Statistics

Size: 6'10"×4'×3' *Payload:* – *Lwt:* 0.45 tons
Volume: 2.4 *Maint:* 201 hours *Cost:* $985

HT: 9. HPs: 20 Body, 8 each Wheel.

gSpeed: * *gAccel:* * *gDecel:* * *gMR:* 1.5 *gSR:* 2
Ground Pressure High. 1/6 Off-Road Speed.
* Use towing vehicles statistics after adding towed weight.

M-4 Sherman

While the M-4 did not win the war, it certainly did not lose it, though it was often put into position to do precisely that. The unspectacular but sturdy Sherman served as the armored backbone of western Allied armies.

Rapidly developed in late 1941, the M-4 debuted with the British as the General Sherman, then simply the Sherman, in October 1942. Every Allied force probably fielded some of the 45,000 various M-4s produced by war's end.

The Soviets received several via Lend-Lease, but officially did not care for them. In practice, Soviet tankers appreciated that the Sherman did not explode as often as the T-34 when set ablaze. (A tank crew in Russia abandoning a burning mount often could find cover only underneath the vehicle.) They were forming this opinion while Allied troops were complaining that the M-4 burned far too easily.

Shermans frequently had less frontal armor and firepower than their opposition, but they were tough and well-suited for the rapid, deep penetrations favored by U.S. commanders. This reliability often overcame their tactical shortcomings – Shermans could be depended on to reach a faraway fight, where many tanks were likely to break down on the road.

Many, many variants of the M-4 were created, including a host of specialized engineer vehicles. For the most part, these looked very similar externally. Inside, they often were radically different. A quartermaster might have a hard time explaining to his superior why he can't produce a part for a Sherman, when so many seemingly identical tanks are standing about! From a combat-performance standpoint, the M-4 continually improved, but its underperforming main gun was not replaced until relatively late in the fighting, and its armor and gun never caught up with the best vehicles that the Germans could field. From the beginning, the M-4 overwhelmed Japanese armor.

Historical cost for the M-4A1 was $47,725, which is in line with tripling the cost of the vehicle to represent "retail."

The turret has a commander who fires the M-2HB, a gunner firing the M-3 cannon and turret M-1919A4, and a loader for the M-3. The driver and bow M-1919A4 gunner/radio operator sit in the body. The M-4A1 burns 11.8 gallons of gas per hour at routine usage. The turret is hydraulically powered and rotates at roughly 25° per second, or 2° if manually turned by two turret crewmen. Note that, as with many tank designs, the Sherman's tracked transmission and turret traverse overlap in their demand on the engine's output; turning the turret reduces top speed by just a fraction. A full load of fuel and ammo costs $1,450.

M-4A1 (Sherman II)

Subassemblies: Large Tank chassis +4 with mild slope; full-rotation Medium AFV turret [Body:T] +2; full-rotation Mini open mount [Tur: T] +0; tracks +3.

Powertrain: 263-kW standard gas engine with 263-kW tracked transmission and 175-gallon self-sealing tanks; 16,000-kWs batteries.

Occ: 2 CS Body, 1 CS Tur, 2 CS Both Cargo: 5.8 Tur, 0.3 OM

Armor	F	RL	B	T	U
Body:	5/300	4/150	4/150	4/75	4/50
Tracks:	4/45	4/45	4/45	4/45	4/45
Tur:	4/300	4/200	4/200	4/100	–
OM:	0/0	0/0	0/0	0/0	–

Weaponry

Ground LMG/M-1919A4 [Body:F] (2,375 rounds).
Ground LMG/M-1919A4 [Tur:F] (2,375 rounds).*
75mm Medium Tank Gun/M-3 [Tur:F] (90 rounds).*
Very Long Ground HMG/M-2HB [OM:F] (300 rounds).
* Linked

Equipment

Body: Fire extinguisher, medium radio receiver and transmitter, 5.5 kW of traversing gear for turret. *Open Mount:* Universal mount for HMG.

Statistics

Size: 19'2"×8'9"×9' *Payload:* 2.1 tons *Lwt:* 33.2 tons
Volume: 133 *Maint:* 36 hours *Cost:* $31,400

HT: 10. HPs: 1,800 Body, 600 each Track, 200 Turret, 30 OM.

gSpeed: 28 *gAccel:* 2 *gDecel:* 20 *gMR:* 0.25 *gSR:* 6
Ground Pressure Low. 2/3 Off-Road Speed.

Design Notes

As designed, 177 gallons of fuel tanks and 5,000 rounds of MG ammo actually were purchased; the historical figures are shown above. Weight has been increased 5% to match historical value. All 75mm ammo is stored in the body.

Those who believe in the often-repeated criticism of the Sherman's high profile may want to increase the body size modifier to +5, but – with the notable exception of Soviet designs – many other tanks of the period were just as tall.

Variants

The M4A3 replaces the gas engine with twin 140-kW HP diesels, increasing gSpeed by 1. The U.S. Marines often used this variant.

The mid-1944 M-4A3E8 "Easy Eight," also called the M-4A3(76)W HVSS, traded up to a 335-kW powerplant with 202 gallons of gas and a new (Large AFV) turret mounting a stabilized 76.2mm M-3 (75mm Long Tank Gun) with 71 rounds. LMG ammo increased to 6,250 and HMG ammo to 600. The body (front DR 370, underside DR 100) and turret (top 100 DR, all else 250 DR) had better armor. This cost $38,600 with a payload cost of $1,400 and weighed 37 tons. Increase gSpeed to 30.

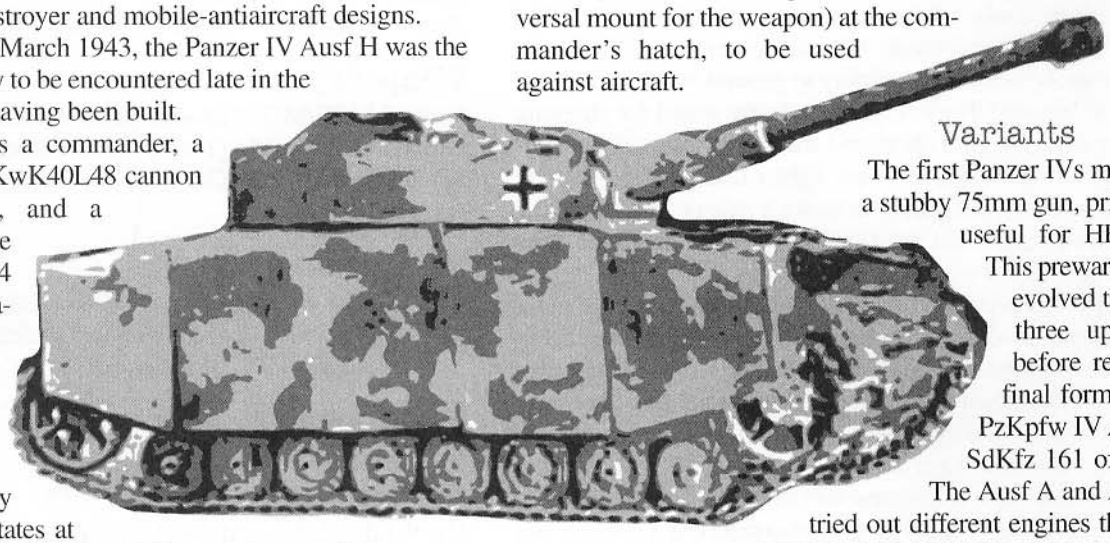
Panzerkampfwagen IV

The Krupp-designed Panzer IV served Germany throughout the war, evolving from a rare heavy "artillery support" tank in 1939 to the medium-tank mainstay in 1945. U.S. and British tankers in France tended to believe every German tank was a Panther or Tiger, but many or most of those encountered were actually this enduring if unexceptional vehicle.

Overall, more than 10,500 vehicles used the Panzer IV chassis, though the casual observer would be hard-pressed to recognize many late-war versions as descendants of the first IVs. Along with upgrades to the Panzer IV incorporating heavier armor and eventually a heavier gun, the chassis also supported tank-destroyer and mobile-antiaircraft designs.

Introduced in March 1943, the Panzer IV Ausf H was the version most likely to be encountered late in the war, some 3,100 having been built.

The turret has a commander, a gunner firing the KwK40L48 cannon and turret M34, and a KwK40 loader. The driver and bow M34 gunner/radio operator sit in the body. The IV burns 10 gallons of gas per hour at routine usage. The turret is electrically powered and it rotates at roughly 20° per second, or just 2° if manually turned by two turret crewmen. A full load of fuel and ammo costs $1,650.



Panzer IV Ausf H SdKfz 162/1

Subassemblies: Medium Tank chassis +3; full-rotation Large AFV turret [Body:T] +3; tracks +3.

Powertrain: 224-kW standard gas engine with 224-kW tracked transmission and 124-gallon standard tanks; 20,000-kWs batteries.

Occ: 2 CS Body, 1 CS Tur, 2 CS Both **Cargo:** 4.5 Turret

Armor	F	RL	B	T	U
Body:	4/315	4/120S	4/80	4/40	4/40
Tracks:	4/40	4/40	4/40	4/40	4/40
Tur:	4/200	4/120S	4/120S	4/40	–

Standoff armor on body sides protects tracks 50% of time.

Weaponry

Ground LMG/MG34 [Body:F] (1,500 rounds).
Ground LMG/MG34 [Tur:F] (1,650 rounds).*
75mm Long Tank Gun/KwK40 [Tur:F] (87 rounds).*
* Linked

Equipment

Body: Fire extinguisher, medium radio and transmitter. *Turret:* 4-kW traversing gear.

Statistics

Size: 19'4"×9'7"×8'6" *Payload:* 2 tons *Lwt:* 27.5 tons
Volume: 108 *Maint:* 39 hours *Cost:* $26,200

HT: 11. HPs: 1,500 Body, 540 each Track, 200 Turret.

gSpeed: 29 *gAccel:* 2 *gDecel:* 20 *gMR:* 0.25 *gSR:* 5
Ground Pressure Low. 2/3 Off-Road Speed.

Design Notes

As designed, 126 gallons of fuel tanks, 3,500 rounds of MG ammo, and 90 rounds of 75mm ammo actually were purchased; the historical figures are shown above. Weight has been increased 7% to match the historical figure.

Some Ausf H's also mounted a third LMG on a pintle mount (treat as a Mini open mount with a universal mount for the weapon) at the commander's hatch, to be used against aircraft.

Variants

The first Panzer IVs mounted a stubby 75mm gun, primarily useful for HE roles. This prewar design evolved through three upgrades before reaching final form in the PzKpfw IV Ausf D SdKfz 161 of 1939. The Ausf A and Ausf B tried out different engines than the powerplant that wound up in the Ausf C and beyond, but both had the same 224-kW rating.

On the Ausf D, both body and turret had thin armor (front DR 120, top and body underside DR 40, all else DR 80). The turret mounted a KwK37 (75mm Short Tank Gun) with 80 rounds (mostly HE shells). The Ausf D weighed 22 tons at $17,600; increase gSpeed to 32 and gAccel to 3.

Though only 440 examples of Ausf A through Ausf D were built (mostly Ds), the type saw extensive service as the premier panzer of the early war years. It could still be encountered as late as 1944.

In March 1944, the Panzer IV's final mark, the Ausf J, reduced the Ausf H's demand on materials and skilled production. It omitted the turret's powered traverse (add a 30-gallon fuel tank to fill the space) and used wire sideskirts instead of solid ones (see pp. 141 and 156).

Older Panzer IVs sometimes were field-fitted with the standoff armor for newer Panzer IVs, once these panels became available as replacement parts. This chassis also served most often for German specialized engineering armor; a few were fitted with bulldozer blades or other equipment.

Some Panzer IVs in Russia towed a two-wheel cart carrying extra fuel (probably 110 gallons). These would weigh 0.7 tons fully loaded and reduce gSpeed to 29 with high ground pressure and 1/4 off-road speed. (Note that a tracked vehicle towing a wheeled vehicle will usually suffer reduced off-road performance; take the lower of the two vehicles' off-road characteristics and apply to the towing vehicle).

Panzerkampfwagen VI "Tiger"

The specter of the Tiger came to haunt western Allied visions of German technological prowess, perhaps even out of proportion to its considerable battlefield impact.

Debuting in September 1942, the Henschel-designed Tiger compactly fielded the thickest armor and heaviest main gun of the day. It should have been unstoppable. In practice, it was fielded too quickly and in numbers too small to be meaningful. The first few Tigers broke down outside Leningrad and one fell into Soviet hands. Others had hardly arrived in Africa before the western Allies captured another casualty of wear and tear.

After this shaky start, the Tiger came to excel at long-range armor duels, where its armor could shrug off Allied shells while its long-range 88mm registered telling blows. This usage, however, ran contrary to general Wehrmacht practice: The big, bad Tiger seemed perfectly suited for slugging it out at close range. This wasn't the case; close combat simply placed it in situations where lighter tanks could penetrate its front armor or maneuver to strike a side or rear, while the Tiger could hardly kill most tanks more thoroughly at muzzle's length than it could at 1,600 yards.

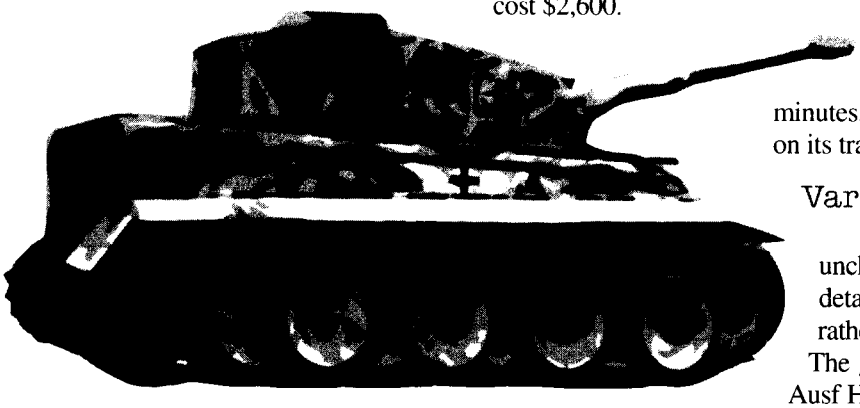
Deployed properly, Tigers could knock off 25 or more vehicles and rumble away untouched, but at short range Soviet tankers fighting Tigers late in the war often gave better than they got. The British rule of thumb was to send five Shermans to kill a Tiger, but only expect one Sherman to return.

Officially, the Tiger's price was 300,000 RM, but the Germans charged the Japanese 645,000 RM for one; delivery never could be arranged. Hungary also received a handful and Spain attempted to purchase some.

Of the 1,355 Tigers built, the most available at any one time was nearly 700 in July 1944, including a significant percentage that weren't operational. The SS claimed more than their share of Tigers, fielding about 500 of them.

The Tiger's overlapping road wheels often caused problems. Rocks jammed between them could knock the tracks off or cause other damage. Mud splashed between them during the day could freeze overnight and immobilize the vehicle.

The turret has a commander, a gunner firing the KwK36 cannon and turret M34, and a KwK36 loader. The driver and bow M34 gunner/radio operator sit in the body. The Tiger burns 23.5 gallons of gas per hour at routine usage. The turret is hydraulically powered and rotates at roughly 7° per second, or 1° if manually turned by two turret crewmen. Fuel and ammo cost $2,600.



Panzer VI Ausf E SdKfz 181

Subassemblies: Very Large Tank chassis +4; full-rotation Large AFV turret [Body:T] +3; tracks +4.

Powertrain: 522-kW standard gas engine with 522-kW tracked transmission and 141-gallon standard tanks; 12,000-kWs batteries.

Occ: 2 CS Body, 2 CS Tur, 1 CS Both Cargo: 4 Body

Armor	F	RL	B	T	U
Body:	4/400	4/240	4/320	4/100	4/100
Tracks:	4/55	4/55	4/55	4/55	4/55
Tur:	4/425	4/310	4/310	4/100	–

Weaponry

Ground LMG/MG34 [Body:F] (1,950 rounds).
Ground LMG/MG34 [Tur:F] (1,950 rounds).*
88mm Medium Tank Gun/KwK36 [Tur:F] (92 rounds).*
* Linked

Equipment

Body: 3 fire extinguishers; 3-kW traversing gear for turret; medium radio and transmitter; sealed. *Turret:* 6 smoke dischargers [3×F, 3×L]Sealed.

Statistics

Size: 28'×12'3"×9'6" *Payload:* 2.6 tons *Lwt:* 62.6 tons
Volume: 177 *Maint:* 27 hours *Cost:* $56,500

HT: 9. HPs: 2,300 Body, 800 each Track, 225 Turret.

gSpeed: 29 *gAccel:* 2 *gDecel:* 20 *gMR:* 0.25 *gSR:* 6
Ground Pressure Moderate. 1/2 Off-Road Speed.

Design Notes

As designed, 4,000 rounds of MG ammo and 91 rounds of 88mm ammo actually were purchased; the historical figures are shown above. Tracks have had +5 DR added to increase weight; regardless, the above weight is 15% higher than as designed. All 88mm ammo is stored in the body.

In the field, Tiger crews sometimes modified their tanks to hold 14 or 28 extra 88mm rounds over the regulation 92. The latter would precisely fill up the four empty VSPs.

The Tiger as shown is fitted with its normal combat tracks. These were too wide to be loaded on a standard railroad flatbed car, so special transport tracks were provided. Tigers to be moved by rail had to go through the time-consuming process of switching to these narrow treads, work which would take an experienced crew at least 30 minutes. Should a Tiger somehow be caught entering combat on its transport tracks, reduce off-road speed to 1/3 of gSpeed.

Variants

In game terms, the Tiger remained relatively unchanged throughout its service. Early Tigers carried a detachable snorkel kit (p. 128) to wade across riverbeds rather than hunt for a bridge sturdy enough for their weight. The gear and general concept were rapidly discarded. The Ausf H had the proper air and fuel filters for desert service.

T-34

Long before the war began, the Soviets had resolved to field the finest tanks in the world. For a time, with the T-34, they did just that. Manufactured at the Kharkiv Tractor Factory, the T-34 built upon the good points of the fine Soviet light tanks of the 1930s, while correcting their major flaws with a thicker skin and large main gun. Though it introduced several of its own flaws – the interior was cramped and inefficient, and the powertrain dubious – the machine still represented the finest balance of armor, firepower, and speed in existence in 1940.

The Soviets had built about 1,200 T34As by the time that the Germans invaded, but very few of these were in front-line service, and those only in handfuls. Those few badly deployed examples still punctured German assumptions about their technological superiority, and led them to emphasize improving their own tanks.

Another flaw of the T34A was that it badly overworked the commander. His primary duty of looking for targets and threats was made difficult by the turret's large, two-man hatch that hinged forward; he had to stretch over to one side to see to the front, which also made him an attractive target for snipers. His secondary duty of keeping in contact with other tanks in the unit was greatly difficult, because very few T34As carried radios; hand signals, flags, and shouts were not nearly as efficient. Also, he served as gunner. GMs should apply at least a -5 to vision rolls for a commander busy waving flags about, and not let him spot anything not immediately adjacent to something at which he's aiming the gun!

The turret has a commander firing the L-11 cannon and turret DT MG, and an L-11 loader. The driver and bow DT gunner sit in the body. The T-34A burns 16.8 gallons of diesel per hour at routine usage. The turret is electrically powered and rotates at roughly 33° per second, or 3° if manually turned by two turret crewmen. A full load of ammo and fuel costs $1,230.

T-34/76 1940 (T-34A)

Subassemblies: Immense Tank chassis +4 with advanced slope; full-rotation Small AFV turret [Body:T] +2 with advanced slope; tracks +4.

Powertrain: 373-kW HP diesel engine with 368-kW tracked transmission and 111-gallon standard tanks; 8,000-kWs batteries.

Occ: 2 CS Body, 2 CS Both **Cargo:** 8.3 Body

Armor	F	RL	B	T	U
Body:	6/350	5/250	4/175	4/75	4/75
Tracks:	4/50	4/50	4/50	4/50	4/50
Tur:	6/350	5/250	5/175	4/80	–

Weaponry

Ground LMG/DT [Body:F] (2,325 rounds).
Ground LMG/DT [Tur:F] (2,400 rounds).*
75mm Medium Tank Gun/L-11 [Tur:F] (77 rounds).*
* Linked

Equipment

Body: 5.5-kW traversing gear for turret; 700-lb. hardpoint [Body:T] for 37-gallon fuel drum (not included).

Statistics

Size: 21'7"×9'10"×8' *Payload:* 1.6 tons *Lwt:* 28.6 tons
Volume: 212 *Maint:* 25 hours *Cost:* $65,400

HT: 12. HPs: 2,600 Body, 900 each Track, 200 Turret.

gSpeed: 36 *gAccel:* 3 *gDecel:* 20 *gMR:* 0.25 *gSR:* 6
Ground Pressure Low. 2/3 Off-Road Speed.

Design Notes

As designed, 5,000 rounds of MG ammo and 72 rounds of 75mm (actually 76.2mm) ammo were purchased; the historical figures are substituted above.

Like any design taking large advantage of slope, this T-34 wants to be much heavier than in real life. To trim weight, DR 5 was removed from the tracks and expensive body armor was used but at the appropriate thickness for regular armor. (Some sources claim the Germans couldn't replicate the alloys in the T-34's armor, so there's some precedent for this.) Also, a high-performance diesel was used; this does not run contrary to the reputed balkiness of the T-34's diesel, since the "high performance" applies to output, not reliability. Despite these measures, the above historical weight is 19% lighter than design weight.

All main-gun ammo is stored in the body.

Hand bars often were welded to the armor (trivial weight and cost in game terms) so that infantry could more easily ride atop the T-34. Usually, these were deployed in eight-man squads of SMG-carrying "tank riders."

Variants

The T-34 went through four general variants, with a great deal of local variation in production. Only about 950 of the A (1940) model were produced before the B (1941) model replaced it, sporting a cast turret with front DR 400, side DR 300, and back DR 200, weighing 30.8 tons with gSpeed 35. It also had a slightly better 76.2mm gun (the F-34), but both are modeled with the same weapon in this system. About 9,000 of these were produced.

The T-34C (1942) introduced a new, hexagonal turret that got rid of the cumbersome front-hinged hatch of old; it also had front DR 540, side DR 300, and back DR 200. Internal fuel tankage increased to 143 gallons; ammo stowage changed to 2,394 MG rounds and 100 main-gun rounds. This was the first variant to frequently carry a radio. It weighed 34 tons and cost $66,700 with gSpeed 33.

The T-34/85 used a new Large AFV turret (front DR 350, sides DR 290, back DR 230) mounting an 85mm D-5 gun with 56 rounds and finally added crew space for a proper gunner. It weighed 35.2 tons and cost $75,200 with gSpeed 32.

T-34s often employed DR 2 48-gallon external fuel tanks (built as equipment pods; p. 138) weighing 650 lbs. when full.

Jeep 1/4-Ton 4x4 Reconnaissance Truck

Credited with winning the war by no less than Gen. Eisenhower, the beloved jeep served as a light transport and general-utility vehicle throughout western Allied forces. It officially served in a variety of functions, including command car and as prime mover (towing vehicle) for the 37mm anti-tank gun. Unofficially, it was put into just about every conceivable role.

The actual brand name Jeep did not yet exist – the "jeep" was a nickname given to the Willys MB and Ford GPW trucks. (Prior to that, according to some sources, WWI mechanics called any new vehicle received for testing a "jeep." Wherever the name came from, by the end of the 1940s it would be fought over as a commercial property for its brand cachet.) The Willys and Ford were virtually identical except for some frame members and an "f" stamped on just about every Ford part.

The Soviets fielded about 1,000 of these trucks made by American Bantam Car Co., which originally came up with the design that Willys and Ford made famous. Though Bantam had pioneered both the concept and the U.S. military's interest in the vehicle, it never profited from jeep-making like its competitors, who delivered more than half a million jeeps to the war effort.

The jeep burns 1.8 gallons of gas per hour at routine usage. A full load of fuel costs $2.25.

Ford GPW "Jeep"

Subassemblies: Very Small Wheeled chassis +2; four off-road wheels +1.

Powertrain: 40-kW standard gas engine with 40-kW all-wheeled transmission and 15-gallon standard tanks; 4,000-kWs batteries.

Occ: 1 XCS, 3 XPS Cargo: 2.7 (exposed)

Armor	F	RL	B	T	U
Body:	2/3	2/3	2/3	2/3	2/4
Wheels:	3/5	3/5	3/5	3/5	3/5

Equipment

Body: 2.7 cargo.

Statistics

Size: 11'×5'2"×4'4" *Payload:* 0.4 tons *Lwt:* 1.6 tons
Volume: 18 *Maint:* 330 hours *Cost:* $365

HT: 11. HPs: 85 Body, 14 each Wheel.

gSpeed: 80 *gAccel:* 4 *gDecel:* 10 *gMR:* 0.75 *gSR:* 4
Ground Pressure High. 1/4 Off-Road Speed.

Design Notes

Historically, the jeep had a top speed of 65 mph, but the historical top speeds recorded for tanks usually are not true top speed, but top *sustained* speed; i.e., the best speed at which the driver can still maintain full control or the engine won't eventually overheat (use cruising speed on p. 148 to represent this). Whether or not that is also true for the jeep is up to each GM.

Regardless, the jeep's cooling system was especially designed so that it could travel indefinitely at speeds as *low* as 3 mph. With most vehicles, this will eventually overheat the engine for lack of adequate air circulation.

One more passenger could be squeezed into the rear passenger/cargo compartment without too much difficulty. In practice, stacking people atop one another, several more passengers could be hauled in a pinch.

Variants

Common accessories included a pedestal mount in back that fit the U.S. MMGs and HMGs and a pintle mount for the passenger next to the driver that fit the U.S. MMGs.

Many jeeps had removable canvas (ragtop) covers for the passenger and cargo area. These increased the vehicle's height to 6'.

The Special Air Service and others greatly modified basic jeeps by removing the windscreen and strapping arms and cargo everywhere.

Dodge made a 1/2-ton utility truck with roughly similar performance that troops also called a "jeep" until mid-war, at which point it became a "beep," as in "*big jeep*."

The jeep sometimes was issued with a 500-lb. trailer that had a 500-lb. payload and used the same tires as the jeep. Towing the trailer, fully laden, would reduce gSpeed by 9.

GMC 2½-Ton 6x6 Cargo Truck

While the jeep won the troops' hearts, the unromantic cargo truck did the heavy lifting of winning the war.

The 6×6 burns 3.2 gallons of gas per hour at routine usage. A full load of fuel and ammo costs $30.

GMC 2½-Ton 6×6 Cargo Truck

Subassemblies: Medium Wheeled chassis +4; Medium Weapon open mount 1 [Body:F] +1; Mini open mount 2 with full rotation [Body:T] +0; 10 large wheels +3.

Powertrain: 70-kW standard gas engine with 70-kW all-wheeled transmission and 40-gallon standard tanks; 4,000-kWs batteries.

Occ: 1 XCS, 20 XPS **Cargo:** 75.2 Body, 1 OM 1, 0.5 OM 2

Armor	F	RL	B	T	U
Body:	3/5	3/5	3/5	3/5	3/5
Wheels:	3/5	3/5	3/5	3/5	3/5
OM 1:	4/20	0/0	0/0	0/0	0/0
OM 2:	0/0	0/0	0/0	0/0	0/0

Weaponry

Very Long Ground HMG/M-2HB [OM 2:F] (500 rounds).

Equipment

Body: 75 cargo, 125-sf canvas cover for cab top and sides and cargo area. *OM 1:* winch with 2,000-lb. capacity.

Statistics

Size: 19'×7'×8' *Payload:* 2.9 tons *Lwt:* 8.2 tons
Volume: 155 *Maint:* 191 hours *Cost:* $1,650

HT: 9. HPs: 330 Body, 22 each Wheel, 75 Open Mount.

gSpeed: 47 *gAccel:* 2 *gDecel:* 10 *gMR:* 0.5 *gSR:* 4
Ground Pressure High. 1/4 Off-Road Speed.

Design Notes

The design includes a 42-gallon standard fuel tank, but the historical fuel tankage is listed, instead.

Historically, only one in four of these trucks included the ring mount (open mount 2) for the .50 M-2HB. Note that open mount 1 is used to represent a "take no prisoners" front bumper – in most frontal collisions it and its DR 20 would take damage before the body of the truck proper. The cab has a canvas top and doors, but provides enough coverage to count as exposed positions for the up to three people riding in it. The truck bed provides bench seating for another 18 people, but several more could be crammed within it, at increasing risk of falling out . . .

Variants

Many similar vehicles were fielded from GMC, Ford, Diamond T, Studebaker, etc. Many had a fully enclosed cab, applying DR 5 to its sides and top.

Schweres Kraftrad 750 ccm BMW R12

German recon troops often rode this 1935 model early in the war. Couriers of all nations rode something similar.

The BMW burns 0.6 gallons of gas per hour at routine usage. A full load of fuel costs $0.45.

BMW 750cc R12

Subassemblies: Motorcycle chassis +0; 2 large wheels -1.

Powertrain: 13-kW standard gas engine with 13-kW wheeled transmission and 3.7-gallon standard tanks.

Occ: 1 MCS, 1 MPS **Cargo:** 0.4

Armor	F	RL	B	T	U
Body:	2/4	0/0	2/4	0/0	0/0
Wheels:	3/5	3/5	3/5	3/5	3/5

Statistics

Size: 4'×3'×3' *Payload:* 218 lbs. *Lwt:* 704 lbs.
Volume: 2.4 *Maint:* 709 hours *Cost:* $80

HT: 11. HPs: 20 Body, 8 each Wheel.

gSpeed: 98 *gAccel:* 5 *gDecel:* 10 *gMR:* 1.5 *gSR:* 2
Ground Pressure High. 1/6 Off-Road Speed.

Design Notes

As designed, a 3-gallon fuel tank was purchased and weight is 690.5. Historical values are used, instead. Also, the cycle actually had a 151-kWs battery. This was too small to be accounted for here; simply assume it's part of the engine weight, and even if it's missing, almost all cycles of the period could be kickstarted (p. 128). Historic top speed was 60, 51 with the sidecar below, but as any motorcyclist knows, there's a wide margin between what's safe and what's doable . . .

Sidecar for BMW 750cc R12

Subassemblies: Motorcycle chassis +0; 1 large wheel -1.

Occ: 1 XPS **Cargo:** 0

Armor	F	RL	B	T	U
Body:	2/2	2/2	2/2	0/0	2/2
Wheels:	3/5	3/5	3/5	3/5	3/5

Weaponry

Ground LMG/MG34 [Body:F] (150 rounds); see below.

Statistics

Size: 4'×3'×3' *Payload:* 207.5 lbs. *Lwt:* 532.5 lbs.
Volume: 2.4 *Maint:* 470 hours *Cost:* $180

HT: 12. HPs: 20 Body, 15 Wheel.

The following statistics are for the cycle with sidecar attached.
gSpeed: 74 *gAccel:* 4 *gDecel:* 10 *gMR:* 1.25 *gSR:* 2

Design Notes

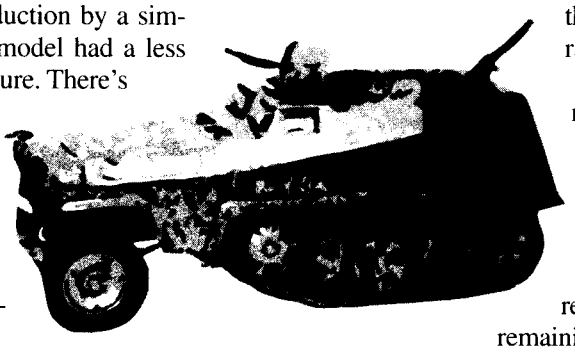
The real sidecar featured a rudimentary pintle mount for the MG, with very limited arc of fire. Rather than purchase an expensive and efficient open mount, the MG mounting is "hand-waved" as trivial. It would be both fair and realistic to treat the gunner as a passenger firing a personal weapon.

SdKfz 250 leichter Schützenpanzerwagen

The Germans had planned all along to develop the SdKfz 250 as a small reconnaissance auxiliary to their primary armored personnel carrier, the SdKfz 251. As it was, the 250 did not see early production, but served from 1941 throughout the remainder of Germany's war.

Most 250s went to panzer (tank) and panzergrenadier (armored infantry) divisions, which officially were supposed to have 28 and 18, respectively. The increasing demands of scouting out the enemy for these units prompted a continual upgunning of the 250.

The old-style 250 was replaced in production by a simplified version in October 1943. The new model had a less complex shape, making it easier to manufacture. There's no substantial variation between the two in game terms.



The real-world official price for the SdKfz 250 was 20,000 Reichsmarks, and officially the Reichsmark traded at 1-to-1 with the U.S. dollar. This should be ignored except as a color detail should Nazi economics come into the campaign.

The 250/1 usually carried a crew of driver and MG34 gunner, and four reconnaissance troopers, one of whom manned the rear antiaircraft MG34.

The halftrack burns 3.4 gallons of gas per hour at routine usage. A full load of fuel and ammo costs $25.

leSPW SdKfz 250/1

Subassemblies: Small Halftrack chassis +3; Mini open mount 1 with limited rotation [Body:F] +0; Mini open mount 2 with full rotation [Body:B] +0; tracks +2.

Powertrain: 75-kW standard gas engine with 75-kW tracked transmission and 37-gallon standard tanks; 8,000-kWs batteries.

Occ: 3 CS, 3 PS Cargo: 0.1 Body, 0.6 OM 1, 0.4 OM 2

Armor	F	RL	B	T	U
Body:	4/35	4/22	4/22	0/0	4/22
Tracks:	3/15	3/15	3/15	3/15	3/15
OM 1:	4/22	0/0	0/0	0/0	0/0
OM 2:	0/0	0/0	0/0	0/0	0/0

Weaponry

Ground LMG/MG34 [OM 1:F] (1,050 rounds).
Ground LMG/MG34 [OM 2:F] (1,050 rounds).

Equipment

Body: 0.1 cargo, medium radio and transmitter. *OM 2:* universal mount for MG.

Statistics

Size: 15'×6'5"×5'7" *Payload:* 0.8 tons *Lwt:* 6.2 tons
Volume: 58 *Maint:* 152 hours *Cost:* $1,750

HT: 10. HPs: 300 Body, 85 each Track, 30 each Open Mount.

gSpeed: 42 *gAccel:* 3 *gDecel:* 20 *gMR:* 0.25 *gSR:* 4
Ground Pressure Moderate. 1/3 Off-Road Speed.

Design Notes

This was designed with a 36-gallon fuel tank and 2,000 rounds of MG ammo. Historical values have been used, instead.

Variants

The SdKfz 250/2 leichter Fernsprechpanzerwagen replaced one LMG and its gunner with storage for a spool of telephone cable (p. 90). The SdKfz 250/3 leichter Funkpanzerwagen, and SdKfz 250/4 and SdKfz 250/5 leichter Beobachtungspanzerwagen, replaced the LMG with room for larger radios and their aerials.

The SdKfz 250/6 Ausf A replaced two passenger stations and the rear LMG with a StuK37 (75mm Short Tank Gun) and 70 rounds (in a Medium Weapon limited-rotation open mount), while retaining 1,050 rounds for the remaining MG: weight 6.8 tons, cost $5,050, gSpeed 40. The SdKfz 250/6 Ausf B carried 60 rounds for the Ausf A's antitank gun. Probably prior to development of the Ausf B, the Ausf A often hauled a trailer with 70 extra 75mm rounds in it; gSpeed would drop to 36 mph.

The SdKfz 250/8 leichte Schützenpanzerwagen was a similar concept carrying fewer (20) 75mm rounds. The 250/10 and 250/11 mounted a PAK35/36 (37mm Medium Tank Gun) with 210 rounds and a sPzB41 (28mm Medium Tank Gun) with 168 rounds, respectively, in place of the 75mm gun. The 250/10 removed both LMGs in the process.

The SdKfz 250/7 Ausf A replaced one passenger station and the rear LMG with a GrW34/1 (81mm mortar) and 42 rounds, with ammo for the remaining LMG at 2,100 rounds. The SdKfz 250/7 Ausf B carried 66 extra rounds for the Ausf A's mortar while retaining both of its LMGs, and normally had a crew of two; usually the unit commander rode in this, and the extra space could host additional radio equipment.

The Germans eventually realized the limitations of wheeled vehicles in the armored-scout role, and experimented with using halftracks by installing the turret from the SdKfz 222 armored car on the 250. This became the 250/9, first used in Russia in mid-1942. The Medium Weapon full-rotation turret had DR 40 in front, DR 22 on the sides and rear, but none on top, and mounted a KwK38 (20mm Long Ground Autocannon), manually rotating at 10° per second. The turret also mounted one LMG, but the other was removed. The vehicle carried 180 rounds for the 20mm and 1.050 for the LMG. The standard crew was only three, but room for six remained with the commander in a split turret/body station. Loaded weight was 6.8 tons, cost $2,475, gSpeed 40. Eventually, these vehicles caused the 222 to be discontinued, and entered mass production as its replacement in mid-1943.

The SdKfz 250/12 leichte Messtruppanzerwagen removed one LMG and was used by artillery troops for surveying and artillery spotting.

M-3 Halftrack APC

The U.S. series of halftracks paralleled the M-4 Sherman's developmental history. The first of some 41,000 produced during the war appeared in British and U.S. usage late in the African campaign, and the distinctive vehicles soon became ubiquitous in Anglo-American armies.

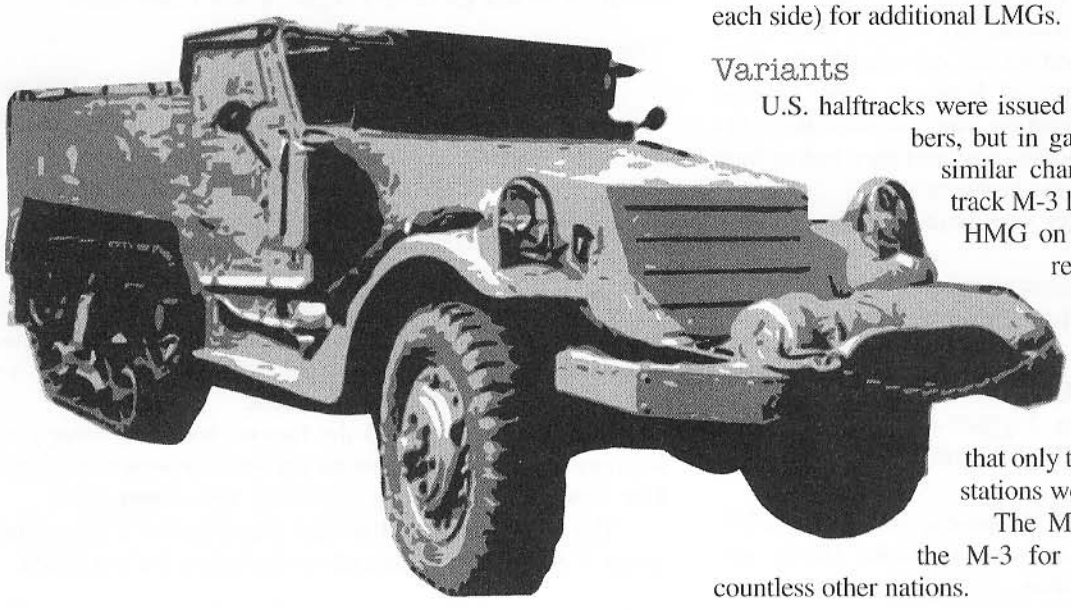
Like most WWII personnel carriers, the M-3A1 has no top armor. (Technically, it does have top armor over the engine compartment, but this detail is abstracted out in this design system.) This made it more comfortable for the crew and passengers, by letting in fresh air, and made it easier for the passengers to fight from over the top of the passenger-compartment walls – but it also made the vehicle particularly vulnerable to infantry attack in close quarters. A single grenade could injure everyone inside.

For this reason, and because of the relatively thin armor, halftracks were seldom deployed very actively in combat. Their purpose was to move troops rapidly to the front – being able to ignore light concentrations of artillery fire along the way – but once the halftrack arrived, the troops dismounted and fought on foot. Sometimes the halftrack crew would be called upon to loiter behind their troops, to provide covering fire with their MGs; in U.S. deployment, two of the three men in the halftrack crew sometimes dismounted the M-1919A4 and deployed on foot as part of the infantry squad that they had delivered.

Even given light and air, no U.S. halftrack was a pleasant ride. In motion they jounced and jolted, squeaked and groaned. Riding in one was no more pleasant than serving in a tank's crew. The M-3A1, in particular, crammed its passengers in with minimal space for each.

Like their German counterparts, U.S. halftracks often served in roles beyond hauling artillery pieces and troops. Some were converted into tank destroyers, mounting antitank guns in the passenger compartment, and others into mobile antiaircraft platforms.

The M-3A1 burns 4.3 gallons of gas per hour at routine usage. A full load of fuel and ammo costs $125.



M-3A1 Halftrack APC

Subassemblies: Medium Halftrack chassis +4; Mini open mount 1 with full rotation [Body:F] +0; Mini open mount 2 with full rotation [Body:B] +0; Small Weapon open mount 3 [Body:F] +0; tracks +3.

Powertrain: 95-kW standard gas engine with 95-kW tracked transmission and 60-gallon standard tanks; 8,000-kWs batteries.

Occ: 3 CS, 10 PS Cargo: 0.1 Body, 0.4 OM 1, 0.6 OM 2

Armor	F	RL	B	T	U
Body:	4/18	4/18	4/18	0/0	3/6
Tracks:	4/20	4/20	4/20	4/20	4/20
OM 1-2:	0/0	0/0	0/0	0/0	0/0
OM 3:	4/20	0/0	0/0	0/0	0/0

Weaponry

Very Long Ground HMG/M-2HB [OM 1:F] (700 rounds).
Ground LMG/M-1919A4 [OM 2:F] (7,750 rounds).

Equipment

Body: 0.1 cargo, 80-sf canvas top for cab and passenger compartment. *OM 1 and 2:* universal mounts for both MGs. *OM 3:* winch with 1,000-lb. capacity.

Statistics

Size: 20'×7'4"×7'5" *Payload:* 3.2 tons *Lwt:* 10.2 tons
Volume: 116 *Maint:* 135 hours *Cost:* $2,625

HT: 10. HPs: 490 Body, 135 each Track, 30 each of Open Mounts 1-2, 45 Open Mount 3.

gSpeed: 40 *gAccel:* 2 *gDecel:* 20 *gMR:* 0.25 *gSR:* 5
Ground Pressure Moderate. 1/3 Off-Road Speed.

Design Notes

The vehicle as designed has 8,000 rounds of Light MG ammo and gSpeed 37. Historical values were used, instead.

The M-3A1 could mount two extra open mounts (one on each side) for additional LMGs.

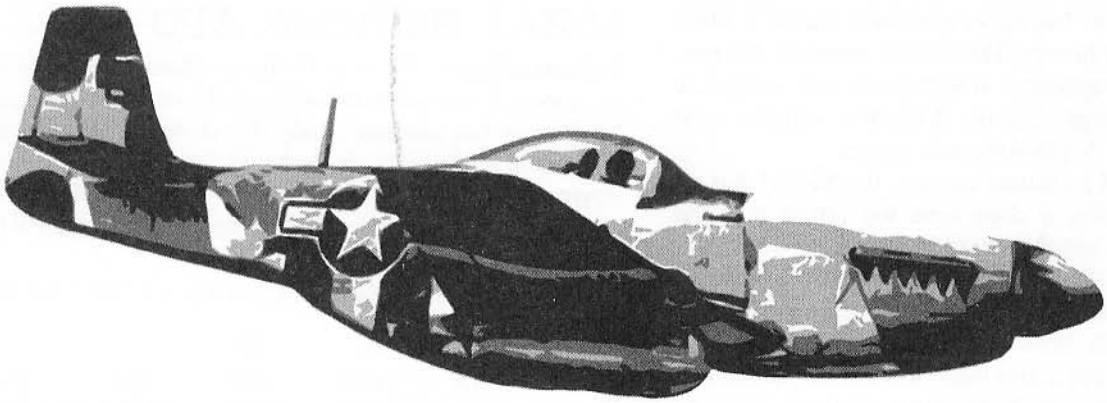
Variants

U.S. halftracks were issued in a variety of model numbers, but in game terms they all had very similar characteristics. The basic halftrack M-3 lacked the ring mount for the HMG on the M-3A1. Other variants replaced passenger stations with larger radios and radio operators.

The M-2 and M-2A1 halftracks were virtually identical to the M-3, except that only two crew and eight passenger stations were installed.

The M-5 and M-9 were copies of the M-3 for export to the Soviets and countless other nations.

North American P-51 Mustang



When the British inquired with North American Aviation about building existing fighters for them in 1939, the U.S. company proposed to create something entirely new. The resulting aircraft, heavily influenced by a former Messerschmitt designer, became the Mustang in British service in 1940. When the United States entered the war, the Army Air Force adopted the Mustang as the P-51.

One of the first fighters to employ a laminar-flow airfoil for improved aerodynamics, the early Mustang already outperformed its rivals in Allied service, but its Allison engine could only be pushed so far. When the British dropped a Rolls Royce Merlin engine into the airframe, the plane became spectacular, laying strong claim to having been the best fighter of the war. Usually powered by Packard license-built versions of the Merlin, U.S. P-51s destroyed more German aircraft – 4,950 – than any other fighter.

Though designed purely as a fighter, the Mustang could serve well in ground-attack or dive-bombing roles, carrying up to a 1,000-lb. bomb under each wing. Its quality performance in these roles did not distract from its most important mission, however, which was to protect the U.S. bombers engaging in daylight runs over Germany.

Prior to the P-51's arrival in Europe, these B-17s had fought costly brawls with German fighters (such as the Me 109, p. 111). Fitted with external fuel tanks, the Mustang was the first Allied fighter that could stay with the bombers on their long journeys. The escort service provided by the P-51 drastically changed the nature of bombing raids. German fighters could still loiter and wait for windows when the P-51s had to turn for home, but for the most part they had to fight through the fighters to get to the bombers.

Overall, 15,586 Mustangs were built, with nearly 8,000 being P-51Ds.

The plane burns 56 gallons of aviation gas per hour at routine usage. A full load of fuel and ammo costs $115.

P-51D Mustang

Subassemblies: Medium Fighter chassis with good streamlining +3; Heavy Fighter wings +2; 3 retractable wheels +0.

Powertrain: 1,112-kW aerial HP gas engine with 1,112-kW prop and 105-gallon self-sealing tanks [Body and Wings]; 8,000-kWs batteries.

Occ: 1 CS Cargo: 0.7 Body, 1.1 Wings

Armor	F	RL	B	T	U
Body:	3/6	3/6	3/6	3/6	3/6
Wings:	3/6	3/6	3/6	3/6	3/6
Wheels:	2/3	2/3	2/3	2/3	2/3
Cockpit:	0/+10	0/+20	0/+30	0/+20	0/+20

Weaponry

2×Long Aircraft HMGs/M-2 [Wings:F] (400 rounds each).*
4×Long Aircraft HMGs/M-2 [Wings:F] (270 rounds each).*
* Each pair linked, additional links fire four or six at once.

Equipment

Body: Medium radio transmitter and receiver, IFF, 1,000-lb. hardpoint. *Wings:* 1,000-lb. hardpoint each.

Statistics

Size: 32'3"×37'×12'2" *Payload:* 0.7 tons *Lwt:* 4 tons
Volume: 200 *Maint:* 38 hours *Cost:* $28,400

HT: 8. HPs: 120 Body, 180 each Wing, 12 each Wheel.

aSpeed: 437 *aAccel:* 8 *aDecel:* 16 *aMR:* 4 *aSR:* 2
Stall Speed 84. -8 aSpeed per loaded hardpoint.
gSpeed: 252 *gAccel:* 11 *gDecel:* 10 *gMR:* 0.5 *gSR:* 2
Ground Pressure Extremely High. No Off-Road Speed.

Design Notes

The vehicle as designed has 1,900 HMG rounds. Historical values were used instead, and wing area has been modified to the historical 233 sf.

Variants

A popular alteration removed one pair of the M-2 HMGs and loaded 400 rounds each for all four remaining guns.

The P-51A employed the Allison engine. The Packard licenses of the Merlin began appearing in the P-5lB and identical P-51C, which entered service in December 1943 carrying four HMGs as standard armament.

The P-51D introduced the famous tear-drop canopy to improve pilot visibility (treat the earlier Mustangs as having a Fair view per p. 144, while the P-51D has a Good view).

The P-51H lightened several elements for a maximum speed of 487 mph; 550 entered service before the war ended.

Messerschmitt Bf or Me 109

When the war began, the Messerschmitt Bf 109 may have been the best fighter in it. It was originally crafted by the Bayerische Flugzeugwerke; when Bayerische went out of business the designer, Willy Messerschmitt, took over production at his own company. Thus, it was known as both the Bf 109 and the Me 109.

Debuting in 1935, the Bf 109 set several records before fighting in the Spanish Civil War in German, Spanish, and Italian colors as the Me109B and -C. Upgraded in light of that experience, the Me109E served as Germany's primary fighter for the first three years of the war, dominating all opposition until matched up against Britain's Hurricanes and (especially) Spitfires during the Battle of Britain.

More than 60% of Germany's WWII fighter production was Me 109s, some 33,000 aircraft in all. Even after newer, better designs entered production, the reliable Me 109 continued to fight – though all German fighters were waging an increasingly rearguard action, particularly on their Western Front. The last major Me 109 sortie came on April 7, 1945, when 150 mostly student pilots intercepted a stream of U.S. bombers – 135 of them became casualties.

The plane burns 38.7 gallons of gas per hour at routine usage. A full load of fuel and ammo costs $55.

Me 109E-3 Emil

Subassemblies: Medium Fighter chassis +3; Light Fighter wings +2; 3 retractable wheels +1.

Powertrain: 860-kW aerial turbo/supercharged gas engine with 860-kW prop and 105-gallon self-sealing tanks [Body and Wings]; 4,000-kWs batteries.

Occ: 1 CS Cargo: 5 Body, 1.8 Wings

Armor	F	RL	B	T	U
Body:	2/3	2/3	2/3	2/3	2/3
Wings:	2/3	2/3	2/3	2/3	2/3
Wheels:	2/3	2/3	2/3	2/3	2/3
Cockpit:	0/+0	0/+10	0/+20	0/+10	0/+10

Weaponry

2×Aircraft LMG/MG17 [Body:F] (1,000 rounds each).*
2×20mm Medium Air AC/MG151/20 [Wings:F] (60 each).*
* Each pair linked, plus third link can fire all four at once.

Equipment

Body: Medium radio and transmitter, IFF, navigation instruments.

Statistics

Size: 29'×32'6"×10'6" *Payload:* 0.5 tons *Lwt:* 2.8 tons
Volume: 200 *Maint:* 53 hours *Cost:* $15,400

HT: 9. HPs: 120 Body, 70 each Wing, 12 each Wheel.

aSpeed: 350 *aAccel:* 9 *aDecel:* 9 *aMR:* 2.25 *aSR:* 2
Stall Speed 76. -5 aSpeed with loaded hardpoint.
gSpeed: 256 *gAccel:* 12 *gDecel:* 10 *gMR:* 0.5 *gSR:* 2
Ground Pressure Very High. 1/8 Off-Road Speed.

Design Notes

As designed, aSpeed is 339. Historical values were used for this and the wing area, at 175 sf.

Variants

A variant E-3 reduced the MG17 (Aircraft LMG) ammo to 500 rounds per gun and added a third MG151/20 (20mm Medium Aircraft Autocannon) in the body equipped with 60 rounds of ammunition.

The E-4/B added a 550-lb. hardpoint for bombs under the body. The E-0, E-1, and E-8 replaced the cannons in the wings with MG17s with 1,000 rounds each. The E-8 also had a 550-lb. body hardpoint used only for an external fuel tank.

The E-5 simply deleted the wing guns.

The E-7 and E-9 added a 550-lb. body hardpoint for bombs.

The Me 109T was an E-series plane modified for carrier landings, intended to serve aboard the never-completed German carrier *Graf Zeppelin*. (In game terms, an arrestor hook is added to the body's equipment.)

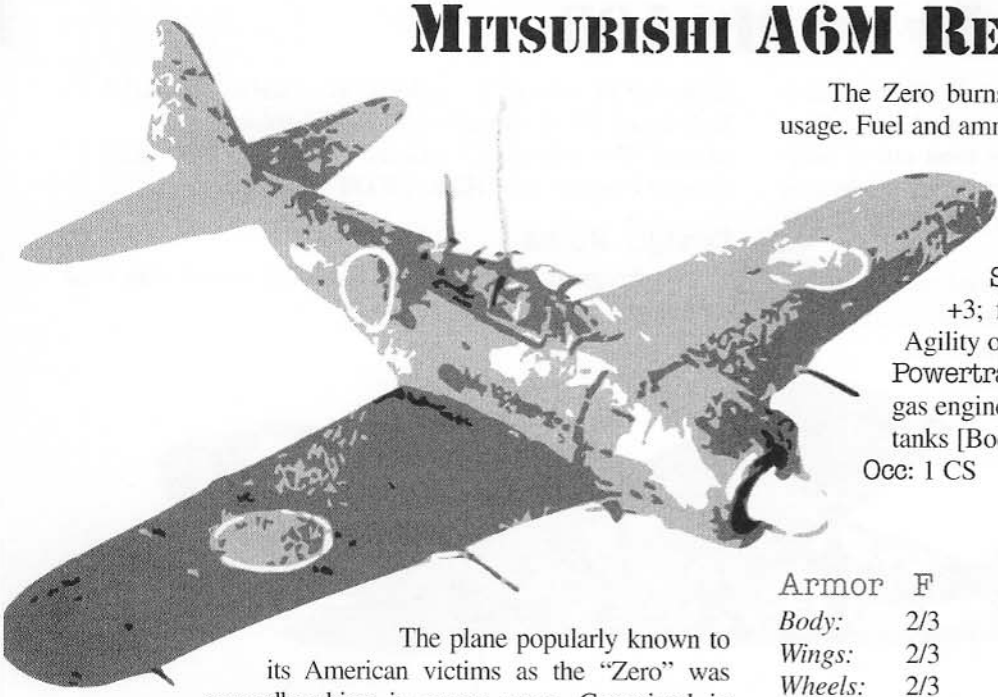
The F-0 deleted the wing guns, adding another MG151/20 with 60 rounds in the body. The F-4 did the same, except it added the 20mm Medium Aircraft Autocannon armed with 200 rounds. The F-4/B was an F-4 also equipped with the 550-lb. body hardpoint for bombs.

The Me 109G was produced in larger numbers than any other variant, though it was not a truly first-line German fighter by the time of its debut. Along with the F model, it supplemented its fighter role as a ground-attack aircraft. Photo-reconnaissance and trainer variants were also produced.

The standard G-series armament was one 20mm Medium or 30mm Short Aircraft Autocannon with two Aircraft LMGs or MG131s (Medium Aircraft HMGs) in the wings. It also could fit a pair of 20mm autocannons in equipment pods slung under the wings.

The Me 109G-10 was the fastest variant of 109, with an aSpeed of 428.

Mitsubishi A6M Reisen "Zero"



The plane popularly known to its American victims as the "Zero" was groundbreaking in many ways. Conceived in 1937, it was engineered to be as light as possible. Previous airframe designs had padded in hefty margins of safety, adding a great deal of weight to the aircraft. The Zero's engineers built it to take the stress that its performance would demand, and not a great deal more. This philosophy would filter into airframe designs of all nations after the war.

This lightness made the first Zeros exceptionally agile, and this in turn made them the first carrier-based fighters that could best land-based fighters. Attacking the cumbersome U.S. Navy aircraft of the early war, the Zero literally flew rings around them, darting into advantageous positions and knocking all opposition out of the sky with what was very heavy armament for the period.

The Japanese rapidly embraced the aura of invincibility that the Zero's early unbroken successes gave them. Conversely, the U.S. military felt a growing dismay at its inability to beat this aircraft, which seemed to be flying everywhere around the Pacific at once. It eagerly sought out scraps of wrecked Zeros and in vain tried to reconstruct one for study.

Then the U.S. forces captured an intact Zero. They discovered that the plane was something of a gimmick, trading hidden shortcomings for its obvious handling advantages. The lack of cockpit armor and self-sealing fuel tanks only highlighted the plane's gross inability to withstand the same punishment that it could dish out. Armed with this knowledge and a new generation of fighters, the U.S. pilots of 1943 began turning the tables on the Zero, and rapidly would rout it from the skies, relying heavily on "wingman" tactics of flying in pairs and groups. One on one, the Zero could still match up with most comers. Against a group, Zero pilots couldn't line up their own shots without having someone taking a pass at them in the process – and it took less of a pass to kill a Zero than an American plane.

The A6M2 first appeared over China in August 1940. By the time of Pearl Harbor, more than 400 were in service. Also manufactured by Nakajima, the Zero had a production run of nearly 11,000.

The Zero burns 32 gallons of gas per hour at routine usage. Fuel and ammo cost $60.

0-21 Shiki A6M2 "Zero"

Subassemblies: Light Fighter chassis +3; folding Light Fighter wings with High-Agility option +2; 3 retractable wheels +0.
Powertrain: 708-kW aerial turbo/supercharged gas engine with 708-kW prop and 156-gallon light tanks [Body and Wings]; 4,000-kWs batteries.
Occ: 1 CS **Cargo:** 0.1 Body

Armor	F	RL	B	T	U
Body:	2/3	2/3	2/3	2/3	2/3
Wings:	2/3	2/3	2/3	2/3	2/3
Wheels:	2/3	2/3	2/3	2/3	2/3

Weaponry

2×Aircraft LMG/97 Shiki [Body:F] (680 rounds each).*
2×20mm Short Aircraft AC/99-1 Shiki [Wings:F] (60 each).*
* Each pair linked, plus third link can fire all four at once.

Equipment

Body: Arrestor hook, navigation instruments, 500-lb. hardpoint.

Statistics

Size: 30'×39'4"×11'6" *Payload:* 0.6 tons *Lwt:* 2.4 tons
Volume: 72 *Maint:* 58 hours *Cost:* $12,000

HT: 7. HPs: 50 Body, 90 each Wing, 5 each Wheel.

aSpeed: 333 *aAccel:* 9 *aDecel:* 16 *aMR:* 4 *aSR:* 1
Stall Speed 61. -4 aSpeed with loaded hardpoint.
gSpeed: 249 *gAccel:* 12 *gDecel:* 10 *gMR:* 0.5 *gSR:* 2
Ground Pressure Very High. 1/8 Off-Road Speed.

Design Notes

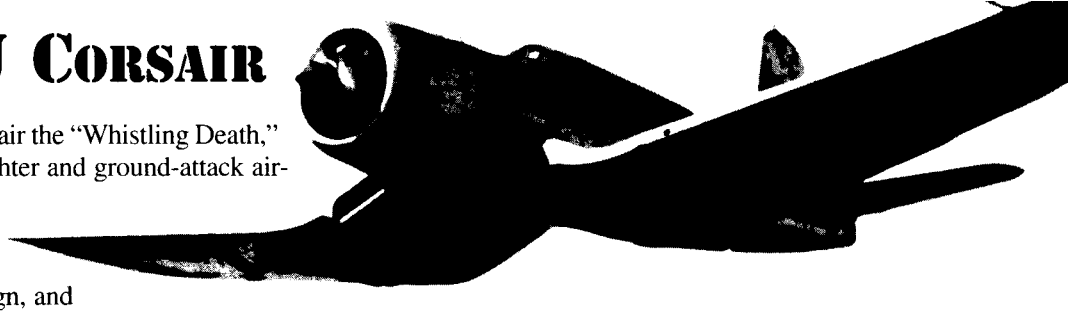
The design purchases 1,500 rounds for the Light MGs and has aSpeed 293. These values have been replaced with the historical values, as has the wing area, at 242 sf. The Zero could roam 1,200 miles using an external fuel tank.

Variants

Later Zero models would attempt to overcome the plane's shortcomings, adding armor, heavier arms (HMGs and 99-4 Shiki 20mm Medium Autocannons), and self-sealing fuel tanks. This would convert the plane from an exceptional if risky fighter to a decidedly mediocre weapon platform, neither as agile as its ancestors or as tough as its adversaries.

The Zero was also the first Kamikaze aircraft that the Japanese Navy purposely aimed at Allied ships as suicide weapons, and continued to be used extensively in this role after its effectiveness as a fighter had come to an end. Kamikazes often were augmented with explosives carried on board to enhance the damage done.

Vought F4U Corsair



The Japanese called the Corsair the "Whistling Death," a name it earned as a ruthless fighter and ground-attack aircraft that would continue to serve long after the war. It made a large contribution to the end stages of the Pacific campaign, and probably was the best carrier fighter of the war. (Some would even argue that it was the best fighter, period.)

Designed with the most robust powerplant available at the time, the Corsair required a huge prop. This, in turn, required a formidable ground clearance – but a carrier aircraft needs short, stout landing gears to better take the stresses. For this reason, the Corsair was given its distinctive gull wings, which provided a low enough base for the landing gear to provide clearance for the prop. Fortuitously, this also improved the plane's aerodynamics. (In a move intentionally designed to improve streamlining, the Corsair's air intakes were placed on the leading edges of the wings. These gave it the whistling sound that the Japanese so dreaded. Its pilots and crews focused on other Corsair characteristics in calling it "Hose Nose," "the Hog," and in deference to its dreadful landing qualities, "Ensign Eliminator.")

The Corsair had its faults. Its long nose blocked forward vision when at rest on deck, so that the pilot couldn't see flight-control personnel, and upon landing the plane tried to corkscrew just at the point of touchdown. Also, oils flying from the engine compartment tended to end up on the canopy. (The GM would be justified in imposing an additional -2 penalty to launch or land a carrier-based Corsair, and to add vision penalties in combat at frequent but random intervals to represent the oil discharge.)

At first, the U.S. Navy decided the Corsair was unsafe for carrier duty, so it was issued to the Marines in 1943 for land-based service. Also issued the Corsair, the British worked out how to land it safely on a carrier (by turning into the approach until the very last second so that the deck personnel stayed visible), and even diverted the oil discharge that had been such a nuisance. In 1944, the U.S. Navy began using Corsairs based on carriers.

Also built by Goodyear Aircraft Co. and Brewster Aeronautical Corp., the Corsair served with all of the Anglo-American forces in the Pacific. About 9,500 of the planes were built during WWII, with the remainder of the production run continuing through 1952.

The plane burns 75 gallons of aviation gas per hour at routine usage. A full load of fuel and ammo costs $175.

F4U-1 Corsair

Subassemblies: Heavy Fighter chassis with good streamlining +3; folding Heavy Fighter wings with High-Agility option +2; 3 retractable wheels +0.

Powertrain: 1,491-kW aerial turbo/supercharged HP gas engine with 1,491-kW prop, 273-gallon self-sealing tanks [Body and Wings]; 4,000-kWs batteries.

Occ: 1 CS Cargo: 0.1 Body, 0.5 Wings

Armor	F	RL	B	T	U
Body:	2/4	2/4	2/4	2/4	2/4
Wings:	2/4	2/4	2/4	2/4	2/4
Wheels:	2/3	2/3	2/3	2/3	2/3
Cockpit:	0/+10	0/+20	0/+30	0/+20	0/+20

Weaponry

2×Long Aircraft HMGs/M-2 [Wings:F] (375 rounds each).*
4×Long Aircraft HMGs/M-2 [Wings:F] (400 rounds each).*
* Linked in pairs, plus additional links can fire all six at once.

Equipment

Body: Arrestor hook, medium radio transmitter and receiver, IFF, navigation instruments, 1,000-lb. hardpoint. *Wings:* 1,000-lb. hardpoint each.

Statistics

Size: 33'5"×41'×16'1" *Payload:* 1.3 tons *Lwt:* 5.5 tons
Volume: 112 *Maint:* 26 hours *Cost:* $57,700

HT: 10. HPs: 260 Body, 240 each Wing, 24 each Wheel.

aSpeed: 417 *aAccel:* 8 *aDecel:* 18 *aMR:* 4.5 *aSR:* 2
Stall Speed 85. -7 aSpeed per loaded hardpoint.
gSpeed: 251 *gAccel:* 11 *gDecel:* 10 *gMR:* 0.5 *gSR:* 2
Ground Pressure Extremely High. No Off-Road Speed.

Design Notes

The design has 2,400 rounds for the .50-caliber M-2 HMGs and aSpeed 454. Historical values have been substituted for these, and for the wing area (314 sf).

The body hardpoint fitted a 192-gallon drop tank that would weigh 2,200 lbs. fully loaded and, of course, counts against aSpeed as a loaded hardpoint.

Variants

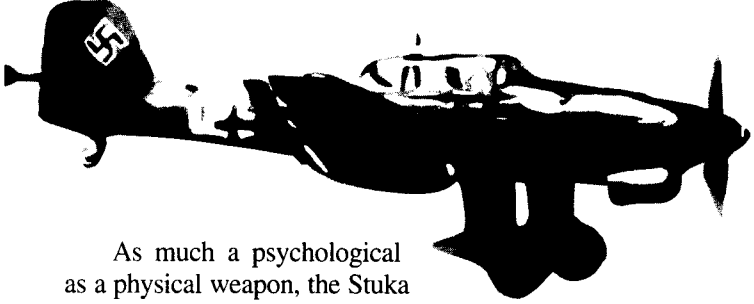
The F3A-1 was the same plane, but made by Brewster rather than Vought. Goodyear used the model number FG-1D for its version of the F4U-1.

The F4U-1C and -1D replaced the MGs with four 20mm Long Aircraft Autocannons with 60 rounds each.

The F4U-2 was a night-fighter version that mounted a radar in lieu of one MG in the starboard wing.

The F4U-4 was fitted with a 1,567-kW engine and a four-blade rather than three-blade prop; aSpeed was 446. It entered service in June 1945. The F4U-4C substituted autocannons for the MGs per the -1C conversion.

The F4U-3 never entered service. Later models debuted after the war ended.



Junkers Ju 87 Stuka

As much a psychological as a physical weapon, the Stuka struck terror in Germany's foes early in the war, but not only did it rapidly become obsolete, its successes proved particularly damaging to Germany's war efforts.

Debuting in 1938, the Junkers Ju 87 dive bomber became known as the "Stuka" based upon the German for dive bomber – *Sturzkampfflugzeug*. The gross inaccuracy of level bombing had long dismayed German military planners, so they placed great emphasis on the relative precision of dive bombing, in which the plane enters a steep dive, literally aiming itself at its target, so that the bomb is traveling quickly and fairly accurately upon release.

The Stuka was designed especially for this job, and performed it well in Poland and France. After outperforming even artillery's precision in striking behind enemy lines with their bombs, the Stukas often would empty their machine guns strafing civilians on roads in the opponent's rear. This unsportsmanlike act – and the special air sirens that made Stukas scream when diving – were aimed at military goals. By terrorizing and harassing the civilians behind the front, the Stukas steered them toward clogging the enemy's road network. This, in turn, slowed down enemy reserves moving toward the point of attack.

The Germans, who called any plane capable of dive-bombing a Stuka, felt that dive-bombing had been proven an unqualified success. Orders were issued that all bombers of any size be designed to be capable of dive-bombing, a restriction that had a significant negative impact on Germany's strategic-bombing capabilities.

In the Battle of Britain, for the first time the Stuka had to fight in skies that the Luftwaffe didn't own. This quickly highlighted its shortcomings. Fighters found it easy prey, and during its dives and the following climbs antiaircraft crews could shoot it down more easily than any other airplane. The Germans soon moved it to theaters where they still commanded the skies or fighter cover was spotty – this primarily meant the Eastern Front – where the Stuka fought for the remainder of the war.

The Luftwaffe fielded more than 5,700 Stukas during the war. The wing guns are MG17s and the rear guns a *single* MG81Z (p. 130). The plane burns 47 gallons of gas per hour at routine usage. A full load of fuel and ammo costs $70 before bombs, which add up to $8,000.

Ju 87D-1 Stuka

Subassemblies: Heavy Fighter chassis with no streamlining +3; Heavy Fighter wings with High-Agility option +2; limited-rotation Mini open mount [Body:T] +0; 3 fixed-strut wheels +0.

Powertrain: 1,044-kW aerial turbo/supercharged gas engine with 1,044-kW prop and 206-gallon self-sealing tanks [Wings]; 8,000-kWs batteries.

Occ: 2 CS **Cargo:** 0.1 Body

Armor	F	RL	B	T	U
Body:	2/3	2/3	2/3	2/3	2/3
Wings:	2/3	2/3	2/3	2/3	2/3
Wheels:	2/3	2/3	2/3	2/3	2/3
Cockpit:	0/+0	0/+10	0/+20	0/+10	0/+10

Cockpit armor for both pilot and gunner stations.

Weaponry

2×Aircraft LMGs/MG17 [Wings:F] (1,000 rounds each).*
2×Aircraft LMGs/MG81Z [OM:B] (1,000 rounds each).*
4,000-lb. Bomb [Body:B].
* Each pair linked.

Equipment

Body: Medium radio transmitter and receiver, IFF, navigation instruments, bombsight, autopilot, 4,000-lb. hardpoint.
Wings: 220-lb. hardpoint each.

Statistics

Size: 37'9"×45'×12'9" *Payload:* 0.9 tons *Lwt:* 7 tons
Volume: 224 *Maint:* 40 hours *Cost:* $22,525

HT: 9. HPs: 260 Body, 240 each Wing, 24 each Wheel, 30 OM.

Without bomb payload:
aSpeed: 255 *aAccel:* 6 *aDecel:* 20 *aMR:* 5 *aSR:* 2
Stall Speed 74. -1 aSpeed per loaded hardpoint.
gSpeed: 200 *gAccel:* 10 *gDecel:* 10 *gMR:* 0.5 *gSR:* 2
Ground Pressure Extremely High. No Off-Road Speed.

With maximum load of one 4,000-lb. bomb:
aSpeed: 254 *aAccel:* 4 *aDecel:* 14 *aMR:* 3.5 *aSR:* 2
Stall Speed 87.
gSpeed: 169 *gAccel:* 8 *gDecel:* 10 *gMR:* 0.5 *gSR:* 2
Ground Pressure Extremely High. No Off-Road Speed.

Design Notes

The design purchased 207 gallons of fuel tanks and 500 lbs. of wing hardpoints, and has aSpeed 208. These values have been replaced with the historical figures, as has the wing area at 343 sf.

The Stuka also possessed a wind siren that shrieked loudly whenever the plane entered a dive. This minor item is considered to be covered under the chassis cost. The body hardpoint is a special bomb rack that swings down and out so that the bomb clears the propeller.

Variants

The Ju 87B served during the Stuka's heyday. It had a single LMG for the rear gunner and a 1,100-lb. body hardpoint.

The Ju87C added an arrestor hook and folding wings for flying from the never-completed carrier *Graf Zeppelin*.

The D-4 added pods with six Aircraft LMGs with 250 rounds apiece under the wings. The D-5 replaced the wing MGs with MG151/20s (20mm Medium Aircraft Autocannons) with 120 rounds apiece; loaded weight became 7.3 tons.

The G-1 and G-2 removed the wing MGs and siren, and mounted a pod with a BK3.7 (37mm Medium Ground Autocannon) with 12 rounds under the wings. This was used to attack Soviet tanks in their relatively thin top armor.

Ilyushin Il-2 Shturmovik

Known to its German victims as the "schwarzer Tod" ("Black Death") and its Soviet compatriots as "the flying tank," the Il-2 was the most heavily produced aircraft of WWII, with more than 41,000 built from 1940 onward. Massively armed and armored, it counterattacked the panzer divisions where the Soviet land forces often could not reach them.

The Soviets had only 249 Il-2s in service when the Germans invaded, even though they believed very fervently in the *bronirovannyi shturmovik* (armored assault aircraft) concept. Stalin designated production of the aircraft as a top priority, so its plants were among those packed up and relocated east of the Urals in the massive relocations of 1941. Many were constructed under harsh conditions during this desperate interim.

Designed to kill armor and infantry alike, a frequent Il-2 tactic was to form a single line, skirt around one flank of a German formation, then attack in single file from the rear, where the tanks' armor was thinnest. Attack runs usually were conducted at very low altitude, about 20'.

While the Il-2 was very potent, it missions also were very dangerous. The Germans formed special fighter units to target Il-2s, which suffered several thousand casualties each year, so that never more than 12,000 were in service at once. Il-2 pilots who survived 10 missions received the prestigious Hero of the Soviet Union medal (p. 46), where other Soviet pilots had to fly 100 missions. Even worse off were the unarmored gunners, who became casualties six times as frequently as the pilots. Soviet women frequently piloted the Il-2.

The plane mounts burns 47 gallons of gas per hour at routine usage. Fuel and ammo cost $1,600.

Weaponry

2×Aircraft LMGs/ShKAS [Wings:F] (750 rounds each).*
2×23mm Long Aircraft ACs/VYa-23 [Wings:F] (250 each).*
Long Aircraft HMG/UB-12.7 [OM:B] (210 rounds).
80×5.5-lb. HEAT Bombs [Wings:B].
8×82mm HEAT Rockets [Wings:B].†
* Each pair linked, and third link fires all four at once.
† Must fire as single eight-shot burst.

Equipment

Body: Medium radio transmitter and receiver, navigation instruments, autopilot. *Wings:* 70-lb. hardpoint each, bomb bay split between them (220 lbs. of capacity each).

Statistics

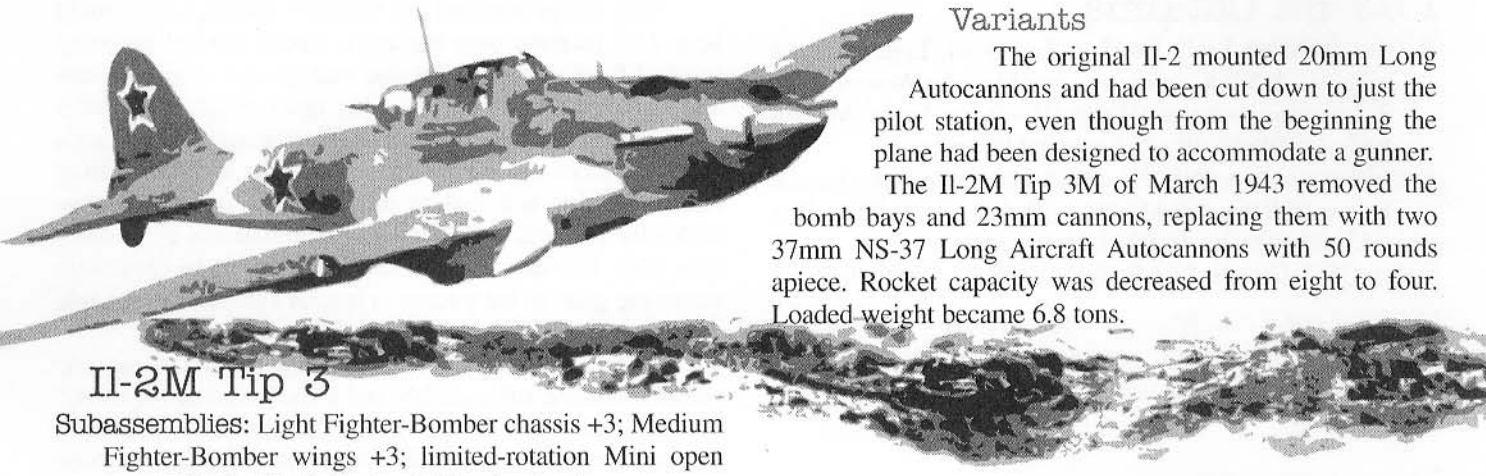
Size: 38'×48'×11' *Payload:* 1.25 tons *Lwt:* 7 tons
Volume: 312 *Maint:* 37 hours *Cost:* $30,000

HT: 7. HPs: 165 Body, 330 Wings, 15 each Wheel, 30 OM.

aSpeed: 246 *aAccel:* 4 *aDecel:* 17 *aMR:* 4.25 *aSR:* 2
Stall Speed 80. +4 aSpeed once rockets fired.
gSpeed: 177 *gAccel:* 8 *gDecel:* 10 *gMR:* 0.5 *gSR:* 2
Ground Pressure Extremely High. No Off-Road Speed.

Design Notes

The design purchased 192-gallons of fuel tanks, 200 rounds of HMG ammo, nine 82mm rocket rounds, 200 lbs. of wing hardpoints, and 500 lbs. of bomb-bay capacity, with an aSpeed of 269. Historical values have been substituted for all of these figures, as well as for the wing area, at 414 sf.



Variants

The original Il-2 mounted 20mm Long Autocannons and had been cut down to just the pilot station, even though from the beginning the plane had been designed to accommodate a gunner.

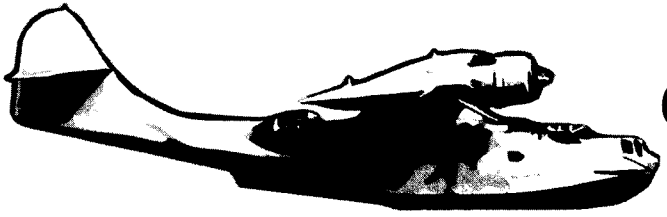
The Il-2M Tip 3M of March 1943 removed the bomb bays and 23mm cannons, replacing them with two 37mm NS-37 Long Aircraft Autocannons with 50 rounds apiece. Rocket capacity was decreased from eight to four. Loaded weight became 6.8 tons.

Il-2M Tip 3

Subassemblies: Light Fighter-Bomber chassis +3; Medium Fighter-Bomber wings +3; limited-rotation Mini open mount [Body:T] +0; 3 retractable wheels +1.
Powertrain: 1,050-kW aerial turbo/supercharged gas engine with 1,050-kW prop and 193-gallon self-sealing tanks [Body and Wings]; 8,000-kWs batteries.
Occ: 2 CS Cargo: 5 Body, 3.5 Wings, 0.4 OM

Armor	F	RL	B	T	U
Body:	3/11	3/14	2/3W	3/8	4/25
Wings:	3/11	3/11	3/11	3/11	3/11
Wheels:	2/3	2/3	2/3	2/3	2/3
Cockpit:	0/+20	0/+30	0/+30	0/+20	0/+50

Cockpit armor for pilot only!



Consolidated PBY Catalina

Perhaps more than any fighter or bomber, this flying boat ruled the seas for the U.S., British, and Canadian navies (as the PBY, Catalina, or Canso respectively). A reconnaissance craft with outstanding endurance, the Catalina tracked down the *Bismarck* and countless Japanese warships, providing crucial intelligence to Allied naval planners.

U.S. and Canadian makers produced 3,290 of all Catalina variants, while the Soviets made an unknown number of them for their own use under license. The plane debuted in 1935 and entered common Allied service early in 1941.

As a rarity among flying boats, many Catalinas had the capacity to land on both ground and water. This considerably aided keeping the aircrafts maintained, though those without wheels could be brought ashore by crane or dolly for repair.

Within its bomb bay, the Catalina could carry mines, depth charges, or torpedoes for a variety of sea-warfare roles. Ideally, a Catalina taking on a full ordnance load would not top off its fuel tanks, as it became dangerously overburdened.

To take off from water, the Catalina needs assistance from headwinds ranging from 15 mph at full load to 5 mph with just a pilot and minimal fuel aboard. If caught in windless conditions, it can land but not take off again from the water. Like all flying boats and seaplanes, it performed best on very smooth seas. Strong waves could capsize it fairly easily.

The Catalina burns 90 gallons of aviation gas per hour at routine usage. Fuel and ammo cost $455.

PBY-5A Catalina

Subassemblies: Light Bomber chassis +4; Light Bomber wings with STOL option +4; two Medium Weapon pods 1-2 used as pontoons [Wings:U] +1; two Large Weapon pods 3-4 [Wings:F] +2; 3 retractable wheels +2.

Powertrain: two 895-kW aerial HP turbo/supercharged engine with two 895-kW props [Pods 3-4] and 105-gallon self-sealing tanks; 16,000-kWs batteries.

Occ: 9 CS Cargo: 17.3 Body, 14.2 Wings, 1 each Pods 3-4

Armor	F	RL	B	T	U
Body:	2/2	2/2	2/2	2/2	2/5
Wheels:	2/3	2/3	2/3	2/3	2/3
All Else:	2/2	2/2	2/2	2/2	2/2

Weaponry

2×Long Aircraft HMGs/M-2 [Body:F] (500 rounds each).*
2×Long Aircraft HMGs/M-2 [Body:R,L] (500 rounds each).
Aircraft LMG/M-1919A4 [Body:U] (500 rounds).
* Linked.

Equipment

Body: Large radio transmitter and very large receiver, IFF, navigation instruments, autopilot, 4,000-lb. bomb bay, watertight. *Wings:* 0.5-kW traversing gear for pontoons, watertight. *Pods 3-4:* Watertight.

Statistics

Size: 64'×104'×20' *Payload:* 6.8 tons *Lwt:* 17.8 tons
Volume: 1,080 *Maint:* 24 hours *Cost:* $87,100

HT: 7 HPs: 375 Body, 825 each Wing, 35 each Wheel, 75 each pontoon, 120 each engine pod.

aSpeed: 179 *aAccel:* 3 *aDecel:* 17 *aMR:* 4.25 *aSR:* 2
Stall Speed 57. See above for water-takeoff restrictions.
wSpeed: 20 *wAccel:* 3 *wDecel:* 10 (11.5) *wMR:* 0.1 *wSR:* 4
Draft 2.2. Flotation Rating 21.1 tons.
gSpeed: 139 *gAccel:* 7 *gDecel:* 10 *gMR:* 0.25 *gSR:* 3
Ground Pressure Extremely High. No Off-Road Speed.

Design Notes

The design purchased 1,749 gallons of fuel tanks, with aSpeed 171. Historical figures have been substituted for both.

The Catalina poses several design challenges:

Calculated maintenance interval is 21.4; this has been increased because the Catalina was celebrated for being able to stay aloft for 24 hours (which would require flying at closer to stall than top speed) or even longer.

The Catalina was very light for its size. For this reason, the distinctive "blister" windows on each side of its fuselage are treated as simply part of the body. They could just as easily have been ruled to be distinct subassemblies, but this would have added weight.

Likewise, the plane has a bow "turret," but the arc of fire for it is so limited that it can be modeled as guns mounted facing forward out of the body rather than as a distinct turret. Since the former course is lighter, it was the option selected.

Wing area is modified to a historic 1,400 sf, which would be a 27% increase over the stock surface area of the wing selected for it – but the Catalina had special wing pontoons that swiveled up to form the wing tips once in flight. With weight again in mind, one can rationalize that the pontoon's 100-sf surfaces can be added to wing area before adjusting toward the historical, making this a 17% adjustment and thus within the ideal limit of fudging vehicle statistics by no more than 20%. This does require that the pontoons be fitted with traversing gear, as for a turret, a special exception to the rule that wings may not mount turrets.

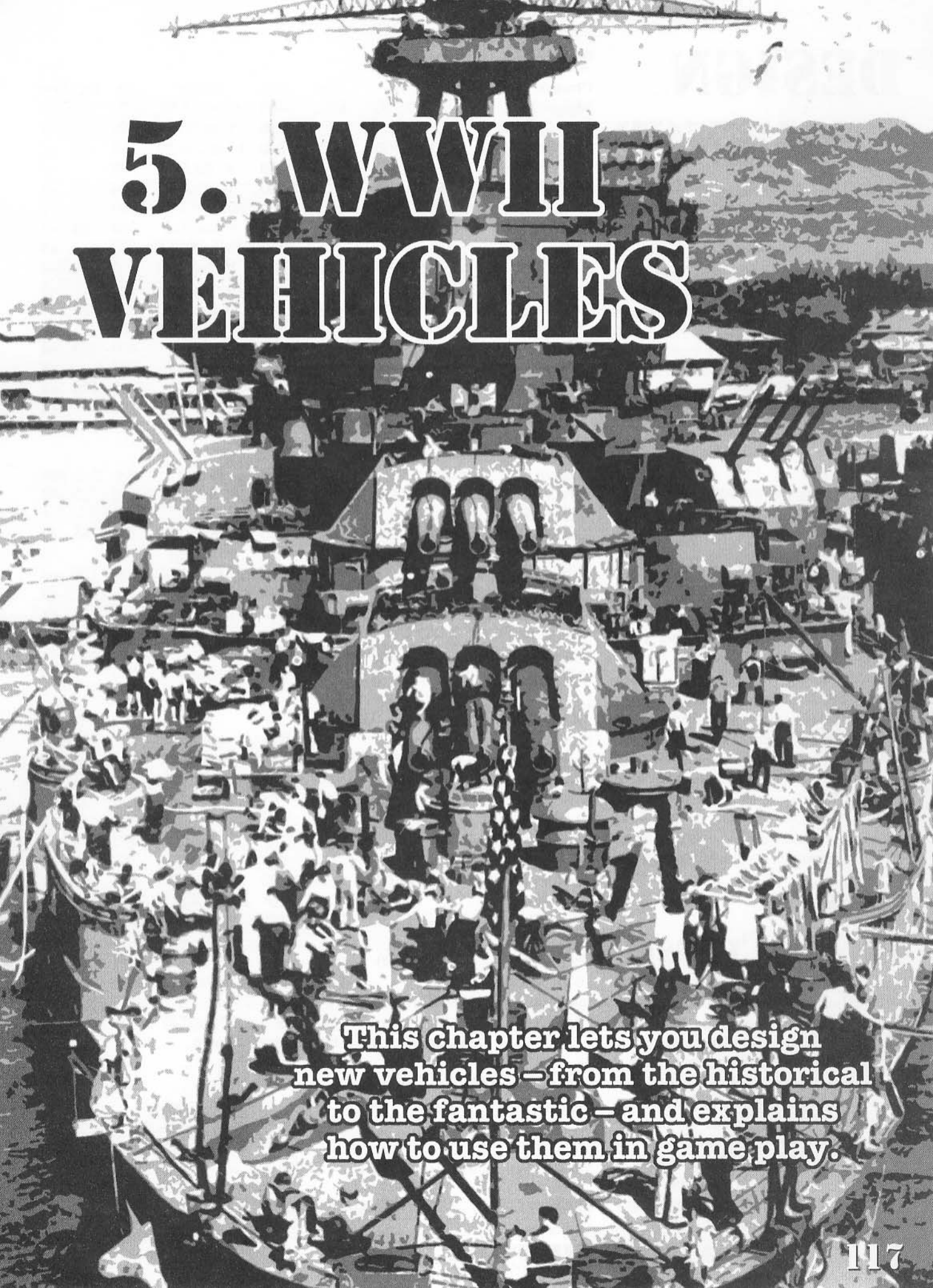
Technically, the plane should have both a retractable wheeled landing subassembly and a fixed-skid subassembly. To work within this design system, the Catalina is built with the retractable wheels, and the body's underside DR has been made relatively heavy to reflect that it routinely takes the stresses of landing on water.

Variants

The PBY-1 entered service in 1936 with 634-kW engines. The PBY-3 of 1937 upgraded to 746-kW engines. 1938's PBY-4 introduced the blister windows on the fuselage. The late-war PBY-6A mounted a "ground" (actually, sea surface) radar to enhance its sub- and ship-hunting capabilities.

The PBYs1-4 and all but the last 33 PBY-5s could not land on the ground. The landing gear was included on all 761 PBY-5As and later models. (The "A" stands for "amphibian.")

5. WWII VEHICLES



This chapter lets you design new vehicles – from the historical to the fantastic – and explains how to use them in game play.

DESIGN SEQUENCE

This system lets players create and use a wide variety of vehicles – both real and imagined – to fill their WWII campaign. It uses a simplified form of the process in ***GURPS Vehicles***. Those who want more detail should reference that book.

To design a vehicle, follow the six steps in this chapter and the instructions in each step. The designer will pick a type of chassis (*Step 1*), then add subassemblies such as turrets and conning towers (*Step 2*, p. 127). All of these have a given amount of space inside them that can be filled with equipment: power systems (*Step 3*, p. 128), weapons (*Step 4*, p. 130), other equipment (*Step 5*, p. 136), and occupant space (*Step 6*, p. 141). The vehicle's overall statistics are then calculated and the design becomes ready for play.

Units of Measure

These rules measure volume in VSPs (*v*ehicle *sp*aces) of 5 cubic feet each. Weight is measured in pounds. Cost is measured in WWII-era dollars. Surface area, or SA, is measured in square feet.

In a design system that extends from motorcycles to battleships, some standard abbreviations will come in handy. A capital K following a number means thousands; i.e., 17K lbs. means 17,000 lbs. A capital M means millions. Be sure to note these abbreviations when adding up the statistics of various components of your vehicle!

STEP 1: PICK A CHASSIS

The tables on these pages offer several historical chassis on which to begin building a vehicle. (For something stranger, see *Alternate Tech* on p.167.) The basic vehicle concept can determine the general category from which to select: Tanks use a tracked chassis, small airplanes use a fighter chassis, etc. This does not mean the designer cannot experiment – personnel carriers can be (and were) built on a tank chassis; a small bomber can use an ostensibly "fighter" chassis. The chassis names simply describe their most common usages.

Tracked Chassis

Chassis	VSPs	Wt.	Cost	HPs	Armor	SA	Top	Size
Midget Tank	8	1,700	$200	400	6 lbs./$3.50	70	20	+2
DR 25 Tracks				150	35 lbs./$3.50	50		+1
Very Small Tank	20	7,300	$750	800	11 lbs./$6.50	130	40	+2
DR 30 Tracks				270	65 lbs./$6	90		+2
Small Tank	30	10,100	$1,000	1,000	14 lbs./$9	170	55	+3
DR 35 Tracks				400	80 lbs./$8.50	120		+2
Medium Tank	55	15,700	$1,600	1,500	21 lbs./$12	250	80	+3
DR 40 Tracks				540	125 lbs./$12.50	180		+3
Large Tank	70	19,200	$2,000	1,800	25 lbs./$15	300	100	+4
DR 45 Tracks				600	145 lbs./$15	210		+3
Very Large Tank	95	24,700	$2,500	2,300	31 lbs./$18	370	120	+4
DR 50 Tracks				800	180 lbs./$18.50	260		+3
Immense Tank	120	29,600	$3,000	2,600	36 lbs./$21	430	140	+4
DR 55 Tracks				900	210 lbs./$21	300		+4
Colossal Tank	160	37,500	$3,800	3,000	43 lbs./$26	520	170	+4
DR 60 Tracks				1,100	260 lbs./$25	370		+4

Halftracked Chassis

Chassis	VSPs	Wt.	Cost	HPs	Armor	SA	Top	Size
Very Small Htrack.	10	1,300	$45	60	9 lbs./$1	80	25	+2
DR 10 Tracks				15	31 lbs./$3	45		+1
Small Halftrack	40	6,200	$180	300	23 lbs./$2.50	200	65	+3
DR 15 Tracks				85	75 lbs./$8	110		+2
Medium Halftrack	80	10,700	$360	490	38 lbs./$3.50	325	100	+4
DR 20 Tracks				135	126 lbs./$12.50	180		+3
Large Halftrack	100	12,900	$475	570	45 lbs./$4.50	380	125	+4
DR 25 Tracks				150	140 lbs./$14	200		+3
Very Lg. Htrack.	130	16,200	$650	675	55 lbs./$5	450	150	+4
DR 30 Tracks				180	170 lbs./$16	240		+3

Wheeled Chassis

Chassis	VSPs	Wt.	Cost	HPs	Armor	SA	Top	Size
Motorcycle	2	250	$13	20	3 lbs./$0.50	25	8	+0
1-2 Wheels				15*	7 lbs./$0.70	10		-1
Very Small Wh.	15	1,000	$50	85	13 lbs./$1	110	35	+2
3-4 Wheels				55*	24 lbs./$2.50	35		+1
Small Wheeled	30	1,600	$80	125	20 lbs./$2	170	55	+3
4-8 Wheels				90*	42 lbs./$4	60		+1
Medium Wheeled	125	4,100	$200	330	52 lbs./$5	440	145	+4
4-8 Wheels				220*	105 lbs./$10.50	150		+3
Large Wheeled	200	5,600	$275	450	70 lbs./$7	600	200	+4
6-10 Wheels				300*	140 lbs./$14	200		+3
Very Large Wh.	350	8,200	$410	650	102 lbs./$10	875	290	+5
6-18 Wheels				450*	210 lbs./$21	300		+4
Immense Wh.	800	14,200	$700	1,100	175 lbs./$17.5	1,500	500	+6
8-18 Wheels				780*	365 lbs./$36	520		+4

* Divided evenly among the number of wheels chosen.

Helicopter Chassis

Chassis	VSPs	Wt.	Cost	HPs	Armor	SA	Size
Small Helicopter	9	450	$1,200	56	6 lbs./$4	75	+2
Rotor				16	10 lbs./$6	20	-1
Medium Helicopter	15	670	$1,700	82	9 lbs./$6	110	+2
Rotor				22	15 lbs./$9	30	-1
Large Helicopter	23	1,500	$4,200	210	12 lbs./$7	140	+3
Rotor				60	20 lbs./$12	40	-1

Airplane Chassis*

Chassis	VSPs	Wt.	Cost	HPs	Armor	SA	Size
Recon. Plane	12	95	$300	15	9 lbs./$5	100	+2
Recon. Plane Wings	2.2	200	$810	25	70 lbs./$40	135	+2
Light Fighter	18	260	$900	50	11 lbs./$6.50	130	+3
Light Fighter Wings	3.5	540	2,200	70	90 lbs./$55	180	+2
Med. Fighter	25	730	$2,600	120	13 lbs./$8	160	+3
Med. Fighter Wings	4	630	2,500	80	105 lbs./$60	210	+2
Heavy Fighter	28	1,300	$4,800	260	14 lbs./$9	175	+3
Heavy Fighter Wings	5.5	1,400	$5,800	180	120 lbs./$72	240	+2
Light Fi.-Bomber	39	830	$3,000	165	18 lbs./$11	220	+3
Lt. Fi.-Bom. Wings	8.6	975	$3,900	120	160 lbs./$100	325	+3
Med. Fi.-Bomber	56	1,100	$3,800	210	23 lbs./$14	280	+4
Med. Fi.-Bom. Wings	13	2,600	$10,600	330	220 lbs./$135	440	+3
Heavy Fi.-Bomber	80	2,600	$9,600	525	30 lbs./$17	350	+4
Hvy. Fi.-Bom. Wings	21	3,600	$14,400	450	300 lbs./$180	600	+3
Light Bomber	135	1,900	$6,900	375	42 lbs./$25	500	+4
Light Bom. Wings	34	4,900	19,700	600	400 lbs./$250	820	+4
Heavy Bomber	230	5,300	$19,800	1,100	60 lbs./$36	720	+5
Heavy Bom. Wings	54	6,600	$26,400	825	550 lbs./$330	1,100	+4
Huge Bomber	380	7,300	$27,500	1,500	80 lbs./$50	1,000	+5
Large Bom. Wings	73	8,100	$32,400	1,000	675 lbs./$400	1,350	+4
Huge Transport	680	5,600	$20,600	1,100	125 lbs./$75	1,500	+6
Huge Tran. Wings	174	7,200	$28,800	900	1.2K lbs./$720	2,400	+5

* Purchase chassis and wings separately; need not use wings of same name.

Airship Chassis

Chassis	VSPs	Wt.	Cost	HPs	Armor	SA	Top	Size
Barrage Balloon	0	650	$305	50	50 lbs./$25	5K	–	+7
Small Blimp	0	2.1K	$980	160	160 lbs./$80	16K	–	+9
Medium Blimp	0	17K	$8K	1.3K	1,330 lbs./$665	133K	–	+10
Immense Blimp	0	55K	$26K	4.2K	4,200 lbs./$2,100	425K	–	+13
Small Zeppelin	5K	55K	$506K	15K	1,000 lbs./$500	100K	17K	+11
Med. Zeppelin	15K	94K	$860K	25K	1,700 lbs./$850	170K	28K	+12
Large Zeppelin	30K	143K	$1.3M	39K	2,600 lbs./$1,300	260K	43K	+12

Ship Chassis

Chassis	VSPs	Wt.	Cost	HPs	Armor	SA	Top	Size
Raft	8	70	$12	11	0.75 lbs./$0.40	75	–	+2
Small Boat	13	880	$70	90	12 lbs./$2.50	120	40	+2
Medium Boat	40	3.7K	$240	375	25 lbs./$5	250	80	+3
Large Boat	120	7.4K	$500	750	50 lbs./$10	500	150	+4
Light Cutter	300	23K	$1.6K	3K	100 lbs./$20	1K	300	+5
Medium Cutter	800	40K	$3K	5.4K	180 lbs./$36	1.8K	600	+6
Heavy Cutter	1.6K	67K	$5K	9K	300 lbs./$60	3K	1K	+6
Very Lt. Corvette	3K	135K	$15K	27K	450 lbs./$90	4.5K	1.5K	+7
Light Corvette	5K	180K	$20K	36K	600 lbs./$120	6K	2K	+7
Medium Corvette	8K	255K	$28K	51K	850 lbs./$170	8.5K	3K	+8
Heavy Corvette	11K	300K	$33K	60K	1K lbs./$200	10K	3K	+8
Light Destroyer	15K	375K	$41K	75K	1,250 lbs./$250	12.5K	4K	+8
Med. Destroyer	25K	540K	$59K	108K	1.8K lbs./$360	18K	6K	+9
Heavy Destroyer	42K	750K	$82K	150K	2.5K lbs./$500	25K	8K	+9
Light Cruiser	84K	1.2M	$131K	240K	4K lbs./$800	40K	13K	+10
Medium Cruiser	123K	1.6M	$170K	312K	5.2K lbs./$1K	52K	17K	+10
Heavy Cruiser	200K	2.2M	$236K	432K	7.2K lbs./$1.5K	72K	24K	+10
Light Battleship	307K	2.9M	$311K	570K	9.5K lbs./$2K	95K	31K	+11
Med. Battleship	430K	3.6M	$393K	720K	12K lbs./$2.4K	120K	40K	+11
Heavy Battleship	669K	4.8M	$524K	960K	16K lbs./$3.2K	160K	53K	+12

Each chassis includes the basic framework for the vehicle body as well as the appropriate motive subassembly – a set of wheels for a wheeled chassis, a set of wings and retractable small wheels (or skids) for a fighter or bomber chassis, etc. Since these are military vehicles, all chassis also include appropriate equipment for the vehicle to tow something or to be towed itself. Some combinations will be rare – while a helicopter may often be towed about the grounds of an airfield, it will rarely be called upon to tow something – but the equipment is there, just in case.

When a chassis is purchased, the body (almost always) has no armor on it yet, but any motive subassembly may already have historically average armor; see the chassis description. Realistically, this subassembly armor should not vary much for wheels and tracks – adding much more "armor" to the tread links of a tank chassis will make them too thick to perform as tread links, while making them much thinner would make them too fragile to do the job! Depending on the campaign style, the GM may rule that wheels and treads must use their default DR.

Key to Chassis Table Terms

Chassis is the chassis' name. This describes its most common usage.

VSPs is the internal space available to be filled with components (engines, fuel, weapons, etc.) in the chassis' body. Note that the overall vehicle will be substantially larger than this figure; see p. 137.

Wt. is the weight in pounds.

Cost is the price in WWII-era dollars.

HPs are hit points; i.e., a measure of how much damage the chassis or motive subassembly can take.

Armor is the weight and cost to place 1 point of DR on *one* of the body's six faces (*f*ront, *l*eft, *r*ight, *b*ack, *t*op, and *u*nderside). For the motive subassemblies, the weight and cost is for 1 point of DR covering the *entire* subassembly. If *removing* DR from a motive subassembly, simply lower chassis weight and cost by this amount per point removed.

SA is surface area, in square feet.

Top is the square footage of the top deck, if any. A top deck is like the deck of a ship; people can walk or ride upon it and cargo can be stacked there. Every person on the deck needs at least 9 square feet.

Size is the Size Modifier to target the body or motive subassembly.

Tracked Chassis

These include the body and two tracks (HPs are *per* track) that already are armored per the chassis description on p. 118.

Common options for tracked chassis include the following. Only *one* slope option may be taken. A real-life hull that had many "shot trap" angles and protuberances breaking up the slope of its face should be considered less sloped than it was.

Mild Slope: Gives the body front at least a 30° slope. After armor is purchased, increase front DR by 50%.

Medium Slope: Gives the body front at least a 60° slope. After armor is purchased, increase front DR by 100%.

Advanced Slope: Gives the body front a minimum 60° slope and both sides 30° slope. After armor is purchased, increase front DR by 100% and left and right DR by 50%.

Expensive Armor: Makes body armor lighter but costlier.

Midget Tank

These tiny tanks, such as the Goliath, historically carried explosives and were used for remote-controlled demolition.

Expensive Armor: Change armor to 5 lbs./$9.

Very Small Tank

Early light tanks, such as the Panzer I, were this small.

Mild Slope: Reduce VSPs to 18.

Expensive Armor: Change armor to 9 lbs./$17.

Small Tank

This is an early front-line tank, such as the Panzer II.

Mild Slope: Reduce VSPs to 27.

Medium Slope: Reduce VSPs to 24.

Expensive Armor: Change armor to 11 lbs./$23.

Medium Tank

This chassis would fit the Panzer III or IV.

Mild Slope: Reduce VSPs to 50.

Medium Slope: Reduce VSPs to 44.

Expensive Armor: Change armor to 17 lbs./$33.

Large Tank

This represents the U.S.-built Sherman series or other late-war standards.

Mild Slope: Reduce VSPs to 63.

Medium Slope: Reduce VSPs to 56.

Advanced Slope: Reduce VSPs to 43.

Expensive Armor: Change armor to 20 lbs./$40.

Very Large Tank

This represents large, late-war tanks such as the Tiger.

Mild Slope: Reduce VSPs to 86.

Medium Slope: Reduce VSPs to 76.

Advanced Slope: Reduce VSPs to 59.

Expensive Armor: Change armor to 25 lbs./$49.

Immense Tank

This chassis most often represents heavily sloped designs, such as the Soviet mainstay, the T-34.

Mild Slope: Reduce VSPs to 109.

Medium Slope: Reduce VSPs to 96.

Advanced Slope: Reduce VSPs to 75.

Expensive Armor: Change armor to 29 lbs./$57.

Colossal Tank

This is a monstrosity such as Hitler's pet project, the Maus.

Mild Slope: Reduce VSPs to 145.

Medium Slope: Reduce VSPs to 128.

Advanced Slope: Reduce VSPs to 100.

Expensive Armor: Change armor to 35 lbs./$69.

Halftracked Chassis

Halftracks combine one or two wheels or skis (the designer chooses which) connected to the steering with a pair of tracks connected to the powertrain. The tracks already are armored (see p. 118); the wheels or skis are PD 3, DR 5, with PD 2, DR 2 tires on the wheels. Common options include:

Mild Slope: Gives the body front a 30° slope. After armor is purchased, increase front DR by 50%.

Very Small Halftrack

This represents utility vehicles such as the Ketten-Krad, with only one front wheel, rather than two.

Small Halftrack

Small personnel carriers such as the SdKfz 250 use this.

Mild Slope: Reduce VSPs to 36.

Medium Halftrack

The U.S.-built personnel carriers fall into this category.

Mild Slope: Reduce VSPs to 72.

Large Halftrack

The SdKfz 8 or other artillery haulers use this.

Mild Slope: Reduce VSPs to 90.

Very Large Halftrack

This represents a SdKfz 9 or similar large artillery hauler.

Wheeled Chassis

Wheeled chassis come with heavy, off-road, or railway wheels (the designer selects one type) and usually a spare tire (GM decides). Wheels are PD 3, DR 5, with PD 2, DR 2 tires if heavy or offroad. Railway wheels can only travel on tracks.

Motorcycle

A small cart also might use this chassis.

Sidecar: A sidecar uses the same chassis as a motorcycle, except with one wheel, which must be the same type (offroad or heavy) as on the host motorcycle. The combination is

treated as one chassis with three wheels. Attaching or detaching a sidecar takes 30 seconds; the hitch costs $10.

Very Small Wheeled

This represents a Jeep, small car, or large "trike."

Civilian Car: This converts the chassis into a civilian model, with standard wheels, a lighter frame, and no proper towing gear. Weight becomes 480 lbs., cost $25, HPs 40. The four wheels each have 4 HP, with a total surface area of 23 sf.

Small Wheeled

This is an armored car or large civilian car.

Civilian Car: As for *Very Light Wheeled*, above. Weight becomes 750 lbs., cost $40, HPs 65. The four wheels each have 7 HP, with a total surface area of 37 sf.

Medium Wheeled

This represents a light truck.

Large Wheeled

This is a medium or large truck.

Cheap Wood Armor: Panel trucks (on all but the front facing) and railcars (on all facings) often use this flammable, inexpensive substitute armor for the body. Buy it at 110 lbs./$1.

Very Large Wheeled

This is a huge truck or standard European boxcar.

Cheap Wood Armor: See *Heavy Wheeled*, above. Buy it at 160 lbs./$1.50 per point of DR.

Immense Wheeled

This represents a very large passenger railcar.

Cheap Wood Armor: See *Heavy Wheeled*, above. Buy it at 275 lbs./$2.75 per point of DR.

Helicopter Chassis

These unstreamlined chassis can be used for helicopters, which use a powered rotor, or autogyros, which use an unpowered rotor with a standard aerial propeller providing the motive power. Pick which type upon purchase.

The rotor already has DR 10, but can receive additional armor. Each chassis also comes with a landing gear consisting of a pair of skids if a helicopter, or a fixed set of three small wheels for an autogyro; in either case, DR is 5.

While helicopters did not play a major role in WWII, they could have. The Germans intended to use a helicopter in their famous mountaintop "rescue" of Benito Mussolini.

Small Helicopter

Historically, most period helicopters were of this size. The landing gear has 5 HPs and 10 sf area, and is targeted at -1.

Medium Helicopter

This is a very large era copter, such as late U.S. models. The landing gear has 8 HPs and 15 sf area, and is targeted at +0.

Large Helicopter

This heavy, large craft isn't historical, but would provide the frame for an early attack craft. The landing gear has 20 HPs and 20 sf area, and is targeted at +0.

Airplane Chassis

Airplane chassis include a body with fair streamlining and a PD 2, DR 3 landing subassembly. The designer may designate this as wheels (usually three) or skids (usually one for a flying boat, two for a seaplane, or three for a skiplane). By default, this subassembly is retractable, but see *Fixed Strut*, below.

Listed with each chassis is an appropriate pair of wings. The designer may use these, or swap them for another set of wings on the list. All statistics are for the *pair* of wings, except HPs, which are given for *each* wing. The wings are unarmored; the listed armor covers *all* of *both* wings. If the landing gear is to be retractable, the designer must subtract the space it takes up in the wings before installing other components in them; see each chassis description for the gear VSPs.

Note that, to have a retractable landing gear, the chassis must use a set of wings large enough to hold its gear VSPs.

WWII's plane designers experimented with a *lot* of variations. Those available to most planes include:

Fixed Strut: The landing gear no longer retracts, saving space but decreasing speed. Do not subtract the gear VSPs from wing VSPs, *and* add the same amount of space to body VSPs. Can't combine with *Very Good Streamlining*. Most planes with skids take this option; except on skiplanes, a fixed-strut skid often doesn't particularly *look* like a distinct structure (as opposed to a particularly bulky belly). Treat it like one, anyway.

An airplane chassis may have *one* of the following options from among those listed for it:

No Streamlining: Cuts cost but decreases performance.

Good Streamlining: Improves top speed at increased cost.

Very Good Streamlining: Historically rarely seen, given the engineering challenge. Can't be combined with *Fixed Strut*.

Any chassis or set of wings may take either of:

Cloth Armor: Some WWII designs still used canvas rather than stressed aluminum for a skin. Divide the chassis or wing armor weight by 8 and cost by 10. Realistically, DR should be no more than 2.

Wooden Armor: Some designs used plywood skins. Multiply chassis or wing armor weight by 1.8 and cost by 0.15.

A set of wings may have *one* of the following listed for it:

High-Agility or STOL: These are distinct features that have the same impact on buying wings. High-agility wings make the plane more nimble. STOL (*s*hort *t*akeoff *or l*anding) wings reduce the amount of runway that the plane needs. Pick one of these two features – a wing may not have both – and apply the indicated changes.

Biplane: Converts wings into a two-deck assembly. Though obsolete, biplanes saw extensive service in WWII.

Any wing may have:

Folding Wings: Allows the wings to fold up, so that the plane takes up less space in storage. Adds 5% to wing weight (after any *High-Agility*, *STOL*, or *Biplane* options but before armor or components). Costs $2.50 per added pound.

Reconnaissance Plane

This represents a tiny observation aircraft, such as the many U.S. makes that were collectively called the "Grasshopper." Older biplanes would also use this lightly built chassis, combining it with *Cloth Armor* and a set of wings with the *Biplane* option.

The wheels or skids divide up 6 HP and have a 15-sf area at +0 to hit. Gear VSPs: 0.4.

No Streamlining: Chassis cost becomes $240. VSPs do not change.

Good Streamlining: Body VSPs become 11, and chassis cost $360.

Very Good Streamlining: Body VSPs become 10, and cost $470.

Light Fighter

This would represent a lightly built fighter, such as the Japanese A6M Zeke, or "Zero." Or it can be used for a larger reconnaissance craft, such as the German Fi 156 Storch. Many biplanes still in active service during WWII would use this chassis, combining it with a set of wings with the *Biplane* option and often (but not always) *Cloth Armor*.

The wheels or skids divide up 15 HP and have a 18-sf area at +0 to hit. Gear VSPs: 0.5.

No Streamlining: Body VSPs become 20, and chassis cost $760.

Good Streamlining: Body VSPs decrease to 16; cost rises to $1,200.

Very Good Streamlining: Body VSPs become 16, and cost $1,500.

Medium Fighter

This represents most WWII-era fighters, such as the German Bf 109 or the U.S. P-51 Mustang. Many of these planes will take advantage of *High-Agility* or *STOL* wings, particularly those based on carriers, but pure interceptors will usually have a standard set. Many biplanes are this large.

The wheels or skids divide up 36 HP and have a 25-sf area at +0 to hit. Gear VSPs: 0.7.

No Streamlining: Body VSPs become 27, cost $2,200.

Good Streamlining: Body VSPs become 23, cost $3,200.

Very Good Streamlining: Body VSPs 22, cost $4,300.

Heavy Fighter

This frame can represent a really large and rugged pure fighter, such as the F-4U Corsair, or a small ground-attack craft such as the Junkers 87 dive bomber. This will rarely be a good chassis upon which to model a historical biplane – it's built using the latest technology and lots of metal to take punishment – but an original concept certainly could use it.

The wheels or skids divide up 72 HP and have a 24-sf area at +0 to hit. Gear VSPs: 0.8.

No Streamlining: Body VSPs 31, chassis cost $4,000.

Good Streamlining: Body VSPs 26; cost $6,000.

Very Good Streamlining: Body VSPs 25, cost $8,000.

Light Fighter-Bomber

This relatively light frame represents a small hybrid vehicle, able to dogfight other planes – often quite well – but also

Airplane Wings Options

The airplane-chassis descriptions only give options for the chassis itself. The wings that go by the same name are those most likely to be attached to that chassis, but they are distinct components. Therefore, options for them are listed separately here. The descriptions of these options are on p. 119.

Wings Cost

Regardless of which wing is selected, multiply its base cost before armor and components by 0.83 if the chassis has no streamlining, 1.25 if the chassis has good streamlining, or 1.67 if it has very good streamlining.

Wing	Wt.	Cost	HPs	Armor	SA
Reconnaisance Wings					
High-Agility or STOL	270	$1,100	35	90 lbs./$50	180
Biplane	400	$1,600	50	135 lbs./$80	270
Light Fighter Wings					
High-Agility or STOL	720	$2,900	90	120 lbs./$75	240
Biplane	1,100	$4,300	135	180 lbs./$100	360
Medium Fighter Wings					
High-Agility or STOL	840	$3,400	105	140 lbs./$85	280
Biplane	1,300	$5,000	160	210 lbs./$125	420
Heavy Fighter Wings					
High-Agility or STOL	1,900	$7,700	240	160 lbs./$95	320
Biplane	2,900	$11,000	360	240 lbs./$145	480
Light Fighter-Bomber Wings					
High-Agility or STOL	1,300	$5,100	160	215 lbs./$130	430
Biplane	2,000	$7,800	250	325 lbs./$195	650
Medium Fighter-Bomber Wings					
High-Agility or STOL	3,500	$13,900	440	290 lbs./$175	580
Biplane	5,300	$21,100	660	440 lbs./$265	880
Heavy Fighter-Bomber Wings					
High-Agility or STOL	4,800	$19,200	600	400 lbs./$240	800
Biplane	7,200	$28,800	900	600 lbs./$360	1,200
Light Bomber Wings					
High-Agility or STOL	6,600	$26,500	825	550 lbs./$330	1,100
Biplane	9,800	$39,400	1,200	800 lbs./$500	1,640
Heavy Bomber Wings					
High-Agility or STOL	8,800	$35K	1,100	730 lbs./$450	1,460
Biplane	13,200	$53K	1,650	1,100 lbs./$650	2,200
Huge Bomber Wings					
High-Agility or STOL	10,800	$43,200	1,350	900 lbs./$550	1,800
Biplane	16,200	$64,800	2,000	1,350 lbs./$800	2,700
Huge Transport Wings					
High-Agility or STOL	9,600	$38.4K	1,200	1,600 lbs./$950	3,200
Biplane	14,400	$57.6K	1,800	2,400 lbs./$1,500	4,800

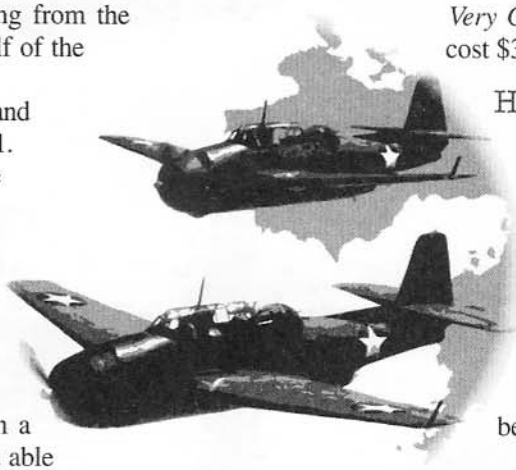
capable of carrying a significant number of ground-attack weapons. An example would be the twin-tailed U.S. P-38 Lightning, which would be built in this system as a standard plane using two engine pods from p. 127 – the tail booms are simply the rear half of the body extending from the engine pods rather than from the front half of the body as is usual.

The wheels or skids divide up 45 HP and have a 30-sf area at +1 to hit. Gear VSPs: 1.1.

No Streamlining: Body VSPs become 43, chassis cost $2,500.

Good Streamlining: Body VSPs become 35, chassis cost $3,800.

Very Good Streamlining: Body VSPs become 34, cost $5,100.



Medium Fighter-Bomber

Planes this size were still tried out in a pure fighter role, but historically were not able to compete with smaller, more specialized designs. They still could do well at night-fighting, where bulky electronics and carrying enough firepower to ensure a one-shot kill counted far more than agility. The German Me 110 is one example. A chassis this large or larger would not represent a historical biplane, though of course an original design might be as large as the designer wishes.

The wheels or skids divide up 60 HP and have a 40-sf area at +1 to hit. Gear VSPs: 1.6.

No Streamlining: Body VSPs 61, chassis cost $3,200.

Good Streamlining: Body VSPs 51, cost $4,900.

Very Good Streamlining: Body VSPs 49, cost $6,500.

Heavy Fighter-Bomber

A larger fighter-bomber or small pure bomber would use this very sturdy chassis and set of wings; examples include the German Do 217 and Ju 88. A small transport also could be based upon it.

The wheels or skids divide up 150 HP and have a 50-sf area at +1 to hit. Gear VSPs: 2.3.

No Streamlining: Body VSPs 88, chassis cost $8,000.

Good Streamlining: Body VSPs 73, cost $12,000.

Very Good Streamlining: Body VSPs 70, cost $16,000.

Light Bomber

This chassis is a heavy bomber – it's only "light" in comparison to a good number of its historical brethren in the pure bomber class. The British Vickers Wellington would be an example. Many transports would use this chassis, as well.

The wheels or skids divide up 105 HP and have a 70-sf area at +2 to hit. Gear VSPs: 3.8.

No Streamlining: Body VSPs 148, chassis cost $5,700.

Good Streamlining: Body VSPs 123, cost $8,700.

Very Good Streamlining: Body VSPs 118, cost $11,500.

Heavy Bomber

This very sturdy chassis would represent the large bombers that pummeled the Axis homelands, including the U.S. B-17 and the British Short Stirling. Fairly large transports, some of them converted from bombers, also would be built on this.

The wheels or skids divide up 300 HP and have a 100-sf area at +2 to hit. Gear VSPs: 6.5.

No Streamlining: Body VSPs 253, chassis cost $16,500.

Good Streamlining: Body VSPs 211, cost $24,700.

Very Good Streamlining: Body VSPs 202, cost $33,000.

Huge Bomber

This very sturdy and large chassis would be the basis for a strategic bomber such as the U.S. B-29 Superfortress or a larger transport such as the German Ju 90.

The wheels or skids divide up 420 HP and have a 140-sf area at +3 to hit. Gear VSPs: 11.

No Streamlining: Body VSPs become 419, chassis cost $23,000.

Good Streamlining: Body VSPs become 349, chassis cost $34,400.

Very Good Streamlining: Body VSPs become 335, and chassis cost $45,800.

Huge Transport

This represents a monstrous but relatively lightly built aircraft such as the German Me 323 transport.

The wheels or skids divide up 300 HP and have a 200-sf area at +3 to hit. (While most historical planes of any size kept the standard three-wheel landing-gear design, the Me 323 actually mounted 10 landing wheels in a fixed strut. Designers should remember to feel free to allocate any number of wheels or skids on original designs.) Gear VSPs: 20.

No Streamlining: Body VSPs 750, chassis cost $17,200.

Good Streamlining: Body VSPs 625, cost $25,700.

Very Good Streamlining: Body VSPs 600, cost $34,200.

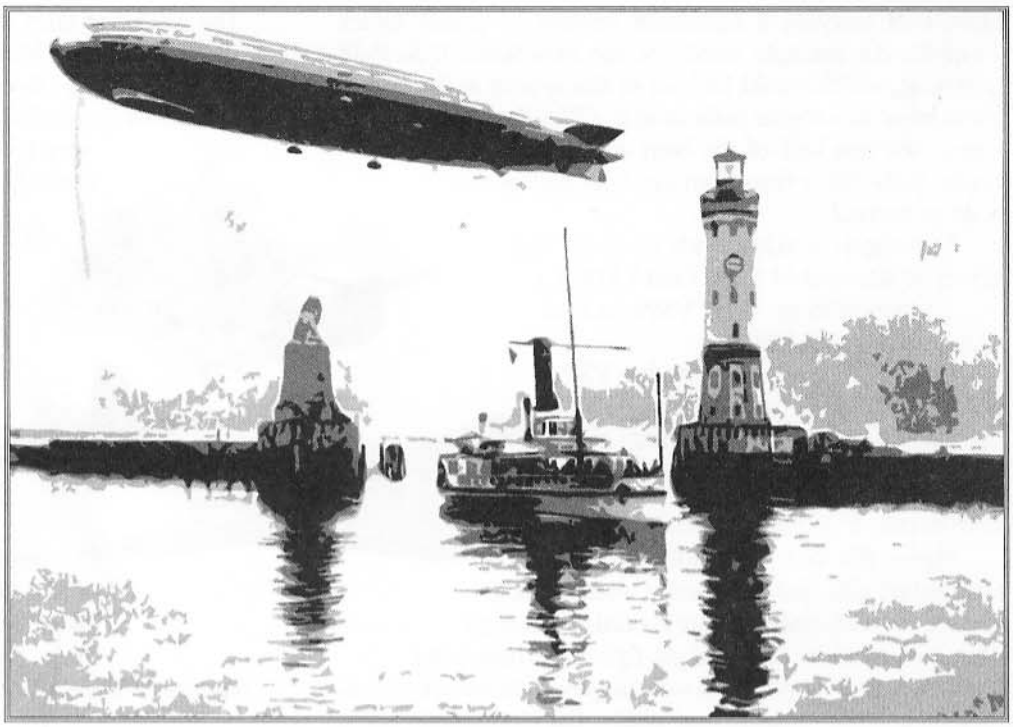
Aerial Accuracy

Designers should feel free to modify the surface area of any set of wings by as much as 20% to precisely recreate historical figures or fine-tune performance.

Also, even with the *Aerial* option for engines on p. 128, historical airplane engines often performed exceedingly well for their weight. This can be replicated by modeling the engine as a more advanced type than it really was. While it's best not to model a plane that used regular gasoline (87 or 90 octane) with an engine that uses aviation gas (100 or higher octane), an engine that wasn't turbo- or supercharged could be modeled as such, especially the surprisingly efficient radials of the period.

Finally, original concepts should not overly abuse the dramatic advantages of *Very Good Streamlining*. This sophisticated shaping doesn't add as much to chassis cost as it does to performance. That's realistic. The real cost of streamlining a complex aerial vehicle came in the design and testing stages. Very good streamlining for planes should require considerable effort *prior* to production.

Airship Chassis



These use hydrogen or helium to generate lift. Blimps are a single gasbag with no frame. Zeppelins use a very light frame wrapped in a sealed canvas skin holding several gas cells. Both have very good streamlining.

The Germans used hydrogen-filled zeppelins to bomb England in WWI, and as passenger liners in the 1930s. These very flammable vessels fell out of favor after the '37 *Hindenburg* disaster. Helium doesn't burn, but the United States controlled the world's supply. After some zeppelin disasters of its own, the U.S. Navy turned to blimps, used (very effectively) to hunt Axis submarines. Stuck with hydrogen, no one else used airships in combat, though the Nazis conducted pre-war reconnaissance with the *Graf Zeppelin II*. In an alternate WWII campaign, airships could play a larger role, especially if other nations have access to helium supplies.

Airships *must* have at least DR 1 on all six faces. Unlike most chassis, they come prearmored, with a nonrigid DR 2. Metal armor can be used; multiply weight by 6.7, cost by 27.

The listed VSPs count only *empty* space within the airship available for components. Historically, an underside superstructure (see p. 127) housed crew stations, quarters, etc. on all blimps and many zeppelins. Blimps may house subassemblies *only* on their underside. Engines were usually mounted in pods, which were attached to the superstructure on blimps. Airships usually require *riggers*, crew members who tend the gas cells and trim of the vehicle. They also require ballast, usually water carried in ultralight tanks (see p. 129); they alternately dump lifting gas and ballast to maintain trim. Each chassis description lists ballast loss per day in *clear* weather – usages are 2-100 times higher in storms – and rigger requirements.

Hydrogen costs $3.50 and helium $5 per 100 VSPs. Airship chassis prices do *not* include their initial lifting-gas load. For each pound of ballast used, $0.11 of hydrogen or $0.16 of helium is also dumped; it must be replaced for the next flight.

Barrage Balloon

This tiny blimp usually hoisted an AA drag cable (p. 136), with a special patch that released the 3,800 VSPs of gas when a plane hit the cable, bringing the balloon back for retrieval. Beyond its own weight, it can lift 633 lbs. of payload when filled with hydrogen or 537 lbs. with helium. Uses no ballast if tethered, or 4 lbs. per day if put into flight. Needs no riggers.

Small Blimp

This represents a 1930s Goodyear or U.S. Navy model, with 22,400 VSPs of gas. Beyond its own weight, the chassis can lift 2.7 tons when filled with hydrogen or 2.4 tons with helium. It needs no riggers. Uses 23 lbs. of ballast per day.

Medium Blimp

This is a large blimp by historical standards, such as the U.S. Navy's sub-hunting K ship, with 105,400 VSPs of gas. Beyond its own weight, the chassis can lift 9 tons when filled with hydrogen or 7.8 tons with helium. It needs two riggers. Uses 106 lbs. of ballast per day.

Immense Blimp

This isn't historical, but represents an early version of the superblimps being planned today, with 3 million VSPs of gas! Beyond its own weight, the chassis can lift 479 tons when filled with hydrogen or 441 tons with helium. It needs 75 riggers. Uses 1.5 *tons* of ballast per day.

Small Zeppelin

This represents a typical WWI airship, with 360,000 VSPs of gas. Beyond its own weight, the chassis can lift 33 tons when filled with hydrogen or 28 tons with helium. It employs nine riggers. Uses 360 lbs. of ballast per day.

Medium Zeppelin

This represents the classic airships of the 1930s, such as the *Graf Zeppelin*, with 740,000 VSPs of gas. These can carry several (very affluent) passengers around the world. Beyond its own weight, the chassis can lift 78 tons when filled with hydrogen or 69 tons with helium. It requires 18 riggers. Uses 740 lbs. of ballast per day.

Large Zeppelin

This represents the largest airships ever built, such as the *USS Akron*, *Hindenburg*, or *Graf Zeppelin II*, with 1.4 million VSPs of gas. Properly designed, these could carry 150 passengers in somewhat cramped luxury. Beyond its own weight, the chassis can lift 165 tons when filled with hydrogen or 147 tons with helium. It needs 35 riggers. Uses 1,400 lbs. of ballast per day.

Ship Chassis

The boats and ships on the table on p. 119 consist of a steel frame with the fine hydrodynamic lines of a classic WWII warship. The body is totally compartmentalized. Adding armor to the bottom and all four sides will also make it waterproof. A ship chassis may incorporate any *one* of the following options listed for it:

Mediocre Lines: This chassis has stocky but somewhat hydrodynamic lines, as on bulk transports, with no compartmentalization of any significance.

Average Lines: Patrol boats and ocean liners typically possess these somewhat reduced hydrodynamics. This option also reduces compartmentalization from total to heavy.

Wooden: This changes the chassis into an all-wooden construction, with wooden armor. Wood burns, but it's cheap. This option also incorporates *Average Lines*, above.

Sub: This submarine chassis retains the fine lines of a ship, while adding the ability to dive underwater.

To create aircraft carriers, see *Flight Decks* on p. 138.

Raft

The raft chassis actually is a complete vessel, rather than just the skeleton of one. It has mediocre lines and DR 2 nonrigid armor on the bottom and all four sides. (Realistically, this armor should not be increased much.) It can be fitted with an engine, or the occupants (up to four) can use paddles.

Small Boat

Given the *Wooden* option, this would represent the sort of small rowboat found around docks and lakes everywhere.

Mediocre Lines: VSPs are 15, weight 740 lbs., cost $55.

Average Lines: VSPs are 14, weight 810 lbs., and cost $63.

Wooden: VSPs become 14, weight 1,100 lbs., and cost $47. Armor becomes 18 lbs./$1.

Sub: VSPs become 10, weight 1,750 lbs., and cost $90.

Large Raft: Changes design to larger version of *Raft*, above – 160 lbs., $37, 18 HPs, nonrigid armor is 1.2 lbs./$0.6.

Medium Boat

This would represent a small lifeboat, or the sort of boat often carried by larger ships for communications with the shore.

Mediocre Lines: VSPs become 47, weight 3,100 lbs., and cost $180.

Average Lines: VSPs become 43, weight 3,400 lbs., and cost $210.

Wooden: VSPs become 43, weight 4,500 lbs., and cost $150. Armor becomes 37 lbs./$2.

Sub: VSPs become 32, weight 7,300 lbs., and cost $375.

Large Boat

A typical lifeboat would be built on this chassis, as would many beach-assault crafts, often using the *Wooden* option.

Mediocre Lines: VSPs become 140, weight 6,200 lbs., and cost $360.

Average Lines: VSPs become 130, weight 6,750 lbs., and cost $425.

Wooden: VSPs become 130, weight 9,000 lbs., and cost $300. Armor becomes 75 lbs./$4.

Sub: VSPs become 96, weight 14,500 lbs., and cost $750.

Light Cutter

Small coastal craft such as the U.S. PT boats use this chassis, often with the *Wooden* option.

Mediocre Lines: VSPs become 350, weight 19K lbs., and cost $1.3K.

Average Lines: VSPs become 325, weight 21K lbs., and cost $1.5K.

Wooden: VSPs become 325, weight 27K lbs., and cost $900. Armor becomes 150 lbs./$7.50.

Sub: VSPs become 240, weight 44K lbs., and cost $2.8K.

Medium Cutter

Larger torpedo boats, such as those favored by the British, would use this chassis, which is about as large as can be mass-produced with the *Wooden* option.

Mediocre Lines: VSPs become 945, weight 34K lbs., and cost $2.3K.

Average Lines: VSPs become 865, weight 37K lbs., and cost $2.6K.

Wooden: VSPs become 865, weight 49K lbs., and cost $1.6K. Armor becomes 270 lbs./$14.

Sub: VSPs become 640, weight 79K lbs., and cost $5K.

Heavy Cutter

This chassis represents the heaviest sorts of coastal craft, including many German classes.

Mediocre Lines: VSPs become 1,890, weight 56K lbs., and cost $3.8K.

Average Lines: VSPs become 1,730, weight 62K lbs., and cost $4.3K.

Sub: VSPs become 1,280, weight 132K lbs., and cost $8.3K.

Very Light Corvette

This chassis actually isn't historically common – boats meant to stick close to shore tended to be smaller, while ships meant to routinely cross deep water were substantially larger. Historically, all corvettes were a rough ride in any sort of foul weather. The crew could depend on staying constantly wet.

Mediocre Lines: VSPs become 3.6K, weight 114K lbs., and cost $13K.

Average Lines: VSPs become 3.3K, weight 125K lbs., and cost $14K.

Sub: VSPs become 2.4K, weight 265K lbs., and cost $28K.

Light Corvette

This represents a small escort, really too small for the Atlantic. The Italians built some of this size for the Mediterranean. A small submarine also uses this chassis.

Mediocre Lines: VSPs become 5.9K, weight 152K lbs., and cost $17K.

Average Lines: VSPs become 5.4K, weight 166K lbs., and cost $19K.

Sub: VSPs become 4K, weight 353K lbs., and cost $37K.

Medium Corvette

This would be a small convoy-escort vessel or typical sub.

Mediocre Lines: VSPs become 9.4K, weight 215K lbs., and cost $24K.

Average Lines: VSPs become 8.6K, weight 235K lbs., and cost $26K.

Sub: VSPs become 6.4K, weight 500K lbs., and cost $52K.

Heavy Corvette

This would be a typical convoy escort found in the Atlantic.

Mediocre Lines: VSPs become 13K, weight 252K lbs., and cost $28K.

Average Lines: VSPs become 11.9K, weight 276K lbs., and cost $31K.

Sub: VSPs become 8.8K, weight 588K lbs., and cost $61K.

Light Destroyer

Warships of this size generally specialized in just one of the traditional destroyer roles. A rather large historical submarine also would use this chassis.

Mediocre Lines: VSPs become 17.7K, weight 315K lbs., and cost $35K.

Average Lines: VSPs become 16.2K, weight 345K lbs., and cost $38K.

Sub: VSPs become 12K, weight 735K lbs., and cost $76K.

Medium Destroyer

A destroyer of this size usually mounts fairly well-rounded armament: torpedoes to attack capital ships, depth charges to assault submarines, medium-bore cannons for shore support, and antiaircraft guns for defending itself and friendly capital ships. The medium destroyer won't be especially good at any of these roles unless it specializes.

Mediocre Lines: VSPs become 29K, weight 454K lbs., and cost $21K.

Average Lines: VSPs become 27K, weight 497K lbs., and cost $55K.

Sub: VSPs become 20K, weight 1,058K lbs., and cost $109K.

Heavy Destroyer

Destroyers of this size mounted all or most of the weapons described under *Medium Destroyer*, in quantities sufficient to make them a real risk to all adversaries. Also, a very small escort carrier (used to screen large convoys or small naval operations, or to ferry planes to war theaters) used this chassis.

Mediocre Lines: VSPs become 49K, weight 630K lbs., and cost $70K.

Average Lines: VSPs become 45K, weight 690K lbs., and cost $76K.

Sub: VSPs become 34K, weight 1.5M lbs., and cost $152K.

Light Cruiser

Light cruisers filled a valuable niche in the period's naval combat, given their ability to dominate destroyers with their larger-bore guns, but had to be wary of encountering any sort of larger cruiser. Also, an escort carrier of average size would use this chassis.

Mediocre Lines: VSPs become 99K, weight 1M lbs., and cost $112K.

Average Lines: VSPs become 91K, weight 1.1M lbs., and cost $122K.

Sub: VSPs become 67K, weight 2.4M lbs., and cost $242K.

Medium Cruiser

Most WWII cruisers use this chassis, as would a fairly large escort carrier.

Mediocre Lines: VSPs become 145K, weight 1.3M lbs., and cost $145K.

Average Lines: VSPs become 133K, weight 1.5M lbs., and cost $158K.

Sub: VSPs become 98K, weight 3.1M lbs., and cost $315K.

Heavy Cruiser

The usual heavy cruiser can truly hold its own in most naval engagements, fencing with a larger capital ship or overwhelming destroyers.

Mediocre Lines: VSPs become 236K, weight 1.9M lbs., and cost $201K.

Average Lines: VSPs become 216K, weight 2M lbs., and cost $219K.

Sub: VSPs become 160K, weight 4.3M lbs., and cost $436K.

Light Battleship

This would represent an outdated WWI-era battleship, a small fleet carrier, or a large battle cruiser. As a naval design, the battle cruiser was supposed to combine the firepower of a battleship with the speed of a cruiser. Combining these elements required skimping on armor, which often proved fatal.

Mediocre Lines: VSPs become 363K, weight 2.4M lbs., and cost $265K.

Average Lines: VSPs become 333K, weight 2.7M lbs., and cost $288K.

Sub: VSPs become 246K, weight 5.6M lbs., and cost $575K.

Battleship

This would form the basis for a typical battleship or fleet carrier of the period.

Mediocre Lines: VSPs become 509K, weight 3.1M lbs., and cost $335K.

Average Lines: VSPs become 466K, weight 3.4M lbs., and cost $364K.

Sub: VSPs become 344K, weight 7.1M lbs., and cost $726K.

Heavy Battleship

These are the largest historical warships, such as the *USS Iowa* or *IJN Yamato*, monstrous vessels capable of carrying 9-16 of the largest naval guns.

Mediocre Lines: VSPs become 790K, weight 4.1M lbs., and cost $447K.

Average Lines: VSPs become 725K, weight 4.5M lbs., and cost $485K.

Sub: VSPs become 535K, weight 9.5M lbs., and cost $968K.

Step 2: Subassemblies

Many vehicles have subassemblies attached to their body or to a larger subassembly. A subassembly has five facings, not six; the facing attached to its host structure is ignored.

A subassembly with no armor, or armor on just one facing, is an *open mount*. Armoring two or more facings makes it a *superstructure*. An open mount or superstructure attached to an aircraft wing is called a *pod*, instead.

Superstructures and open mounts, but not pods, may be designed to rotate. This makes them a *turret* or a *rotating open mount*, respectively. The rotation may be limited (180°) or full (360°). Empty rotation space is required, as shown on the table. These VSPs must be in the *supporting structure* of a turret, but a rotating open mount takes them from its *own* VSPs instead.

For each rotating subassembly, keep track of weight separately: 1 ton of subassembly will traverse 6° per second for each 0.2 kW powering the process. Each crew station in the subassembly may include a handwheel for manual rotation; each cranking crewman contributes 0.02 × ST in kW to traverse rate. Hydraulics or electric motors also may be installed for power traverse. These weigh 25 lbs., cost $250 and take up 0.1 VSPs for every 0.5 kW of engine power that they apply to traverse. An incline or low engine rpms can *greatly* affect traverse speed.

Placement

Vehicle bodies, superstructures, and turrets may support smaller subassemblies freely; subassemblies other than turrets take up no space within the supporting structure. Open mounts and pods may not support other subassemblies. Pods must be in matched sets on each wing. Aircraft with Good or Very Good streamlining may not use open mounts or unarmored pods.

Designate the facing of the supporting structure upon which the subassembly will be placed. Often, this is the top facing.

VSPs of all subassemblies may not exceed the body's VSPs.

Options

Superstructures and turrets may take *Mild*, *Medium*, or *Advanced Slope*, or *Expensive Armor*, as described on p. 120.

Subassemblies

Subassembly	VSPs at Given Slope				Rotate Space		Wt.	Cost	HPs	Armor	Exp. Armor	SA	Size
	None	Mild	Med.	Adv.	Limited	Full							
Mini	1	0.9	0.8	0.6	0.1	0.2	160	20	30	2.4 lbs./$0.50	2 lbs./$1.25	20	+0
Small Weapon	2	1.8	1.6	1.2	0.2	0.4	250	30	45	3.6 lbs./$0.75	3 lbs./$2	30	+0
Med. Weapon	5	4.5	4	3.1	0.5	1	420	50	75	6 lbs./$1.25	5 lbs./$3	50	+1
Large Weapon	10	9	8	6.2	1	2	660	85	120	9.6 lbs./$2	8 lbs./$5	80	+2
Small AFV	15	13	12	9.3	1.5	3	830	105	150	12 lbs./$2.50	10 lbs./$6	100	+2
Medium AFV	20	18	16	12	1.5	3	1K	135	200	16 lbs./$3	13 lbs./$8	130	+2
Large AFV	25	22	20	15	2.5	5	1.3K	150	225	18 lbs./$3.50	15 lbs./$9	150	+3
Small TD	35	31	28	21	3.5	7	1.5K	200	285	23 lbs./$4.50	19 lbs./$12	190	+3
Medium TD	50	45	40	31	5	10	2K	240	360	29 lbs./$6	24 lbs./$15	240	+3
Large TD	75	68	60	46	7.5	15	2.5K	310	450	36 lbs./$7	30 lbs./$18	300	+4
Small Second.	100	90	80	62	10	20	3.1K	380	560	45 lbs./$9	38 lbs./$22	375	+4
Med. Secondary	150	136	120	93	15	30	4.2K	510	750	60 lbs./$12	50 lbs./$30	500	+4
Large Second.	200	181	160	125	20	40	5K	610	900	72 lbs./$14.5	60 lbs./$35	600	+4
Med. Conning	300	272	240	187	30	60	6.5K	800	1.2K	94 lbs./$18	78 lbs./$45	780	+5
Large Conning	400	363	320	250	40	80	8.3K	1K	1.5K	120 lbs./$24	100 lbs./$60	1K	+5
Small Naval	600	545	480	375	60	120	10K	1.3K	1.9K	140 lbs./$29	120 lbs./$75	1.2K	+5
Med. Naval	800	727	640	500	80	160	13K	1.5K	2.3K	180 lbs./$36	150 lbs./$90	1.5K	+6
Large Naval	1.2K	1K	960	750	120	240	16K	2K	3K	240 lbs./$48	200 lbs./$120	2K	+6
Huge Naval	2K	1.8K	1.6K	1.2K	200	400	23K	2.9K	4.2K	336 lbs./$67	280 lbs./$170	2.8K	+6
Small Ship	4K	3.6K	3.2K	2.5K	400	800	37K	4.5K	6.6K	530 lbs./$100	440 lbs./$265	4.4K	+7
Medium Ship	5K	4.5K	4K	3.1K	500	1K	42K	5.2K	7.6K	615 lbs./$120	510 lbs./$310	5.1K	+7
Large Ship	6K	5.4K	4.8K	3.7K	600	1.2K	48K	5.9K	8.7K	700 lbs./$140	580 lbs./$350	5.8K	+7
Small Capital	10K	9K	8K	6.2K	1K	2K	67K	8.3K	12K	970 lbs./$195	810 lbs./$490	8.1K	+8
Med. Capital	20K	18K	16K	12K	2K	4K	108K	13K	20K	1.6K lbs./$300	1.3K lbs./$780	13K	+8
Large Capital	30K	27K	24K	18K	3K	6K	141K	17K	25K	2K lbs./$400	1.7K lbs./$1K	17K	+9

Key to Subassemblies Table Terms

Subassembly is a name describing general size. The name in no way limits what sort of vehicle may use the subassembly, or the intended purpose. It is simply descriptive.

VSPs at Given Slope is the space available for components, varying per the slope option (if any) chosen for the subassembly.

Rotate Space is the number of VSPs that must be empty within the supporting structure for turrets – or in the subassembly itself for rotating open mounts.

Wt. is with no armor; *double* the weight if on a submarine.

Cost is multiplied by *all* of these chassis features: ×2 if a submarine, ×10 if it has wings or rotors, ×1.2 if fair streamlining, ×1.5 if good streamlining, or ×2 if very good streamlining.

HPs are hit points.

Armor is the weight and cost to place 1 point of DR on *one* of the subassembly's *five* faces (see above). *Expensive Armor* can be substituted at greater cost but less weight.

SA is the surface area, in square feet.

Size is the bonus to target or detect the subassembly.

Step 3: Add Powertrain

Vehicles that will rely upon another source for motive power – such as trailers, towed artillery, and gliders – and have no power-using components may skip this step, but most vehicles will need something to propel them. Options include:

Powertrains

A powertrain is one or more steam-turbine or internal-combustion engines connected to one or more transmissions.

Engines

Engines are designed based on their kilowatts of power output. Output should equal the power input of the transmission(s) designed below, plus perhaps spare output for power-using gear from Step 5. Some vehicles use multiple engines, which weigh and cost a bit more than one larger engine.

	— *Weight* —			
Engine Type	***per kW***	***Base***	***Cost***	***Fuel***
Standard gas	6	30	$0.2	0.045G
Turbo or supercharged gas	4.5	20	$0.4	0.045G
High-performance gas	3	15	$0.8	0.05Av
Turbo or supercharged HP gas	2.5	12.5	$2	0.05Av
Steam turbine	25	500	$0.05	0.06D*
Marine diesel	18	60	$0.1	0.04D
Standard diesel	12	40	$0.2	0.04D
High-performance diesel	6	20	$0.6	0.045D

* May instead burn 0.008C.

Engine Type is the engine's general design. *Per kW* and *Base Weight* are used to figure the overall weight: Multiply the engine's output in kW by the *per kW* figure then add the *Base* weight to get overall weight. *Cost* is multiplied by overall weight. *Fuel* is consumption in gallons per hour for each kW of output. The fuel used is gas (G), aviation gas (Av), or diesel (D). Steam turbines may instead burn coal (C), for which consumption is measured in VSPs per hour.

Volume: For ground vehicles, divide weight by 125 to find each engine's volume in VSPs. This provides room for maintenance and minor repairs in the field from *outside* the vehicle. For airplanes and helicopters, divide weight by 250. This provides for no maintenance outside a proper repair facility. For water vehicles or airships, divide weight by 80. This provides room for all routine and minor repairs from inside the vehicle. In all cases, round *up* to the nearest tenth of a VSP.

Historical WWII engines ranged from 20-70 kW for cars, 50-100 kW for trucks, 100-500 kW for tanks, 900-1,200 kW for fighters, 1,700-7,200 kW total for large bombers, 300-5,000 kW for subs, and 25,000-160,000 kW for battleships.

Starting an engine with a battery (see p. 129) takes 4 seconds. Some designs forgo the battery. This requires hand-cranking the engine: roll vs. Driving or Mechanic taking 10 seconds per attempt, with penalties up to -4 for cold weather.

A diesel engine won't start at all if it has cooled to 20° F or below, nor will a gas engine at -20° F or below. Engines in weather this frigid can be pre-warmed by starting a fire beneath their oil pan, or packing them in straw to insulate them prior to cooling. Starting an engine takes 20 times longer if its temperature is within 20° of its won't-start limit.

Aerial: This replaces thick, heat-absorbing engine construction with much thinner parts, sometimes made of expensive aluminum and well-engineered to cool via air flow. Overheating will be troublesome if not used in an airplane. Multiply weight by 0.4 and cost by 5, but volume remains the same to reflect more spacing between parts, air intakes, etc.

Snorkel: This late-war innovation allows a vehicle to use its air-breathing engines while up to 10 yards underwater. The snorkel has a +0 Size Modifier to detect or target. It adds 1% to engine VSPs, weight, and cost; round up to the nearest 0.1 VSP. A watertight or sealed body (p. 138) is advisable . . .

Add Transmissions

Vehicles with engines will need machinery that converts the engine's power into motive power, either by linking the engine to a motive subassembly (such as wheels) or through generating its own motive thrust (such as aerial propellers). This machinery is called a transmission.

A transmission is rated in kilowatts, representing the largest amount of power *input* that it can turn into motive power. A transmission need not be rated for as much power as its attached engine(s) produces, though many will be. There's no reason to build a transmission with a larger kW rating than its attached engine(s). On vehicles with multiple engines, generally each gets it own transmission. This was not universal, however; attaching multiple engines to one transmission is OK.

Transmission types include:

	— *Weight* —			
Transmission Type	***per kW***	***Base***	***Cost***	***Thrust***
Wheeled	2	40	$0.4	
All-wheel drive	3	60	$0.8	
Tracked (and halftracks)	6	120	$1	
Helicopter	1	30	$2.5	
Screw propeller	5	100	$1	×15
Hydrojet	20	400	$4	×7
Old aerial propeller	0.6	27	$0.25	×2.5
Aerial propeller	0.4	18	$0.5	×3

Transmission Type defines its general purpose. *Per kW* and *Base Weight* are used to figure the overall weight: Multiply the transmission's input in kW by the *per kW* figure then add the *Base* weight to get overall weight. *Cost* is multiplied by overall weight. *Motive Thrust* is per kW of input; this figure will be *very* important in determining performance.

Volume: For ground vehicles, divide weight by 125 to find transmission volume in VSPs. This allows for maintenance and minor repairs in the field from outside the vehicle. For helicopters, divide weight by 250. This provides for no maintenance outside a proper repair facility. Aerial propellers take up no space in the vehicle. For water vehicles, divide weight by 80. This provides room for all maintenance and minor repairs from inside the vehicle. Round *up* to the nearest tenth of a VSP.

A wheeled transmission requires a chassis with wheels (this *can* be an airplane or autogyro, though they usually have unpowered wheels). A tracked transmission requires a tracked or half-tracked chassis. A helicopter transmission requires a helicopter chassis. Other transmissions can go in any chassis.

Power plants and transmissions usually go in the vehicle's body. Airplanes and airships often place them in pods.

Other Motive Sources

Many WWII vehicles resorted to lower-tech motive power, and a few used newer technology.

Horse Harness

Harnessed horses pulled more supplies and artillery than did motorized vehicles in WWII. Harnessed animals may propel ground vehicles or water vehicles in canals with proper footing provided on the banks.

The standard harness fits four draft animals. At a gallop, four draft horses generate 4.8 kW with a top speed of 24 mph; four mules 3.2 kW with top speed 18 mph; four oxen 6.4 kW with top speed 16 mph. Divide kW rating by 2 and top speed by 8 for a walking pace. Multiple harnesses may be used at once.

Draft animals are high-maintenance. They require 15-30 minutes of attention before and after each day's work. Horses work up to 8 hours per day, oxen 4 hours. Each horse needs 10 pounds of hay daily, as well as 20 lbs. of grain for a draft horse, or 14 lbs. for a mule; oxen eat three times as much as draft horses. The grain ration can be cut in one-third if the beast works less than half its normal day. The animals require an hour to eat each day.

Draft animals fatigue per p. 205. Triple fatigue if the animal hasn't eaten, double it if on half rations or less, or multiply it by 1.5 if on more than half but less than full rations.

The harness cost does not include the cost for animals: $200 for a draft horse or mule, $150 for an ox.

Rowing Station

This is a four-man assemblage of oars and oarholes, but *not* crew stations; see p. 141. Four ST 10 men provide a motive thrust of 24 lbs. while rowing. Multiple rowing stations will increase motive thrust, as long as the boat carries enough people to man all the oars. Rowing stations must be in the body.

Jets

Jet engines were invented in the late 1930s, but underdeveloped until the Germans fielded the first turbojet warplane in 1944. Each engine requires basic machinery – the Base Turbojet module – to which any number of Turbojet Add-On modules may be added. Each Add-On module generates 250 lbs. of motive thrust and consumes 25 gallons of jet fuel per hour; each also generates 2.5 kW for use by other components. Any nonhelicopter aircraft, watercraft, or wheeled chassis may use turbojets. They require oxygen to operate.

Liquid-Fuel Rockets

Rockets require no oxygen. Vehicles that can use turbojets can also use rockets. Each module provides 5,000 lbs. of thrust, but consumes 7,500 gallons of rocket fuel per hour!

Solid-Fuel Rockets

These include their own fuel, and are the only motive system that may be placed in a *hardpoint-mounted* equipment pod (p. 138), but once turned on they cannot be turned off! They burn up 85% of their weight as fuel; replacing it takes several hours and costs 20% of original cost. Each module provides 1,100 lb.-seconds of thrust, that is 1,100 lbs. for one second, or 550 lbs. for two seconds, or 11 lbs. for 100 seconds, etc. The burn time *must* be set when the rocket is designed.

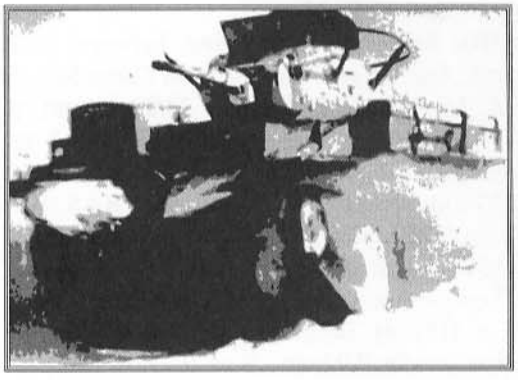
Batteries

Submarines use lead-acid batteries for underwater power, since they require no oxygen or fuel. Each module provides 40,000 kWs, or kilowatt-seconds. This can provide 1 kW for 40,000 seconds, 10 kW for 4,000 seconds, 4,000 kW for 10 seconds, etc. Battery modules may be broken down into 0.1-VSP fractional modules. Many military ground vehicles carry a 4,000-kWs, 0.1-VSP battery to power lights and other electronics when the engine is off, and to turn over the engine.

Any engine can recharge a battery, replacing 1 kWs times its kW output per second; for instance, a 400-kW engine would take 100 seconds to completely recharge one module.

Module Type	*VSPs*	*Wt.*	*Cost*	*Power*
4-Horse Harness	–	120	$180	*
4-Man Rowing Station	8	40	$12	*
Base Turbojet	2	500	$2.5K	–
Turbojet Add-On	0.3	75	$375	*
Liquid-Fuel Rocket	0.3	75	$190	*
Solid-Fuel Rocket	0.6	300	$30	*
Batteries	1	1K	$500	*

* Uses no power; see above for thrust or power generated.



Fuel

Every vehicle that uses power plants, jets, or a liquid-fuel rocket will need to carry fuel for all of its engines. A land vehicle of average endurance will carry roughly 6 hours' worth. Aircraft vary widely, carrying anywhere from 1 to 30 hours' worth. Boats usually will carry 10-12 hours of fuel, while large ocean-patrolling vessels often hold a roughly 30-day supply (and stretch this even more using the travel rates on p. 148).

Fuel-tank modules are purchased in increments of 1 VSP, each holding 30 gallons. Several modules can be combined to form a larger fuel tank. Partial modules can be purchased, at 3 gallons' capacity per 0.1 VSPs. Ships often rate their fuel capacity in tons of fuel oil; each ton requires 11 VSPs of fuel tankage.

Generally speaking, power plants require one fuel-tank module to generate 660 kW for one hour.

Ships that burn coal store it in coal bunkers, instead of fuel tanks. Each module holds 5 VSPs of coal. A steam turbine needs 1 VSP of coal per 125 kW of output per hour.

All modules list *empty* weight; see p. 144 for fuel weight.

Module Type	*VSPs*	*Weight*	*Cost*	*Power*
30-Gal. Standard Fuel Tank	1	45	$6	–
30-Gal. Light Fuel Tank	1	23	$12	–
30-Gal. Ultralight Fuel Tank	1	4.5	$30	–
30-Gal. Self-Sealing Fuel Tank	1	90	$12	–
5-VSP Coal Bunker	6	150	$15	–

Step 4: Add Weapons

The following modules provide many weapon options, for which statistics can be found on pp. 134-135. The descriptions also list historical weapons that match each module, with any historical variation from the "generic" statistics.

Any "ground" or "aircraft" in the names of these weapons does not restrict their usage. It simply describes the sort of vehicle, historically, in which one would usually find them.

Light and Medium Machine Guns

Rifle-caliber machine guns were used liberally on armored vehicles, combat aircraft, even many supply vehicles.

Ground LMG: Often little different from the infantry weapons in use, these air-cooled MGs were used on tanks and for AA fire. Represents the French 7.5mm MAC Mle 31 (Mle 24/29 variant, p. HT119); U.S. 7.62mm (".30-inch") Browning M-1919A4 (p. HT118); Soviet 7.62mm DT (RoF 10, DP variant, p. HT119); British 7.7mm (".303-inch") BREN Mk I; Japanese Army 7.7mm 97 Shiki; British 7.92mm BESA Mk I; Czechoslovakian 7.92mm ZB vz.37; German 7.92mm MG13 (RoF 9*), MG34 (RoF 15*, p. 97), and MG42 (RoF 20, p. 97); and Italian 8mm Breda-SAFAT Mod 38.

Aircraft LMG: Represents faster-firing, lightened MGs installed in aircraft. Use for the French 7.5mm Darne Mle 29 (RoF 28), MAC Mle 34 (RoF 21, Mle 24/29 variant, p. HT119); U.S. 7.62mm (".30-inch") Browning M-2 (p. HT118); Soviet 7.62mm DA (RoF 10, DP variant, p. HT119), PV-1 (RoF 13, Maxim variant, p. HT118), and ShKAS (RoF 30); British 7.7mm (".303-inch") Browning Mk II (p. HT118) and Vickers GO Mk I (RoF 16); Italian 7.7mm Breda-SAFAT Mod 30 (RoF 15); Japanese Army 7.7mm 89-2 Shiki (RoF 15, Maxim variant, p. HT118); Japanese Navy 7.7mm 97 Shiki (RoF 16); Czechoslovakian 7.92mm ZB vz.30 (RoF 16); Danish 7.92mm Madsen M/26 (RoF 16); German 7.92mm MG15 (RoF 16), MG17 (RoF 18), and MG81 (RoF 26); and Japanese Army 7.92mm 98 Shiki (RoF 25). The German 7.92mm MG81Z twin-barreled gun consisted of two guns mated at the receiver (bought as two gun modules with combined RoF 52).

Heavy Machine Guns

These heavier weapons saw wide use as vehicle armament, especially with U.S. forces. Most other countries soon abandoned them in favor of light autocannons.

Very Long Ground HMG: Mostly used for AA fire, these guns could penetrate many lightly armored targets. Represents the U.S. 12.7mm (".50-inch") Browning M-2HB (p. HT119), and can also be used for the Soviet 12.7mm DShK-38 (RoF 10, p. HT120), French 13.2mm Hotchkiss Mle 30, Italian 13.2mm Breda-SAFAT Mod 31, Japanese Navy 13.2mm 93 Shiki, and even the U.S. water-cooled 12.7mm (".50-inch") Browning M-2AA (RoF 10).

Medium Aircraft HMG: A lightened aircraft weapon with a relatively short barrel, this represents the German 13mm MG131, and can also be used for the Italian 12.7mm Breda-SAFAT Mod 31 (RoF 13) and Fraschini-Scotti Mod 28 (RoF 11); Japanese Army 12.7mm 1 Shiki (Ho-103); and Japanese Navy 13mm 2 Shiki.

Long Aircraft HMG: A lightened and faster-firing version of the Very Long Ground HMG, this represents the U.S. 12.7mm (".50-inch") Browning M-2 (p. HT119), and can also be used for the Soviet 12.7mm UB-12.7 (RoF 17), 13.2mm Japanese Navy 3 Shiki, and Swedish 13.2mm Browning Akan m/39 (RoF 16).

Autocannons

These mostly armed aircraft or served as AA guns; some were main guns of light tanks or armored cars.

20mm Short Aircraft Autocannon: Represents the German 20mm Oerlikon MG-FF; can also be used for the Japanese Navy 20mm 99-1 Shiki.

20mm Medium Aircraft Autocannon: Represents the German 20mm MG151/20; can also represent the Austrian 20mm Steyr-Solothurn S18-350 (RoF 7), German 20mm Lübbe MG204 (RoF 7), and Japanese Navy 99-4 Shiki (RoF 8).

20mm Long Aircraft Autocannon: The standard Allied autocannon installed in aircraft, this represents the U.S. AN/M-2, British Mk II, British Mk V (RoF 12), and French HS.404 (RoF 8) versions of the 20mm Hispano-Suiza license. Also can be used for the Soviet 20mm ShVAK (RoF 13).

20mm Long Ground Autocannon: An autocannon whose main use was air defense, this represents the German 20mm FlaK30 AA gun. Can also be used for the U.S. M-1, British Mk 1, and Swiss Type SS versions of the 20mm Oerlikon (all RoF 8*); Danish 20mm Madsen M/35 (RoF 7*); German 20mm FlaK38 (RoF 8*), KwK30, and KwK38 (RoF 8*); and Italian 20mm Breda-SAFAT Mod 35.

23mm Long Aircraft Autocannon: Represents the Soviet 23mm VYa-23, specifically designed for antitank use.

28mm Long Ground Autocannon: Represents the U.S. Navy 28mm ("1.1-inch") Mk 1 anti-aircraft gun.

30mm Short Aircraft Autocannon: Represents the Rheinmetall MK108 aircraft gun, optimized to kill heavy bombers.

37mm Medium Ground Autocannon: A typical anti-aircraft gun, this represents the German 37mm FlaK36. It can also be used for the U.S. 37mm Browning M-1 (RoF 2*), German 37mm FlaK43 (RoF 4*), and Italian 37mm Breda-SAFAT Mod 39 (RoF 2*). The German 37mm BK3.7 (RoF 4*) aircraft gun was based on it.

37mm Medium Aircraft Autocannon: An aircraft gun for use against bombers, this is the U.S. 37mm Browning M-4 and M-10. It can also be used for the Japanese Army 37mm 4 Shiki (Ho-204) (RoF 6).

37mm Long Aircraft Autocannon: This aircraft gun for antitank use represents the Soviet 37mm NS-37.

40mm Medium Ground Autocannon: Represents the Swedish 40mm Bofors Lvkan m/36 and licensed variants such as the U.S. M-1, British Mk IV, and Polish wz.36.

Tank/Antitank Guns

Many tank guns were mounted on carriages (build a small vehicle with front armor and no engine) and used as antitank weapons. Firing HE or HEPF, some of them can be used to represent anti-aircraft guns.

28mm Medium Antitank Gun: Represents the German 28mm Mauser sPzB41 antitank gun, which was a squeeze-

bore design firing a 20mm projectile. It can also be used for the experimental 28mm KwK42 tank gun.

37mm Medium Tank Gun: Standard tank gun of many mid-1930s tank designs, this is the German 37mm KwK36. Also represents the U.S. 37mm M-5 and M-6; Japanese 37mm 94 Shiki; Soviet 37mm PS-2 (M-1937); and the Czechoslovakian 37.2mm Skoda vz.34 (A3) and vz.38 (A7). It can also be used for antitank guns such as the U.S. 37mm M-3, German 37mm PAK35/36, Japanese 37mm 97 Shiki, and the Swedish 37mm Bofors used by the British as the QF Mk I.

47mm Short Tank Gun: Another popular 1930s tank and antitank design, this represents the French 47mm SA-35 and SA-37. Can also be used for the Italian 47mm OTO Mod 35; Soviet 45mm M-1932 and PTP-35B; and Austrian 47mm Böhler PAK35.

50mm Long Tank Gun: An intermediate design dating to the late 1930s, this represents the German 50mm KwK39.

75mm Short Tank Gun: A typical late 1930s tank gun, this represents the German 75mm KwK37 ("*Stummelkanone*") and StuK37. Can also be used for the Soviet 76.2mm Model 27/32.

75mm Medium Tank Gun: The typical tank gun for most of WWII, this represents the U.S. 75mm M-2, M-3, M-6, and M-17; and Soviet 76.2mm L-11 (M-1939) and F-34 (M-1940).

75mm Long Tank Gun: Represents the German 75mm KwK40 (in either barrel length) or U.S. 76.2mm ("3-inch") M-1. It can also be used for the German 75mm PAK40 AT gun; U.S. 76.2mm ("3-inch") M-5 AT gun, M-1 AA gun, and Mk 3 dual-purpose gun; British 76.2mm ("3-inch") Vickers Mk I AA gun; and the Soviet 76.2mm ZiS-3 field gun.

75mm Very Long Tank Gun: This powerful tank armament represents the German 75mm KwK42 and StuK42, or the equally formidable British 76.2mm ("17-pounder") QF Mk IV.

85mm Medium Tank Gun: Represents the Soviet 85mm D-5S, D-5T (M-1943), ZiS-53, ZiS-S-53 (M-1944), and F-39.

88mm Medium Tank Gun: Based on the famous AA gun, this tank gun represents the German 88mm KwK36, and can also be used for the U.S. 90mm M-3. Also serves for the German 88mm FlaK18 and FlaK36 AA guns; German 88mm SK35 dual-purpose gun; and U.S. 90mm M-2 AA gun.

Mortars

Slightly modified or even unmodified infantry mortars were installed in some APCs.

81mm Mortar: The standard infantry support mortar for almost all nations, this represents the German 81mm GrW34/1. Can also be used for the U.S. 81mm M-1; British 81mm ("3-inch") ML Mk I; Czechoslovakian 81mm Skoda vz.36; French 81mm Brandt Mle 27/31; Italian 81mm Breda Mod 35; Polish 81mm wz.31; Yugoslavian 81mm M31/38; and Soviet 82mm 82-BM-36, 82-BM-37, and 82-BM-41.

Dual-Purpose Guns

Dual-purpose guns were mainly used as AA weapons on watercraft, but also served against naval and coastal targets.

37mm Very Long DP Gun: Represents the German 37mm SK30.

76.2mm Medium DP Gun: Represents the U.S. 76.2mm ("3-inch") Mk 10.

105mm Medium DP Gun: Represents the German 105mm SK32.

105mm Long DP Gun: Represents the Japanese 100mm 98 Shiki and the German 105mm SK33.

127mm Short DP Gun: Represents the U.S. 127mm ("5-inch") Mk 12 and Japanese 127mm 89 Shiki.

150mm Medium DP Gun: Represents the German 149mm ("15cm") SK28. Can also be used for the British 152mm Mk XXII and Italian 152mm OTO Mod 36.

155mm Long DP Gun: This is the Japanese 3 Shiki.

Naval Guns

14-inch (356mm) Naval Gun: Represents the U.S. Mk 8 and British Mk VII guns.

15-inch (380mm) Naval Gun: Represents the German SK34. Can also be used for the British Mk I and Italian Mod 34.

16-inch (406mm) Naval Gun: Represents the U.S. Mk 7 and British Elswick Mk I guns.

18-inch (460mm) Naval Gun: This is the Japanese 94 Shiki.

Rockets

3-inch HE Rocket: Represents the British 76.2mm RP Mk I, used both for air defense and ground attack.

82mm HE Rocket: Represents the Soviet RS-82 used both as an air-to-ground rocket and also with the BM-8 *Katyusha* artillery rocket launcher.

82mm HEAT Rocket: Represents the Soviet 82mm RBS-82 used as an air-to-ground rocket.

4.5-inch HE Rocket: Represents the U.S. 114mm M-8 used for ground attack.

132mm HE Rocket: Represents the Soviet RS-132 used both as an air-to-ground rocket and also with the BM-13 *Katyusha* artillery rocket launcher.

60-lb. HE Rocket: Represents the British 152mm RP Mk I used for air-to-ground attack.

Flamethrowers

Medium Tank Flamethrower: Represents the U.S. M-3-4-3 flame gun sometimes installed in M-4 Sherman tanks in place of the bow MG. See p. 99 for flamethrower effects.

Torpedoes

Tube launchers, hardpoints, or bomb bays can launch a torpedo. Guidance options include none; active (skill 12) or passive (skill 14) sonar homing (add $3K per torpedo for either); inertial guidance ($10K) to weave about in a hunting pattern (allow a second attack roll at -4 if the first roll misses); or wire guidance ($1K); see p. 155. Any torpedo can be set for contact or magnetic detonation; the latter is supposed to wait until the weapon is directly under a ship, thus breaking its spine (multiply damage that penetrates DR by 1.5). Magnetic detonators did not work well; they change the Malf to [(year of use)-1934], +3 for German or Japanese detonators, with a maximum of 14.

533mm Torpedo: The 21-inch torpedo was the standard size for the submarines and ships of most combatants. This represents the battery-driven German G7e T2 and T3; it also serves for the wakeless G7e T4, T5, and T10 (Spd 12, End 683); Japanese 92-1 Shiki (6d×1,400, Spd 17, End 450); and U.S. Mk 18 (6d×1,200, Spd 17, End 235). Steam-driven variants that left wakes include the German G7a T1 (6d×1,400, Spd 25, End 262); Japanese 95-1 Shiki (6d×1,900, Spd 29, End 340); U.S. Mark 14 (6d×1,300, Spd 26, End 173) and Mark 15 (6d×1,700, Spd 26, End 173); and British Mark VIII (6d×1,600, Spd 24, End 208) and Mk IX (6d×1,600, Spd 21, End 524).

610mm Torpedo: The Allies knew, and feared, the steam-driven 24-inch Japanese 93-1 Shiki as the *Long Lance*.

Depth Charge: Not a torpedo, but often seen in the same battle. This represents the U.S. Mk 7. It sinks at 3 yards per turn and can be armed to explode at 30' to 600'. An attack roll is made only to check for malfunction; otherwise, simply determine how distant the sub is when the charge explodes.

Bombs

5.5-lb. HEAT Bomb: This is the Soviet 69mm PTAB-2.5.

100-lb. HE Bomb: Represents the U.S. 208mm M-31; can also be used for the German 200mm SC50 Ida.

132-lb. HE Bomb: Represents the Japanese 97-6 Shiki.

220-lb. HE Bomb: Represents the Soviet 273mm FAB-100 M-1943.

250-lb. HE Bomb: This is the British 260mm GP Mk I.

300-lb. HE Bomb: This is the U.S. 343mm M-31.

500-lb. HE Bomb: Represents the U.S. 360mm M-43 and British 360mm GP Mk I.

550-lb. HE Bomb: Represents the Soviet 323mm FAB-250 M-1943. Can also be used for the German 368mm SC250 Irma and Japanese 2 Shiki.

1,000-lb. HE Bomb: This is the British 395mm GP Mk I.

2,200-lb. SAPHE Bomb: Represents the German 470mm SD500 Dagmar.

4,000-lb. HE Bomb: Represents the German 660mm SC1800 Satan.

22,000-lb. SAPHE Bomb: Represents the British 1,170mm Grand Slam.

Weapon Accessories

These improve weapon performance. They must be installed in the same structure as the weapon they support. See *Combat* on pp. 155-156 for normal penalties and arcs of fire.

Links: Two or more weapons can be linked so that one gunner can use them all in a single Aim or Attack maneuver. The weapons must be facing in the same direction to use the link, but need not be in the same vehicle structure. Weapons in an open mount may only link to other weapons in the same mount. Missile launchers may only link to other launchers, and wire- or radio-guided weapons may not be linked. Varying configurations may be linked together; buy one link to connect each two weapons or two previously linked sets of weapons.

Stabilization: This equipment dampens out the jostling from vehicle movement in the weapon's elevation only, reducing movement penalties for attacks by 1. Historically, only the United States used it – and British troops using Lend-Lease tanks found it to be more trouble to maintain than it was worth. Buy one module per 2 VSPs of stabilized weapon, rounding up.

High-Angle Mount: This points the weapon up so that it may engage in indirect or antiaircraft fire, but it cannot use direct fire against a target for which elevation is less than distance. (Weapons in normal mounts cannot engage in indirect fire unless their vehicle is driven up a steep slope.) This adds no extra VSPs, weight, or cost.

Universal Mount: Added to any weapon in a turret, superstructure, or open mount, this increases vertical arc of fire to 90° (45° up and down if the subassembly is on one of the vehicle's sides). Install one module per 2 VSPs of weapon, rounding up.

Casemate Mount: Added to any weapon mounted in a body or superstructure, this increases horizontal arc of fire to 90° – usually 45° to the right and left. Install one module per 2 VSPs of weapon, rounding up.

Bomb Bay: This internal bay includes racks and underside doors for stowing and releasing bombs. Mines and missiles may also be dropped. Each module holds 500 lbs. A bomb bay may only be used in the air or water. Opening or closing the doors takes 2 seconds; while the doors are open, any attack from below has a 1-in-6 chance of ignoring DR. Bomb bays can be used as an emergency entrance or exit by personnel in the same structure as the bomb bay.

WEAPON MODULES TABLE

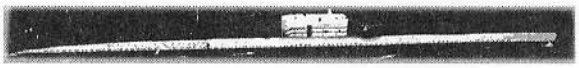
Weapon Type	*VSPs*	*Weight*	*Cost*
Machine Guns			
Ground LMG	0.1	25	$150
500 rounds of Solid	0.1	[25]	[$5]
Aircraft LMG	0.1	20	$150
500 rounds of Solid	0.1	[25]	[$5]
Very Long Ground HMG	0.3	85	$550
100 rounds of Solid	0.1	[25]	[$5]
100 rounds of AP	0.1	[25]	[$15]
Medium Aircraft HMG	0.2	45	$270
150 rounds of Solid	0.1	[25]	[$5]
Long Aircraft HMG	0.3	65	$400
100 rounds of Solid	0.1	[25]	[$5]
Autocannons			
20mm Short Aircraft Autocannon	0.2	60	$400
60 rounds of SAPHE	0.1	[25]	[$10]
20mm Medium Aircraft Autocannon	0.4	90	$675
60 rounds of SAPHE	0.1	[25]	[$10]
20mm Long Aircraft Autocannon	0.4	110	$840
45 rounds of SAPHE	0.1	[25]	[$10]
20mm Long Ground Autocannon	0.6	140	$840
45 rounds of SAPHE	0.1	[25]	[$10]
45 rounds of API	0.1	[25]	[$20]
23mm Long Aircraft Autocannon	0.6	150	$950
250 rounds of API	1	[250]	[$100]
28mm Long Ground Autocannon	1.3	330	$1.5K
136 rounds of SAPHE	1	[250]	[$100]
30mm Short Aircraft Autocannon	0.5	130	$960
200 rounds of SAPHEC	0.8	[210]	[$85]
37mm Medium Ground Autocannon	2.4	600	$1.7K
80 rounds of SAPHE	1	[250]	[$100]
37mm Med. Aircraft Autocannon	0.9	215	$1.7K
80 rounds of SAPHE	1	[250]	[$100]
37mm Long Aircraft Autocannon	1.5	375	$2.2K
75 rounds of API	1	[250]	[$200]
40mm Medium Ground Autocannon	2.2	540	$1.9K
52 rounds of SAPHE	1	[240]	[$100]
Tank and Antitank Guns			
28mm Medium Antitank Gun	1.1	280	$760
90 rounds of APCR	0.5	[126]	[$125]
37mm Medium Tank Gun	2	490	$960
90 rounds of APEX	1	[245]	[$250]
90 rounds of HE	1	[245]	[$100]
47mm Short Tank Gun	1	250	$1.1K
40 rounds of APEX	1	[230]	[$230]
40 rounds of HE	1	[230]	[$100]
50mm Long Tank Gun	3.8	950	$2.2K
30 rounds of APEX	1	[240]	[$240]
30 rounds of HE	1	[240]	[$100]
75mm Short Tank Gun	3.2	800	$2.5K
16 rounds of APEX	1	[240]	[$240]
16 rounds of HE	1	[240]	[$100]
75mm Medium Tank Gun	4	1K	$3.5K
12 rounds of APEX	1	[240]	[$240]
12 rounds of HE	1	[240]	[$100]
75mm Long Tank Gun	6.4	1.6K	$5.6K
10 rounds of APEX	1	[240]	[$240]
10 rounds of HE	1	[240]	[$100]
75mm Very Long Tank Gun	12	3K	$8.5K
8 rounds of APEX	1	[240]	[$240]
8 rounds of HE	1	[240]	[$100]
8 rounds of APCR	1	[240]	[$240]
85mm Medium Tank Gun	11.2	2.8K	$7K
7 rounds of APEX	1	[250]	[$250]
7 rounds of HE	1	[250]	[$100]
7 rounds of APCR	1	[250]	[$250]
88mm Medium Tank Gun	12	3K	$7.5K
7 rounds of APEX	1	[250]	[$250]
7 rounds of HE	1	[250]	[$100]
7 rounds of APCR	1	[250]	[$250]

Weapon Type	*VSPs*	*Weight*	*Cost*
Mortars			
81mm Mortar	0.5	135	$900
32 rounds of HE	1	[250]	[$105]
Dual-Purpose Guns			
37mm Very Long DP Gun	2.1	535	$1.3K
50 rounds of HE	1	230	$95
76.2mm Medium DP Gun	7	1.8K	$5.7K
10 rounds of HE	1	240	$95
105mm Medium DP Gun	14	3.5K	$11K
5 rounds of HE	1	250	$100
105mm Long DP Gun	26.8	6.7K	$15K
4 rounds of HE	1	250	$100
127mm Short DP Gun	16	4K	$9.2K
3 rounds of HE	1	255	$100
150mm Medium DP Gun	40	10K	$21K
4 rounds of HE	3	740	$300
155mm Long DP Gun	52	13K	$33K
3 rounds of APEX	2	495	$500
Naval Guns			
14-inch (356mm) Naval Gun	236	59K	$115K
1 round of APEX	8	[2K]	[$2K]
15-inch (380mm) Naval Gun	250	63K	$130K
1 round of APEX	10	[2.5K]	[$2.5K]
16-inch (406mm) Naval Gun	285	71K	$149K
1 round of APEX	14	[3.4K]	[$3.4K]
18-inch (460mm) Naval Gun	365	91K	$191K
1 round of APEX	17.2	[4.3K]	[$4.3K]
Rockets			
3-inch HE Rocket	0.2	[50]	[$17]
3 × 82mm HE Rocket	0.2	[50]	[$15]
3 × 82mm HEAT Rocket	0.2	[50]	[$18]
4 × 4.5-inch HE Rocket	0.6	[150]	[$65]
132mm HE Rocket	0.4	[90]	[$32]
60-lb. HE Rocket	0.4	[85]	[$36]
Special Weapons			
Medium Tank Flamethrower	0.6	150	$875
15 Shots	1	[240]	[$50]
Bombs			
4 × 5.5-lb. HEAT Bombs	0.1	[22]	[$65]
100-lb. HE Bomb	0.4	[100]	[$200]
132-lb. HE Bomb	0.5	[132]	[$265]
220-lb. HE Bomb	0.9	[220]	[$440]
250-lb. HE Bomb	1	[250]	[$500]
300-lb. HE Bomb	1.2	[300]	[$600]
500-lb. HE Bomb	2	[500]	[$1K]
550-lb. HE Bomb	2.2	[550]	[$1.1K]
1,000-lb. HE Bomb	4	[1K]	[$2K]
2,200-lb. SAPHE Bomb	8.8	[2.2K]	[$4.4K]
4,000-lb. HE Bomb	16	[4K]	[$8K]
22,000-lb. SAPHE Bomb	88	[22K]	[$44K]
Torpedoes			
533mm Torpedo Tube	28	7K	$18K
533mm Torpedo	14	[3.5K]	[$7K]
610mm Torpedo Tube	48	12K	$31K
610mm Torpedo	24	[6K]	[$12K]
Depth Charge	3	[750]	[$1.5K]

WEAPON ACCESSORIES

Module Type	*VSPs*	*Weight*	*Cost*	*Power*
Link	–	–	$5	–
Stabilization	0.1	25	$250	–
High-Angle Mount	–	–	–	–
Universal Mount	0.1	25	$50	–
Casemate Mount	0.1	25	$50	–
Bomb Bay	3	25	$5	–

Vehicular Weapons Table



Machine Guns – Use Gunner (Machine Gun) Skill

Weapon Type	*Malf*	*Type*	*Damage*	*SS*	*Acc*	*1/2D*	*Max*	*Ind.*	*RoF*
Ground LMG	Crit.	Solid	7d	17	13	700	3,900	4,500	10
Aircraft LMG	Crit.	Solid	7d	17	13	700	3,900	–	20
Very Long Ground HMG	Crit.	Solid	13d+1	20	14	1,300	5,500	7,400	8*
	Crit.	AP	13d+1 (2)						
Medium Aircraft HMG	Crit.	Solid	9d	20	13	730	4,000	–	15
Long Aircraft HMG	Crit.	Solid	12d	20	14	1,100	5,100	–	13

Autocannons – Use Gunner (Cannon) Skill

Weapon Type	*Malf*	*Type*	*Damage*	*SS*	*Acc*	*1/2D*	*Max*	*Ind.*	*RoF*
20mm Short Aircraft AC	Crit.	SAPHE	5d×2 (0.5) + 1d-3 [2d]	20	12	650	4,800	–	8
20mm Medium Aircraft AC	Crit.	SAPHE	6d×2 (0.5) + 1d-3 [2d]	20	13	900	5,400	–	12
20mm Long Aircraft AC	Crit.	SAPHE	6d×3 (0.5) + 1d-3 [2d]	20	14	1,300	6,400	–	10
20mm Long Ground AC	Crit.	SAPHE	6d×3 (0.5) + 1d-3 [2d]	20	14	1,300	5,400	8,500	5*
	Crit.	API	6d×3 (2)						
23mm Long Aircraft AC	Crit.	API	7d×3 (2)	20	15	1,500	7,400	–	10
28mm Long Ground AC	Crit.	SAPHE	7d×4 (0.5) + 1d [2d]	20	15	1,600	6,400	7,500	3*
30mm Short Aircraft AC	Crit.	SAPHEC	5d×3 (0.5) + 2d	20	12	600	3,000	–	10
37mm Medium Ground AC	Crit.	SAPHE	6d×5 (0.5) + 2d+1 [4d]	25	14	1,200	6,400	7,200	3*
37mm Medium Aircraft AC	Crit.	SAPHE	6d×5 (0.5) + 2d+1 [4d]	25	14	1,200	6,400	–	3*
37mm Long Aircraft AC	Crit.	API	6d×6 (2)	20	15	1,800	6,900	–	5
40mm Medium Ground AC	Crit.	SAPHE	6d×6 (0.5) + 3d [4d]	25	14	1,100	5,100	10,200	2*

Tank and Antitank Guns – Use Gunner (Cannon) Skill

Weapon Type	*Malf*	*Type*	*Damage*	*SS*	*Acc*	*1/2D*	*Max*	*Ind.*	*RoF*	*Ldrs*
28mm Medium Antitank Gun	Crit.	APCR	6d×5 (2)	25	13	900	4,500	–	1/3	0
37mm Medium Tank Gun	Crit.	APEX	7d×4 (2) + 1d-3 [4d]	25	14	1,000	4,800	8,100	1/3	0
		HE	2d-2 [4d]							
47mm Short Tank Gun	Crit.	APC	7d×4 (2)	25	13	760	4,100	6,000	1/3	0
		HE	3d-1 [4d]							
50mm Long Tank Gun	Crit.	APEX	6d×7 (2) + 1d [4d]	25	15	1,800	6,900	7,200	1/3	0
		HE	3d [4d]							
75mm Short Tank Gun	Crit.	APEX	6d×5 (2) + 3d [6d]	25	13	800	4,200	6,500	1/4	1
		HE	5d×3 [6d]							
75mm Medium Tank Gun	Crit.	APEX	6d×6 (2) + 3d [6d]	30	15	1,000	4,700	10,000	1/4	1
		HE	5d×3 [6d]							
75mm Long Tank Gun	Crit.	APEX	5d×11 (2) + 3d [6d]	30	15	1,500	6,100	14,000	1/4	1
		HE	5d×3 [6d]							
75mm Very Long Tank Gun	Crit.	APEX	6d×12 (2) + 3d [6d]	30	16	2,200	7,800	20,000	1/4	1
		HE	5d×3 [6d]							
		APCR	6d×16 (2)							
85mm Medium Tank Gun	Crit.	APEX	6d×9 (2) + 3d+1 [6d]	30	15	1,600	6,400	17,000	1/4	1
		HE	6d×3 [6d]							
		APCR	6d×12 (2)							
88mm Medium Tank Gun	Crit.	APEX	6d×11 (2) + 4d+2 [6d]	30	15	1,600	6,400	17,000	1/4	1
		HE	5d×4 [6d]							

Mortars – Use Gunner (Mortar) Skill

Weapon Type	*Malf*	*Type*	*Damage*	*SS*	*Acc*	*1/2D*	*Max*	*Ind.*	*RoF*	*Ldrs*
81mm Mortar	Crit.	HE	6d×2 [6d]	20	6	-	-	2,650	1/4	1

Key to Weapons Table

Most of the terms are explained on pp. 200-201. See p. 135 for more information on damage types. Other terms include:

Malf.: The malfunction number; see p. 201.

Ind.: The indirect-fire range of the weapon.

Ldrs: The minimum number of loaders needed. In many cases, many more are used.

Spd: The weapon's speed in yards per turn.

End: The number of turns that a weapon motor operates.

Dual-Purpose Guns – Use Gunner (Cannon) Skill

Weapon Type	*Malf*	*Type*	*Damage*	*SS*	*Acc*	*1/2D*	*Max*	*Ind.*	*RoF*	*Ldrs*
37mm Very Long DP Gun	Crit.	HE	2d-2 [4d]	25	15	1,800	6,900	9,300	1/2	0
76.2mm Medium DP Gun	Crit.	HE	6d×3 [6d]	30	15	1,500	6,400	14,600	1/4	1
105mm Medium DP Gun	Crit.	HE	5d×8 [10d]	30	15	1,700	6,600	16,600	1/5	1
105mm Long DP Gun	Crit.	HE	5d×8 [10d]	30	16	2,600	8,700	20,000	1/5	1
127mm Short DP Gun	Crit.	HE	6d×15 [10d]	30	15	1,500	7,400	17,400	1/6	1
150mm Medium DP Gun	Crit.	HE	6d×21 [10d]	30	16	2,100	7,600	25,200	1/7	2
155mm Long DP Gun	Crit.	APEX	6d×23 (2) + 6d×6 [10d]	30	17	3,200	10,000	30,000	1/5	2

Naval Guns – Use Gunner (Cannon) Skill

Weapon Type	*Malf*	*Type*	*Damage*	*SS*	*Acc*	*1/2D*	*Max*	*Ind.*	*RoF*	*Ldrs*
14-Inch (356mm) Naval Gun	Crit.	APEX	6d×45 (2) + 6d×60 [12d]	30	17	3,200	10,000	40,000	1/19	5
15-Inch (380mm) Naval Gun	Crit.	APEX	6d×50 (2) + 6d×80 [12d]	30	17	3,300	10,200	40,000	1/19	5
16-Inch (406mm) Naval Gun	Crit.	APEX	6d×55 (2) + 6d×80 [12d]	30	17	3,400	10,400	42,300	1/20	6
18-Inch (460mm) Naval Gun	Crit.	APEX	6d×60 (2) + 6d×150 [12d]	30	17	3,600	10,800	46,000	1/23	6

Special Weapons – Use Gunner (Flamethrower) Skill

Weapon Type	*Malf*	*Type*	*Damage*	*SS*	*Acc*	*1/2D*	*Max*	*Ind.*	*RoF*	*Ldrs*
Med. Tank Flamethrower	Crit.	Spcl. (p. 99)	3d	5	7	50	80	–	3~	0

Rockets – Use Gunner (Rocket Launcher) Skill

Weapon Type	*Malf*	*Type*	*Damage*	*SS*	*Acc*	*Spd*	*End*	*1/2D*	*Max*	*Ind.*	*RoF*	*Ldrs*
3-inch Rocket	Crit.	HE	6d×9 [6d]	20	14	500	4	830	2,000	4,000	1/6	0
82mm Rocket	Crit.	HE	6d×2 [6d]	25	12	344	3	600	1,000	6,450	1/6	0
		HEAT	5d×4 (10)									
4.5-inch Rocket	Crit.	HE	6d×12 [10d]	30	12	283	4	500	1,100	4,600	1/6	0
132mm Rocket	Crit.	HE	6d×18 [10d]	30	13	388	9	640	3,500	9,300	1/7	1
60-lb. Rocket	Crit.	HE	6d×28 [10d]	20	13	450	3	750	1,400	–	1/8	1

Torpedoes – Use Gunner (Torpedo) or (Depth Charge) Skill

Weapon Type	*Malf*	*Type*	*Damage*	*SS*	*Acc*	*Max*	*Spd*	*End*	*RoF*	*Ldrs*
533mm Torpedo	15	HEC	6d×940	30	(0)	5,470	17	322	1/18	2
610mm Torpedo	15	HEC	6d×2,300	30	(0)	21,900	28	782	1/20	2
Depth Charge	15	HEC	6d×1,200	30	(0)	200	3	67	1/9	2

Bombs – Use Gunner (Bombs) Skill

Weapon Type	*Malf*	*Type*	*Damage*
5.5-lb. Bomb	Crit.	HEAT	6d×3 (10)
100-lb. Bomb	Crit.	HE	6d×110 [12d]
132-lb. Bomb	Crit.	HE	6d×130 [12d]
220-lb. Bomb	Crit.	HE	6d×220 [12d]
250-lb. Bomb	Crit.	HE	6d×250 [12d]
300-lb. Bomb	Crit.	HE	6d×300 [12d]
500-lb. Bomb	Crit.	HE	6d×500 [12d]
550-lb. Bomb	Crit.	HE	6d×550 [12d]
1,000-lb. Bomb	Crit.	HE	6d×1,000 [12d]
2,200-lb. Bomb	Crit.	SAPHE	6d×40 (0.5) + 6d×2,000 [12d]
4,000-lb. Bomb	Crit.	HE	6d×4,500 [12d]
22,000-lb. Bomb	Crit.	SAPHE	6d×110 (0.5) + 6d×19,500 [12d]

Key to Weapon Damage

Solid: Standard ***GURPS*** damage.

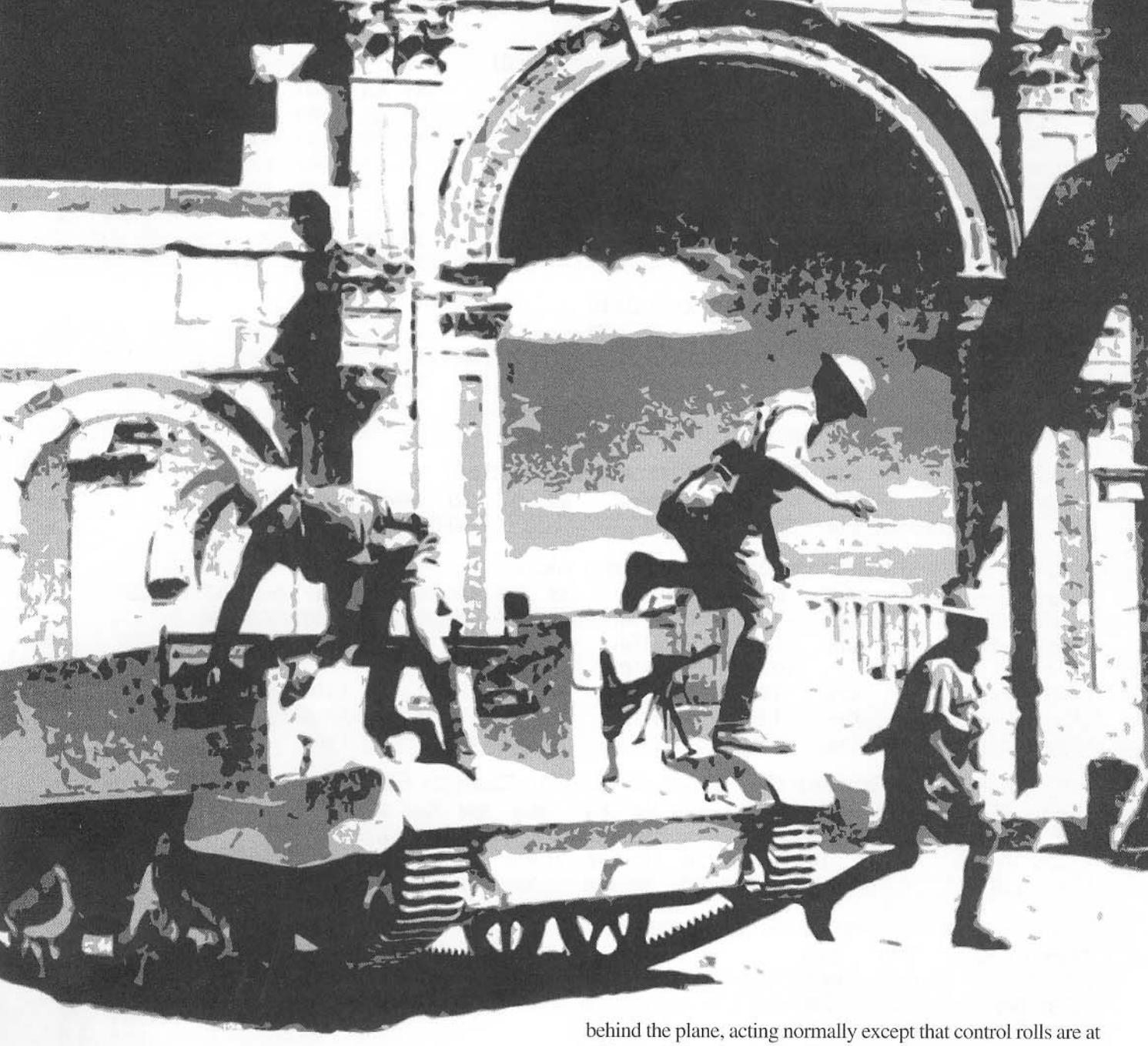
AP, API, APCR: These divide the target's DR by the number in the parentheses before the DR is applied to base damage.

HEAT: As for *AP*, but this is explosive damage. The divisor does not apply to targets not directly hit by the round.

HE: See pp. 202-203. This does explosive damage, which covers an area but is less effective in penetrating DR. The value in brackets is fragmentation damage; see p. 203.

APEX, SAPHE: This has an effect like *AP*, then explodes like HE. Explosive damage is *outside* the target if the AP effect failed to penetrate DR. Historically, the explosive often failed to go off; it could be given a separate Malf. of 12.

HEC, SAPHEC: These are like their HE equivalents, except the casing isn't designed to throw fragments. They may still fling ground objects such as rocks or splinters of trees around like fragments; the GM decides.



Step 5: Components

In this step, the vehicle will be filled with all of the other gear found within it. It will be a good idea to total up space used to this point to see how many VSPs remain.

These modules often are rated for a certain capacity of stowage, lifting, etc. Unless otherwise noted, they can be grouped together into a single component of larger capacity. For instance, two Winch modules can represent one larger winch with 50 yards of cable and 1,000 lbs. of hauling capacity.

Miscellaneous Equipment

AA Drag Cable: This is simply a 3-module winch with a 3-module vehicular parachute attached to the cable; see p. 137 for both. A barrage balloon (p. 124) can dangle the cable beneath it. If a plane hits the cable, treat as a collision (p. 154) with a 200-lb. stationary object. Then the parachute deploys behind the plane, acting normally except that control rolls are at -6 instead of -4. The parachute must be replaced afterward.

Airlock: Each of these modules holds one person or 2 VSPs of cargo. Cycling the lock takes 10 seconds.

Arrestor Hook: Mounted on an aircraft, this retractable device provides 80 mph/s of deceleration when used with an arrestor wire on a flight deck (p. 138). If this does not stop the plane, the wire snaps. Must be placed in the plane's body.

Autopilot: When activated, this keeps a vehicle on the same heading at the same speed. It's rarely practical on land.

Bilge Pumps: Watercraft often take on water; these remove it. Each pump expels 60 lbs. of water every minute and requires one crewman to operate it. Warships usually install *several* to keep themselves afloat after damage.

Bulldozer Blade or Plow: This attaches to the front of a ground vehicle and can clear a path as wide as the vehicle. In a collision to the vehicle's front (see p. 154), the blade or plow reduces damage received and increases damage inflicted by +1 per 2 dice rolled. The blade or plow weighs 2 lbs. times body surface area and costs $0.2 per lb.

Crane: These elevate and move heavy loads. The crane requires an operator with Professional Skill (Crane Operation). Each module provides 6' of height and 1 ton lifting capacity.

Extendable Ladder: Usually seen on firetrucks, each module provides 10' of height.

Fire Extinguisher: This helps put out fires; see p. 156. Adding more modules increases effectiveness.

Launch Catapult: This hydraulic catapult almost instantly accelerates any plane under 25 tons to 20 mph, shortening its takeoff run. Launching a plane with very low stall speed into a strong headwind, it can even remove any need for a runway!

Mat Layer: This large spool or similar device must be placed in an open mount on a ground vehicle's top. It can carry fascines to fill ditches, Hessian mats to cover soft ground or barbed wire, or log carpets to make roads. Once released, the load unrolls automatically as the vehicle rolls forward; no occupants can see forward as it unrolls. Up to 25 fascines or 100 logs (70 lbs., $0 each) can be carried; fascines fill 2'×2'×8' of ditch or logs make 6" of road each. Up to 30 yards of Hessian mat can be carried, at 10 lbs., $0.1 per yard.

Mine Flail: This heavy drum dangling lengths of chain must be placed in an open mount on a ground vehicle's front. When activated, it spins and detonates mines as if a 20-ton vehicle, but misses entirely 50% of the time on uneven ground. The DR 100, 300-HP drum takes normal mine damage from 1 yard away; the vehicle front takes damage from 3 yards away. A rotating flail does 3d damage to anything that it strikes.

Remote Control: This allows an outside operator to steer the vehicle. Control rolls are at -4 if the operator can see where the vehicle is going, -10 if not! Guidance can be wire or radio; each has a host module for the operator and a remote module for the vehicle itself. Each remote wire module provides 200 yards of range. A host radio module has a medium transmitter and the remote module a medium receiver (see *Radios*, p. 138).

Vehicular Bridge: Installing this hydraulic folding bridge requires 1 minute per yard of length and a successful Driving (Construction Equipment) roll. It has DR 10, and 100 HPs per yard of length. Each module supports 6.25 tons for 1 yard; for longer bridges supporting more weight, multiply by total length then by (tons of capacity / 6.25). For instance, a 10-yard bridge supporting 26 tons would require $10 \times 4 = 40$ modules.

Vehicular Parachute: When deployed, each module provides 18 mph/s of deceleration for up to 4 tons of payload, or a proportional deceleration for a larger weight (9 mph/s for 8 tons, etc.). Lighter payloads do not improve deceleration. All control rolls, except for extra braking, are at -4 while the chute is deployed. The chute must be jettisoned to cancel its braking effect, and replaced after use. Any chute has 50 HPs and can be attacked at +4, but only nearby explosions or flames do damage; shells just pass through.

Winch: These pull things, often stuck vehicles. A winch needs to be able to haul a stuck vehicle's weight to free it; if the vehicle with the winch is lighter than that, it will be moved, instead! Cabling to a tree or another heavy vehicle can solve this. Winch speed is 4 yards per turn, half that if hauling more than half its capacity. Divide hauled weight by 2 on a smooth, level surface, by 20 if the object has wheels. The cable is 25 yards long and hauls 500 lbs. per module.

Small-Craft and Cargo Stowage

The following store general cargo or auxiliary vessels. The dry dock and both bays each have two forms of module. The Base module for each must be used to start a new bay or dock, but each Base module may be expanded with any number of Add-On modules of the same type. All Base modules hold 40 VSPs of small craft. All Add-On modules hold 20 VSPs each.

Dry Dock: This floodable hangar lets watercraft dock inside; it takes 5 seconds per VSP of capacity to fill or empty.

Hangar Bay: A large bay in which all sorts of smaller vehicles can be stored. Includes any necessary elevators or ramps to a flight deck (see below).

Vehicle Bay: This holds a single *specific* type of auxiliary vehicle very snugly. To enter the craft, one steps through a door directly into the craft. The craft then leaves through a set of small hangar doors. Vehicle bays are rare in WWII.

External Cradle: Ships often attach smaller craft, such as lifeboats, to their decks or sides; some airships also use this system to carry other aircraft. The smaller vehicle is carried outside the hull, and can be targeted separately. The cradle includes a winch or boom for releasing and recovering the vehicle. This generally takes at least a minute and (if the vehicles are moving) requires matching velocities. For flying vehicles, this usually requires that one of them has no stall speed. A flying vehicle with external cradles will add the aerodynamic drag (see p. 149) of its auxiliary crafts to its own when they are in the cradles. Each modules holds 1.25 tons of vehicle.

Cargo: Each VSP assigned as cargo space holds 5 cf of general goods. Cargo averages 100 lbs. per VSP, but this figure can be adjusted *greatly* to reflect special loads. Cargo spaces can be given the *Exposed* option, fitting 10 cf of cargo in each VSP but leaving it half outside the vehicle's DR. Cargo can also be carried on the deck, taking up no VSPs.

Vehicles as Cargo

Vehicles often carry smaller vehicles in cradles, bays, or cargo holds. This requires determining how many VSPs the smaller vehicle *takes up* as cargo, which will be substantially more than the VSPs that it *holds*.

For ground vehicles, multiply *basic* chassis VSPs (before any options reduce them) by 1.6 if tracked, 1.4 if half-tracked or legged, or 1.2 if wheeled. Add to that the basic VSPs of all subassemblies.

Airplanes and copters take up 8× their basic chassis VSPs, half that for planes with the *Folding Wings* option. A barrage balloon deflates to take up 5 VSPs if stowed; other airships cannot be carried aboard a larger vehicle.

Ships take up 1.3 times their *basic* chassis VSPs plus the basic VSPs of all subassemblies.

Stowage *on deck* is measured in square feet of deck space instead of VSPs. For all vehicles, total up the surface area of the body and all subassemblies, then divide by 4 to find the square footage required. Double the figure for planes without the *Folding Wings* option or helicopters.

Surface Features

Subassemblies on the body's top reduce its top deck by their own surface area/5, exposed cargo by 1 sf per VSP.

Covered Deck: A canvas cover for some or all of a top deck weighs 1 lb. and costs $1 per 20 sf covered. Flame attacks (see p. 156) to the body start a fire on a 10 or less when in place.

Flight Deck: This makes all or part of a top deck into a runway with length equal to 3 × the square root of its square footage. Half of the deck must be clear to perform takeoffs or landings, which can take place each minute. Each 10 sf of flight deck is 1 lb., $1; including safety nets and arrestor wires.

Hardpoints: These reinforced attachment points can go on any body, superstructure, turret, or set of wings (must have matched sets). A bomb, rocket, or missile may be directly attached. Other gear can be carried in an *equipment pod*; design as a regular pod, but an equipment pod can be jettisoned. Usual loads include fuel tanks, guns (all ammo must also be in the pod), or multiple rockets (these pods often have no armor). Hardpoint control must be assigned to a crew station. Hardpoints weigh 10 lbs. and cost $1 per 100 lbs. capacity. A structure may have up to 20 lbs. × HPs in hardpoint capacity.

Pontoons: An *empty* superstructure or pod may become a pontoon. These add 185 lbs. × their VSPs to a vehicle's flotation rating (p. 147). Flying boats must mount small ones (total flotation rating at least 5% of loaded weight) under their wings to stay upright. Seaplanes use wing pontoons *and* mount large ones under their body, transferring their fixed-strut skid (p. 121) to the pontoon(s). If pontoon flotation *alone* is higher than total loaded weight, the vehicle is treated as having fine hydrodynamic lines for all water performance (p. 147) *except* calculating draft. Pontoons add $4 × surface area to their usual cost.

Sealing and Waterproofing: Waterproofing makes a body or subassembly watertight. Sealing is truly airtight and protects against pressure, too. Ship chassis already are waterproof; those with the *Sub* option and zeppelin bodies already are sealed. Other bodies and subassemblies may purchase either feature; waterproofing costs $0.2 or sealing $4 times surface area. Neither has weight nor volume.

Communications, Sensors, and ECM

Many of these devices require an unblocked line of sight, or LOS, to contact or detect the target. Water quickly degrades radio, radar, and infrared. Radio will penetrate building walls, but not several yards of solid matter; make an Electronics Operation (Communications) roll in borderline cases. Active sonar requires LOS except that water does not block it.

Radio signals can circumvent the LOS rule by bouncing off the upper atmosphere to reach receivers over the horizon. This also requires a skill roll, often at penalties depending on the weather. Indirect sensors – passive sonars and sound detectors – do not require LOS, but can't be used to target attacks.

LOS sensors can only detect out of one facing of the vehicle; for universal coverage install several or mount them in a turret. Indirect sensors and jammers provide 360° coverage.

Radar and sonar have a Scan rating for use with the rules on p. 154. This rating derives from the sensor's range in miles, which is itself a rough approximation of several variables. Consult the table, rounding range in miles down:

Range	*Scan*	*Range*	*Scan*	*Range*	*Scan*	*Range*	*Scan*
0.1	5	1	11	10	17	100	23
0.15	6	1.5	12	15	18	150	24
0.2	7	2	13	20	19	200	25
0.3	8	3	14	30	20	300	26
0.45	9	4.5	15	45	21	450	27
0.7	10	7	16	70	22	700	28

Each range figure is 10 times the range figure to its left; huge, nonhistorical sensors would simply keep extending the table to the right to calculate higher Scan values.

Communications

Semaphore and Signal Hoists: For centuries, armies had communicated via raising different combinations of flags or flashing signal lights. WWII combatants still widely used these methods. These signals can be read up to 3 miles away with a telescope, weather and terrain permitting. Complex messages require a specialization of Telegraphy (p. 191) called Semaphore – and both parties must be using the same code. The sender may transmit up to one word per minute per point of skill with flags, twice that at night with spotlights. If his transmission rate exceeds the skill of the receiving party, not all of the message is understood! Cost and weight of signal devices is trivial.

Radios: Radio transmitters can broadcast code or voice. Anyone with a radio receiver tuned to the same frequency can hear the signal. The listed ranges are for voice transmissions; multiply transmitter range by receiver sensitivity to see if the signal is heard. Using Telegraphy skill (see p. 191) with Morse code doubles range. Range can be further extended on a successful Electronics Operation (Communications) roll, at -1 per extra 10% added, to a maximum 100% added. Radios are purchased as separate receivers and transmitters. Two transmitters or two receivers may not be bundled to create a better unit.

Radio Jammer: This untuned transmitter projects powerful "noise" to drown signals in static. If (distance to the transmitter/transmitter range) is more than (distance to the jammer/jammer range), a receiver can't hear that transmitter. Even if a transmitter can be heard, clear reception requires an Electronics Operation (Communications) skill roll at -5.

Radio Direction Finder: This receiver also can locate a transmitter to which it is listening. This takes at least 10 seconds. Roll against Electronics Operation (Communications) skill to locate a normal broadcast, or roll a contest of skills if the transmitting radio operator is trying to be evasive. Additional radio direction finders, set at least 100 yards apart, give a +1 to skill each due to triangulation; use the skill of the "commanding" operator. A successful roll reveals the general distance and direction; success by 5 or more gives an exact location. On a failure, the GM may allow repeated rolls to succeed, rolling every minute or so.

Sensors

Headlights: Powered vehicles have lights at no extra cost. These clearly illuminate at up to 30 yards and can be seen by others at 600 yards, 200 yards if fitted with slitted covers.

IFF: The "identify friend or foe" system is a specialized radio transmitter and receiver package. An IFF-equipped vehicle transmits a special signal to a vehicle of unknown

nature. If the mystery vehicle has the same IFF system set to the same codes, it sends back the proper response. The codes can be changed to prevent enemy trickery. IFF has a 100-mile range, restricted as per normal radios.

Navigation Instruments: These give a +3 to Navigation and +2 to Meteorology rolls. If combined with a radio receiver capable of hearing immense transmitters at two friendly shore stations, the vessel's position can be radio-triangulated to within a mile.

Periscopes: These extend a telescope straight up, so that a vehicle crew member can view things while underwater or behind a ridge. Most submarines have one; tanks and helicopters also could make use of them. (The simple periscope devices used on many tanks to replace windows are *not* this sort of periscope, and are assumed to be part of the basic chassis.) Periscopes can rotate but have a fixed direction of view; submarines usually install two, one to search the horizon for targets and one to search the sky for hostile aircraft.

Periscopes may be up to 60' feet long. Each module provides up to 10' of length. This basic periscope provides up to 15× magnification, giving a +4 to spot things or +7 to examine previously spotted items; darkness penalties apply. Doubling the required modules produces a 30× scope giving +4/+9; tripling them provides a 45× scope giving +5/+10. For instance, a 45×, 30' periscope would require nine modules.

Extending or retracting a periscope takes 2 seconds.

Radar: *Ra*dio *d*etecting *a*nd *r*anging can determine an object's position, range, and speed by bouncing radio waves off of it. Spotted targets usually appear as fuzzy blips on a screen. Fog, smoke, and darkness do not impair radar. A given set must be designed to scan the air or the "ground." Ground sets will not work in complex terrain, so they're usually used on the ocean. Even then, rough seas can severely impair radar. A few land areas, such as the great plains of Russia, might have been suitable for radar, but historically this wasn't attempted. Using an air radar to conduct a ground search or vice versa imposes a -5 penalty to Electronics Operation (Sensors) rolls.

Radar is an active sensor – its beam can be detected by radar detector or locator systems at twice its actual range.

Early in the war, most radar sets could not be used to target objects, but by 1945 warships routinely fired based on radar locks while still outside visual range. A targeting radar provides a +2 to target a *single* object.

Each radar module provides 1 mile of range. Historically, major powers started WWII using nontargeting radars with 5-15 miles of range. By 1945, U.S. warships could make nontargeting scans for airplanes 100 miles away or target surface vessels 20 miles out. Large ground stations could scan farther.

Radar Detector: This detects radar emissions within LOS at twice an active radar's range or 20 times a jammer's.

Radar Jammer: These devices project a signal that imposes a penalty on skill rolls with radios or a radar's Scan rating. Small jammers impose a -2 on *every* radar or radio within 10 miles, medium ones a -3 within 15 miles, and large ones a -4 within 20 miles. Radars within 20 times a jamming field's range can detect the field, even if they can't see inside. During the war, both sides constantly upgraded radars and jammers, so that jammers that worked against one model of radar set didn't work at all against the next. The GM should rule on when a given jammer does or does not work.

Recon Camera: This telephoto camera provides competent surveillance images (1 hour of film or thousands of stills) on a successful Photography roll.

Searchlights: These project a bright beam of light, illuminating a 10-yard radius for 5 miles. The beam is visible 10 miles away. Aiming a searchlight is a combat action. A vehicle or object caught in the beam can be attacked with no penalty for darkness.

A searchlight can be used to blind a single person facing it for as long as the searchlight is aimed at him. This ranged attack requires a roll to hit (SS 20 and Accuracy 15) each turn. The subject is blinded for as long as he faces the light plus, at night, 1d more seconds on a failed HT roll.

Infrared Searchlights: These active-infrared lights emit a 10-yard by 500-yard beam that is invisible to normal vision. The searchlight includes an IR reader so that crew members can see what the beam detects by day or night. The U.S. Army could have fielded these in 1943; the Germans did use them in 1945. Late TL6 (post-WWII) improvements could improve range by a factor of 25!

Sonar: *So*und *n*avigation *a*nd *r*anging interprets sound waves to detect objects. Active sonar sends outs its own sound wave, usually in the form of a distinct ping, and listens to the reflections. It can provide a +1 to hit a single target. Passive sonar, or a hydrophone, relies upon the object's own sounds for detection. Active/passive sonar combines both abilities.

Active sonar works best underwater; divide range by 10 (or reduce Scan by 6) in the air. Passive sonar must be underwater. Both types must be physically placed in the water; WWII destroyers often had a small, underside superstructure or turret for their sonar. Aircraft could purchase an underside superstructure and an appropriately sized winch placed in the body, then state that the winch lowers the superstructure into the water to represent an early form of the dipping sonar described on p. VE53. Flying over 20 mph or exceeding a 2-G bend would tear the cable away in this case.

Passive sonar cannot be used for targeting and relies on its targets to be noisy, but it can hear active sonar at twice the active sonar's range and it allows a skilled operator to identify the target based on the success of his Electronics Operation (Sensors) roll. For instance, a roll made by 1 might let him know the target is a submarine, while one made by 5 might identify the particular class, thus indicating whether it's a friendly.

Each sonar module provides 1 mile of range. Active-passive sonar is bought as active sonar, but when switched to passive mode has ×2 range (or +2 to Scan). Most historical sonars had a 2- to 10-mile range in game terms. Nonhistorical sonars may be built to a maximum of 18 miles active or 48 miles passive range.

Sound Detectors: These sensitive microphones can locate the position of a firing artillery battery up to 30 miles away. Make an Electronics Operation (Sensors) roll at no penalty if the battery is under 2 miles away, -2 at 2-3 miles, -4 at 4-7 miles, -6 at 8-15 miles, or -8 at 16-30 miles to locate it. Though nontargeting sensors, sound detectors provide enough information to allow indirect counterbattery fire. Sound detectors also were used to detect approaching aircraft at night – but treat the range to the planes as 8 times what it really is!

Dischargers: Each of these is a single smoke or chaff round in its own launch tube; vehicles often mount several. When fired, smoke rounds create a 20'-radius cloud; chaff rounds a 100' cloud. The direction of fire is fixed – usually behind the vehicle, though turret-mounted dischargers may swivel with the turret. Any or all dischargers may be fired each turn. This is not a combat maneuver; it can be combined with Dodging. If a crew station controls multiple types of discharger, it may use one of each in a single turn.

For the effects of chaff or smoke, see p. 154. Chaff, like radar jammers, can become obsolete against newer radar sets; the GM should rule. Reloads cost $1 for smoke or $2 for chaff.

Radar Reflectors: These large, metallic panels make a vehicle look bigger to radar. They can add +1 to +4 to the body's Size Modifier for being detected by radar. Usually, a destroyer mounts one along its side to appear like a battleship, or a fighter mounts one on a hardpoint to appear like a bomber. On a critical success, the radar operator realizes that something odd is going on. Radar reflectors are normally stowed as cargo. They take 10 minutes to set up or readjust, 5 minutes to take down. Aircraft must be on the ground to adjust reflectors.

Targeting Aids

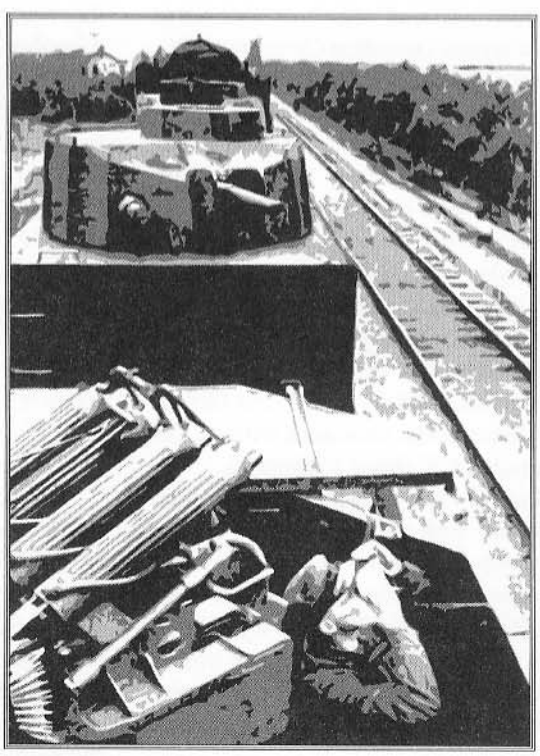
Weapons have their own sights included in their Accuracy bonus. These systems work independently of a given weapon.

Bombsights: See p. 155 for bonuses. Historically, the United States alone had improved bombsights.

Fire Direction Center (FDC): This is a command center full of maps and plotting tables for controlling indirect, bomb, or torpedo fire. Warships often install these high in their main superstructure. Each module gives a +3 bonus to indirect fire against a *single* target for all weapons in contact with it. Each module can hold up to eight FDC personnel, and requires one crewman for every gun or forward observer communicating with it. A radio also will be needed for every two guns or FOs not on the same vehicle. Only one FDC may assist a given shot.

Targeting Computer: This dedicated computer can improve the accuracy of a *specific* type of indirect-fire weapon, bomb, or torpedo that is fired in communication with the computer operator, as per the FDC, above. The bonus can combine with that from an FDC, but not from another computer. Historically, these were mechanical rather than electronic devices, or a simple book full of precalculated data! The "computer" requires an operator, who makes the appropriate weapon-skill roll each turn. Each success adds +1 up to his computer's maximum bonus. A normal failure simply lengthens the process, while a critical failure means he must start over. A targeting minicomputer gives a maximum +2 bonus, a microframe +3, a mainframe +4, or a macroframe +5.

Targeting Radar or Sonar: Active radars provide a +2 or sonars a +1 when locked onto a target. Both may not be used at once, though the bonus adds to FDC or computer bonuses.



Special Accessories

Brigs and Restraints: Any passenger accommodations (see pp. 141-142) can be equipped with manacles, bars, etc. to serve as brigs. This costs an extra 10% of base module cost.

Cargo Ramp: Vehicles with 10 or more VSPs of cargo space (or six or more passengers) may have a large back or front drop ramp at no extra cost. Raising or lowering the ramp takes 2 seconds. When lowered, any attack aimed at the ramp side has a 50% chance of ignoring PD and DR. Any nonaircraft up to half the size of the cargo compartment may drive in or out.

Emergency Lights and Siren: These add +4 to Vision rolls and +8 to Hearing rolls to detect the vehicle. Turning the lights and siren on or off is a combat action.

Paint: The first paint job is free. Appropriate camouflage can impose a -2 to spot the vehicle, but out-of-place camouflage (such as arctic white in a green field) can give a +2! A new paint job takes 1 man-hour per 12 sf of overall surface area, or 20% of that time if using spraying equipment.

Self-Destruct: Treat built-in explosives as a bomb or a set of several linked bombs (p. 132). Fusing may be set for contact, operator control, timed, or remote control (see p. 137).

Standoff Armor: This option improves armor's resistance to HEAT rounds. Standoff armor may be mounted on any facing of a body or superstructure with DR 10 or higher, except the underside. Vehicles with standoff armor may not benefit from any streamlining.

Standoff armor adds 15 DR to that facing's armor on brackets several inches away from the body proper. When a HEAT round hits the standoff panel, much of its energy discharges harmlessly in the empty space between the panel and vehicle. In game terms, a standoff panel halves the HEAT armor divisor; usually this will make a (10) into a (5).

Panels of standoff armor frequently fall off. In cross-country travel, a control roll should be made to avoid knocking part of the armor off in a ditch, on a tree, etc. If a vehicle operator fails a hazard roll (see p. 151) caused by damage that penetrated the armor, assume that a gap is created in the standoff panel, as well. Any such gap may be targeted at an additional -2 to the facing's usual size modifier – this bypasses the HEAT-reducing effect *and* the panel's DR 15!

Normal standoff armor weighs and costs the same as 18 points of armor for its facing; the extra weight and cost is for its brackets and mounting gear.

Crew Requirements

Knowing how many crew members your vehicle will have helps in allocating facilities. These guidelines determine what a minimal effective crew would include:

Crew Stations: Normally require a crew member for each crew station, although a vehicle only truly needs someone to fill the driver (or equivalent) crew position.

Rowers: One per rowing position.

Loaders: As specified for each weapon carried.

Riggers: Per the airship chassis' description.

Auxiliary Vehicles: Find the crew needs of often-used auxiliaries and add them to the host vehicle's crew.

Medics, Labs, Etc.: Many component modules supply space for specialized services, which usually require specialized crew members to perform them.

On long-occupancy vehicles, also add:

Mechanics: Add up the total kW of power generation, divide by 500, then find the square root. (*All* coal-burning vehicles – long-occupancy or not – also need this many stokers to feed the engines, in addition to the mechanics.) Add in maintenance personnel, per p. 144.

Stewards: One per 100 military passengers, three times as many for paying civilian passengers.

Service Crew: One per 200 other crew, round down.

Ground vehicles and aircraft usually carry their minimal crew – 1-3 soldiers for halftracks or 3-6 for tanks, and 1-12 airmen for airplanes depending on size.

Naval vessels often carry a *much* greater crew, to improve efficiencies, provide 24-hour operations, repair battle damage, and offset combat losses. Even submarines, with space at a premium, will carry 30-80 men in most classes. A destroyer might have 200 crewmen and a cruiser 900. Battleship crews averaged 1,800 men and could reach 2,500.

About one crew member in 12 will be an officer; the percentage of officers goes up in smaller and combat vehicles, down in larger and support vessels.

Standoff armor can also be made of stout wire mesh; this has the same divisor-halving effect on *all* HEAT rounds, but its DR 15 is open-frame armor (see p. 156). Mesh standoff armor weighs and costs the same as 4 points of standard armor.

As an additional option, at a 50% increase in weight and cost, any body standoff armor can be extended to cover attacks on the motive subassembly 50% of the time.

Historically, the Germans were the only combatant to use standoff armor routinely, but they mounted it on many tanks.

Wading Screen: This collapsible assembly of DR 2 waterproof canvas fits around a ground vehicle like a belt. When raised, it increases flotation rating (see p. 147) by 312.5 lbs. × base body VSPs. The vehicle has no hydrodynamic lines, and the crew cannot fire any weapons not facing up or even see unless exposed out of a topmost hatch. Attacks easily puncture the canvas, causing leaks that return flotation to normal. A wading screen has the same weight and cost as 3 points of body DR.

Step 6: Occupants and Related Gear

Total up allocated space to see how many VSPs remain for occupants. A design may need to be moved to a larger or smaller chassis at this point.

A vehicle must allocate room for everyone riding in it. First, determine whether the vehicle will be short- or long-occupancy. The former are only driven for a few hours before the crew stops to rest, stretch their legs, etc. The crews of long-occupancy vehicles may stay on board for months at a stretch.

All vehicles will require crew stations for drivers, gunners, commanders, radio operators, sensor operators, and some other rare functions. Each vehicle function may only be assigned to one station, but a crew station can handle more than one function (hull machine-gunner and radio operator are often combined on WWII tanks, for instance). That crew member must either switch among his jobs or combine them at *greatly* reduced efficiency. Gunners firing open-mount weapons mounted on a structure's top can stand on the deck, instead. Each crew station should be given an appropriate name.

Loaders, mechanics, service crew, stokers, riggers, and passengers require no crew station. They still need a passenger seat or standing room in a short-occupancy vehicle, except that loaders require work space in *all* vehicles and riggers never do. Passengers can use 6 VSPs of cargo space, 4 VSPs if crammed together. Long-occupancy vehicles will require quarters for *all* occupants. This provides work space for everyone except those positions needing crew stations and loaders.

Seats and quarters are allocated *minimal* volume in the components table. Adding 50% to 100% more VSPs each will make them increasingly more roomy and comfortable. Crew stations can be grouped together into a "ship's bridge," then further VSPs can be added for officers to move about, etc.

Stations, Seats, and Standing Room

Crew Station: This cramped seat has basic controls for the jobs assigned to it, and just enough space to squeeze into it *or* for bulky gear like parachutes. Its VSPs can be reduced to 4, but this means occupants must exit the vehicle to change places.

Backup Driver Option: The first set of driver controls on a vehicle is free. Additional sets are not. Large vessels often have backup driver positions to maintain control should combat knock one or more of them out. Some armored cars mount duplicate controls to provide a quick getaway in reverse.

Passenger Seat: This cramped seat fits one, with just enough room to squeeze by someone else and change seats.

Exposed Option: This places the occupant halfway out of the vehicle, as seen on many biplanes. Or the ***Ragtop Option*** provides an exposed seat or seats with a convertible DR 2 fabric covering to keep out the weather, as on many jeeps. Neither provides room for someone to switch places with the occupant.

Standing Room: Fits one, with room to squeeze by.

Cycle Seat: This seat works like a saddle, allowing the occupant to straddle the vehicle and ride outside of it (exposed to enemy fire). It may only be placed on the smallest chassis in each category except airships. The first cycle seat is always a crew station. Additional ones are always passenger seats.

Vehicles Variance

This system varies from ***GURPS Vehicles*** in several respects, to simplify or improve historical accuracy. Most changes are explained. Those using ***Vehicles*** to embellish this system should also know the following.

Wing Volume: Wing volume has been divided by 5 after area is calculated for more accuracy.

Armor: Cheap armor is DR 70 per inch, standard DR 82, expensive DR 98, and advanced DR 122.

Radios: The revised range rules from ***GURPS Steampunk*** have been used.

Weapon Limits: Some – such as maximum RoF – have been ignored to reflect historical performance.

Ammo Weight and Volume: Weight has been kept constant across ammunition types and required volume tripled to reflect historical data.

Indirect Fire Range: Calculating this for guns only has been changed to multiplying Max range by:

[square root of (bore width + 10) × square root of (barrel length in calibers + 10)]/30

If result is less than 1, use 1.

HE and Related Damage: Multiplying by 0.5 if bore or warhead size is up to 60mm, 0.6 at 61-90mm, or 0.8 at 91-110mm will provide a more historically accurate figure, but this real-world statistic varies *immensely*.

Rockets, Missiles, and Torpedoes: Multiply the warhead weight by 3 before figuring motor performance. For battery-driven torpedoes, multiply End by 0.36. The calculated maximum or indirect-fire range will often greatly exceed the historical range of early historical models of these weapons, less often with later models.

Bombs: Multiply calculated damage by 0.5. Streamlined bombs (see p. 155) also would increase warhead weight by 50%.

Crush Depth: The revised rules from ***GURPS Atlantis*** have been used.

Stall Speed: The rules have been revised in accordance with material planned for ***Vehicles Companion***.

Landing and Takeoff Runs: The rules have been revised to easily factor in carrier-based aids.

Pricing: The TL-based cost modifiers for weapons and ammo have been ignored. *All* components have had costs divided by 10 to roughly reflect WWII-era dollars.

Fudging: Even with these modifications, this system will not perfectly replicate all historical vehicles. Some final designs have had statistics modified (though no more than 20%) to reflect real-world data. GMs may modify original designs similarly, of course.

Crew stations can be split between two adjacent structures. Divide the VSPs between the two areas. Those crew members are considered to be in both structures for the purposes of taking damage (p. 156). For instance, a tank commander's station will usually be wholly within the turret; the loaders may be split evenly between turret and body, and the gunner might have either arrangement depending on the specific layout.

Quarters

Historically, enlisted seamen got hammocks except on subs and U.S. warships. Submariners and U.S. ratings got bunks, except that all submariner ratings shared them (two men rotating use of one bunk). Petty officers usually got their own bunk. Two junior officers often shared a cabin; on a submarine only the captain got his own cabin. On surface vessels, senior officers got their own cabins. On large ships, captains' and admirals' cabins were often luxurious.

Quarters include access space, galleys, laundry chutes, toilets, and related facilities as appropriate for overall crew size. Adding empty VSPs will improve crew comfort.

Hammock: Provides no creature comforts.

Bunk: Gives a bit of comfort, but no privacy.

Cabin: A tiny room with bunks and desk.

Luxury Cabin: Well-equipped, but still snug.

Crew Station and Quarters Accessories

Armored Station: This provides +60 DR to be divided among the six facings of a crew station; i.e., it can be placed as +10 DR on all facings or unevenly among them. Two modules can protect two stations or provide +120 DR toward one, etc.

Environmental Control: This modifies the temperature in crew spaces by as much as 40°, *greatly* improving quality of life aboard the vehicle. Each module supports 25 people.

Life Support: This acts as *Environmental Control*, above, and provides bottled oxygen and water for a period measured in man-days. For instance, 30 man-days would keep one man breathing for 30 days, two for 15 days, etc. It can be turned off if not needed. Any life support providing 10 man-days or more can replenish its air supply by compressing ordinary air when it's available. Each module provides 1 man-day of life support. Structures with life support must be sealed; see p. 138.

Provisions: Food and water for the crew. Each module feeds one man for 20 days.

Special Occupant Stations

The following don't fall under the normal rules for occupancy, but are often installed, particularly on large vehicles.

Hall: This room with furnishings serves as a bar, conference or dining room, etc. Each module seats 10 comfortably.

Hospital Bed: Fits one patient with room to aid him.

Science Lab: This equipment-filled laboratory aids a specific Scientific skill (often Meteorology). The lab may be required to perform a task; or if not required, it gives a +2 bonus to using the skill. Physics labs multiply power needs by 100!

Stage: Used for briefings, dancing, etc., each module provides a 100-square-foot stage, lights, and a basic sound system.

Stretcher Pallet: This stretcher-bed has safety straps and is suitable for an ambulance or medevac aircraft.

Surgery: This contains one operating table and related equipment. It allows Surgery rolls at no penalty other than the same penalties that gunners would take for vehicle movement (see p. 155). It also gives a +2 to First Aid skill.

Workshop: This includes the tools and spare parts for minor repairs using Mechanic, Engineering, Electronics, and Armoury skill. Up to three people can work in a workshop at once; ships may have several workshops. Using a workshop to make repairs or modifications adds +2 to user's skill.

COMPONENT MODULES TABLE

The following table lists the standard vehicle components described on pp. 136-142. *Module Type* gives the name. *VSPs* gives the space that each module of that type takes up. *Weight* is how heavy each module is. *Cost* is price per module. *Power* is the number of kWs that each module of that type requires; a value of "neg." means it drains a trivial amount of power, but must still be connected to a power source to operate. Values in brackets are not counted in vehicle empty statistics; see p. 144.

Miscellaneous Equipment

Module Type	*VSPs*	*Weight*	*Cost*	*Power*
AA Drag Cable	6	1.2K	$100	–
Airlock	15	750	$50	–
Arrestor Hook	1.5	150	$20	–
Autopilot	–	5	$20	neg.
Bilge Pumps	2	200	$50	–
Bulldozer Blade or Plow	–	p. 136	p. 136	neg.
Crane	6	1.5K	$800	1
Extendable Ladder	1	100	$17	–
Fire Extinguisher	1	250	$50	–
Launch Catapult	160	40K	$20K	500
Mat Layer	10	1K	$100	–
Mine Flail	7	2K	$200	45
Remote Control, Radio-Guided				
Host	–	60	$30	0.1
Remote	–	10	$1,000	–
Remote Control, Wire-Guided				
Host	–	50	$10	–
Remote	0.1	20	$500	–
Vehicular Bridge	2	500	$100	1.25
Vehicular Parachute	1	120	$2	–
Winch	1	250	$25	0.125

Small-Craft and Cargo Stowage

Module Type	*VSPs*	*Weight*	*Cost*	*Power*
Base Dry Dock	80	2K	$500	–
Add-On Dry Dock	40	–	–	–
Base Hangar Bay	60	2K	$500	–
Add-On Hangar Bay	30	–	–	–
Base Vehicle Bay	42	1K	$300	–
Add-On Vehicle Bay	21	–	–	–
External Cradle	1	250	$25	–
Cargo	1	[100]	–	–
If Exposed Cargo	1	[200]	–	–

Surface Features – all are variable; see p. 138

Communications, Sensors, and ECM

Module Type	*VSPs*	*Weight*	*Cost*	*Power*
Radio Transmitters				
Small (3-mile)	–	2	$4.50	neg.
Medium (10-mile)	–	9	$18	0.1
Large (30-mile)	0.4	90	$55	0.4
Very Large (100-mile)	3.6	900	$180	1
Immense (300-mile)	36	9K	$540	4
Small Radio Jammer (3-mile)	9	2.2K	$4.5K	10
Medium Radio Jammer (10-mile)	36	9K	$18K	40
Radio Receivers				
Small (×1/3)	–	0.5	$1	neg.
Medium (×1)	–	2	$4	neg.
Large (×3)	0.1	20	$12	0.05
Very Large (×10)	1	200	$40	0.1
Immense (×30)	8	2K	$120	0.4
Radio Receiver Options				
Direction Finder	×1	×1	×5	×1
IFF	0.1	20	$100	neg.
Navigation Instruments	0.1	20	$5	–
Periscope	0.1	25	$25	–
Radar	0.1	20	$100	0.25
Nontargeting Radar	×0.5	×0.5	×0.5	×1
Radar Detector	–	10	$40	neg.

Communications, Sensors, and ECM (Continued)

Module Type	*VSPs*	*Weight*	*Cost*	*Power*
Radar Jammers				
Small	0.8	100	$2K	500
Medium	1.2	150	$3K	750
Large	1.6	200	$4K	1K
Recon Camera	0.2	50	$250	–
Searchlight	0.4	100	$50	5
IR Searchlight	0.6	150	$250	5
Active Sonar	0.8	200	$400	2.5
Nontargeting Active Sonar	0.8	200	$200	2.5
Passive Sonar	0.4	100	$200	neg.
Active/Passive Sonar	1.2	300	$600	2.5
Sound Detector	1	50	$400	neg.
Discharger, Smoke or Chaff	0.2	20	$10	–
Radar Reflectors				
Destroyer	25	2.5K	$2.5K	–
Fighter	0.5	45	$45	–

Targeting Aids

Module Type	*VSPs*	*Weight*	*Cost*	*Power*
Bombsight	–	5	$20	–
Improved Bombsight	–	5	$200	–
Fire Direction Center (FDC)	60	3K	$5K	neg.
Targeting Computers				
Mini	1	140	$850	0.1
Microframe	2	300	$1.8K	1
Mainframe	3	600	$7K	10
Macroframe	17	2.1K	$62K	100

Special Accessories – many are variable, also see p. 140

Module Type	*VSPs*	*Weight*	*Cost*	*Power*
Brigs and Restraints	–	–	+10%	–
Emergency Lights and Siren	–	–	$5	neg.

Occupants and Related Gear

Module Type	*VSPs*	*Weight*	*Cost*	*Power*
Crew Station or Passenger Seat	5	20	$10	–
Exposed Option	2	×1	×1	–
Ragtop Option	2	+5	+$5	–
Backup Driver Option	×1	+50	+$10	–
Standing Room	4	–	–	–
Cycle Seat	–	10	$5	–
Hammock	20	100	$2	–
Bunk	20	200	$10	–
Cabin	100	2K	$300	–
Luxury Cabin	200	4K	$1K	–
Armored Station	–	200	$400	–
Environmental Control	1	250	$50	6
Life Support	1	250	$20	0.5
Provisions (20 man-days)	1	[240]	[$12]	–

Special Occupant Stations

Module Type	*VSPs*	*Weight*	*Cost*	*Power*
Hall	200	80	$50	0.1
Hospital Bed	60	200	$10	–
Science Lab	200	20K	$20K	1
Stage	200	250	$100	0.1
Stretcher Pallet	8	50	$10	–
Surgery	40	500	$1K	0.5
Workshop	240	30K	$6K	1

Powertrains and Fuel – see pp. 128-129
Weapons and Accessories – see pp. 130-135

GENERAL STATISTICS

Now that the vehicle has been designed, its overall general statistics must be determined.

Passive Defense (PD)

Armor with DR 1 is PD 1, DR 2-4 is PD 2, DR 5-15 is PD 3, or DR 16+ is PD 4. Add +1 PD for a 30° slope or +2 PD for a 60° slope.

Vision Characteristics

Classify the vehicle as Good, Fair, Poor, or No View.

A Good View, typical of cars and fighters, provides unrestricted vision over most of the potential field of view, but a window critical hit (see p. CII62) always hits a window.

A Fair View, typical of trucks and bombers, requires mirrors to look toward the rear and provides no view below. Vision rolls will take a -1 if toward one of the blind spots. Window critical hits hit a window 50% of the time.

A Poor View, typical of tanks, uses visions slits and viewing scopes to provide minimal vision. All vision rolls are at -2, often worse, and people next to or on top of the vehicle can easily move out of view. Window critical hits are ignored.

No View is primarily used for submarines. Windows would place severe limits on their crush depth (see p. 148).

Windows possess one-half the DR of the vehicle face they are placed in, up to a maximum of DR 10.

Weight (Wt.)

Empty weight is the sum of all components with their weight not listed in brackets.

Payload is the sum of all components with their weight listed in brackets, plus 200 lbs. per occupant, plus the weight of all carried vehicles, plus fuel (or ballast). Per gallon, fuel is:

Fuel	*Wt.*	*Cost*	*Fire*
Aviation Gas	6.5	$0.20	13
Diesel	6	$0.12	9
Gasoline	6	$0.15	11
Jet Fuel	6.5	$0.30	13
Rocket Fuel	10	$0.20	13
Coal	250	$0.50	–

The Fire number indicates flammability. Modify by +0 for self-sealing fuel tanks, +1 for standard tanks, +2 for light, or +3 for ultralight.

Loaded weight is the sum of empty weight and payload. Though all following calculations use pounds, it usually will be simpler to list the final weight in tons (pounds / 2,000).

Cost

This is the sum of all component prices not listed in brackets. Those prices in brackets and fuel (see above) are the payload price, which isn't listed among the vehicle's primary statistics, but should be mentioned in its general description.

Health (HT)

HT measures how well the final vehicle resists the wear and tear of routine operation or combat damage. HT declines as vehicle weight increases. Most WWII vehicles have a very low HT and are very temperamental in service. Vehicle HT cannot be lower than 6 or higher than 12. To calculate it, multiply the body's hit points by 200, then divide by loaded weight. (If the result is less than 0.5, the vehicle is too heavy and it must be lightened.) Add 5. The formula is:

vehicle HT = (200 × body HPs / loaded weight) + 5

Round to the nearest whole number. Maximum is 12.

Size

For a reproduction of a historical vehicle, simply use the real dimensions. For a new vehicle, base its dimensions on a real vehicle of similar volume, and adjust to taste.

Maintenance Interval (MI)

The maintenance interval indicates how long the vehicle can operate before requiring routine service, such as oil changes, new belts, etc. To calculate maintenance interval in hours, multiply vehicle cost by 10. Find the square root of that result. Divide 20,000 by that square root. The formula is:

maintenance interval in hours =
20,000 / [square root of (vehicle cost × 10)]

Each maintenance checkup requires 4 hours of work. This can be divided among several technicians with the appropriate Mechanic skill at 9 or higher and the proper tools.

When a checkup is missed, roll against the average Mechanic skill of those who made the last checkup, at -4 for each additional missed checkup. If that roll fails, roll vs. the vehicle's HT. A failure drops HT by 1. Mechanics can restore the lost HT; treat as a minor repair (see below). A critical failure also indicates a major breakdown; the GM picks the type.

Vehicles with onboard maintenance crews (ships, primarily) should instead list *man hours (MH)* of maintenance per day. Divide 96 by the maintenance interval to reach this figure. A military mechanic usually provides 8 hours of maintenance per day, but can provide more during combat.

Vehicle Repair

Repairs usually require Mechanic skill with the correct specialization and proper tools; see p. 190.

Minor repairs take 30 minutes per attempt. They either fix the problem or restore 1 lost HP times the amount the roll succeeded by (minimum 1). Restoring HPs to a nondisabled structure (see p. 156) is a minor repair.

Major repairs take the same time, and restore the same number of HPs, but take a -2 modifier and require 10-60% of component cost in new parts. Restoring HPs to a disabled (but not destroyed) assembly is a major repair.

Vehicles with mechanics onboard may undergo minor repairs while in action. Major repairs usually require infrastructure beyond what the repaired vehicle can carry: dry docks for ships, cranes for engines, etc.

PERFORMANCE

Once a vehicle is finished, its ground, water, underwater, and air performance can be calculated. Many vehicles will have performance characteristics in multiple categories; for instance, all airplanes have both ground and air performance.

General Guidelines

Some characteristic are based upon the vehicle body's VSPs – *always* use the modified VSPs after any chassis options have altered the basic chassis VSPs.

A few calculations will request a square or cube root. (Some components already have asked for these.) Any spreadsheet program or financial calculator can handle these. Square roots can be calculated as the number to the power of 0.5; cube roots are the number to the power of 0.3334 – this is the y^x key on financial calculators. P. VE138 provides a simplified table for cube roots, but most designers will want to be able to compute these values more precisely than that.

Characteristics that are unique to each mode of travel will be described and calculated in this section, but all modes of travel will have the following five characteristics:

Top Speed (Speed)

This is the highest speed that the vehicle can reach except in special circumstances, measured in miles per hour, or mph. Translated to ***GURPS*** movement, each 2 mph of speed equals 1" (1 yard) of movement per turn. For instance, a vehicle with a 50 mph top speed may move 0" to 25" each second.

Acceleration (Accel)

This is the maximum amount that the vehicle's own motive system can increase its current speed in each second, which is one ***GURPS*** turn. It is measured in miles per hour per second, or mph/s. A vehicle operator usually may choose *not* to accelerate. Conversely, he may not accelerate past the vehicle's top speed. For instance, a vehicle moving at 35 mph with a 10 mph/s acceleration and top speed of 45+ mph may accelerate to anywhere from 36 to 45 mph in the current turn.

Deceleration (Decel)

This is the maximum amount that the vehicle can safely decrease its current speed in each second. It also is measured in miles per hour per second, or mph/s. For instance, a vehicle moving at 35 mph with a 5 mph/s deceleration may safely slow to anywhere from 34 to 30 mph in the current turn.

Stability Rating (SR)

This measures how likely the vehicle is to flip over, go into a spin, or otherwise do something extreme when the operator loses control. It is an abstract number.

Maneuver Rating (MR)

This measures how many Gs (gravities) the vehicle can safely handle in maneuvering each second.

Quick-and-Dirty Design

This system will not precisely emulate historical vehicles; designers will need to fudge the results to perfectly match real-world statistics. Conversely, this means designers can take short-cuts when recreating historic vehicles if they're not too worried about precision.

In quick-and-dirty design, don't bother keeping track of VSPs, weight, and cost! Simply create the vehicle on the chassis that seems most appropriate. Write down the chassis options that seem to fit. For airplanes, use the wing type and size closest to the historical usage and surface area. Add the appropriate subassemblies.

Now add historical armor levels, at DR 70 (for ordinary steel) to 122 (for the best face-hardened armor plate) per 1" or 25.4 millimeters of armor. Add the components that the historic vehicle had. Best guesses will have to be made about many components; obviously, any battleship had bilge pumps, but few sources discuss how many or how well they worked!

Add engines with the historic output, at 0.746 kW to the horsepower. Give the appropriate transmission the same kW rating. Often a guess will have to be made about batteries; subs carried a *lot* of them! Add fuel tankage if the historic figure is available, but be wary of using "range" statistics to deduce tankage – these vary a lot. Add the appropriate weapons (or the nearest substitute) from those available.

When done, simply record the historic loaded weight, and use the historic empty weight if it's available, too. Don't worry about the cost unless you want to calculate the maintenance interval, in which case assign one based on comparison to the example vehicles in this book. Do not use historical cost, even if available.

Record the historic top speed (at 1 mph per 1.6 kph or 0.87 knots) and whatever other statistics are available (draft and crush depth are common). With power output, loaded weight, and top speed already determined, all other statistics can be calculated normally if the historical value isn't available.

Above all, even when using the full design process, be flexible. Historical statistics can be very murky. They often give armor thickness, but don't discuss armor quality, which can have a great impact on effectiveness. Power figures rarely discuss whether the period method of measuring at the crankshaft or modern method of measuring at the driveshaft is being used. As mentioned, range figures giving the vehicle's radius of action on a full fuel load often vary significantly.

If your final design by either process just doesn't feel right, feel free to fudge the numbers until it begins to fit better. This design system is here to provide you tools with which to fit *your* vision of the Second World War.

Ground Performance

Vehicles use these calculations to determine their performance when moving on the ground.

Ground Acceleration (gAccel)

To determine gAccel, multiply the transmission's kW rating by 2,000. Divide by the vehicle's loaded weight, adding the weight of all towed vehicles, too. (Vehicles using wheels or skis also may add the motive power of any harnessed animals – and one-quarter of the motive thrust from any airscrews, jets, or rockets – before multiplying by 2,000.)

Find the square root of the above quotient. Multiply that by 0.8 to determine gAccel. Round to the nearest mph/s.

Ground Top Speed (gSpeed)

Multiply the *unrounded* gAccel by the following speed factor to determine top speed:

Motive Type	*Factor*	*Motive Type*	*Factor*
Wheels	20	Tracks	12.5
Railway Wheels*	40	Halftracks	15
Two Legs	10	Skitracks	10
Three Legs	12.5	Four or more legs	15

* Can only move on railroad tracks.

Streamlining: If top speed is 50 mph or higher, add 5% to it if the vehicle has Fair streamlining, 10% if Good or better streamlining. This applies only to airplanes in this system.

Round fractional top speeds to the nearest mph. For harnessed animals' top speed, see p. 129.

Ground Deceleration (gDecel)

Simply use the table:

Motive Type	*gDecel*	*Motive Type*	*gDecel*
Wheels	10	Skitracks	15
Tracks or Halftracks	20	Legs	20

Ground Stability Rating (gSR)

Simply use the table:

	Body's Size in VSPs Before Options				
Motive System	*1-6*	*7-20*	*21-60*	*61-600*	*601+*
1 Wheel*	1	1	1	1	1
2 Wheels*†	2	2	2	2	2
3 Wheels*	2	3	3	4	4
4-6 Wheels*	3	4	4	4	4
8+ Wheels*	3	4	4	5	5
Tracks	3	4	5	6	6
Ski- or Halftracks	3	4	4	5	5
2 Legs	1	1	1	1	1
3 Legs	1	1	2	2	2
4+ Legs	2	2	3	3	3

* Subtract 1 (minimum 1) for airplanes' small wheels.

† If designed to use harnessed animals, treat as *3 Wheels*.

Ground Maneuver Rating (gMR)

Simply use the table:

	Body's Size in VSPs				
Motive System	*1-6*	*7-20*	*21-60*	*61-600*	*601+*
1 Wheel*	1.5	1.25	0.5	0.25	0.125
2 Wheels*†	1.5	1.25	0.5	0.25	0.125
3 Wheels*	1.25	1	0.75	0.25	0.125
4-6 Wheels*	1	0.75	0.75	0.5	0.125
8+ Wheels*	0.75	0.5	0.25	0.25	0.125
Tracks	0.5	0.25	0.25	0.25	0.125
Ski- or Halftracks	0.5	0.25	0.25	0.25	0.125
2 Legs	2.5	2	1.5	1	0.5
3 Legs	2	1.5	1	0.75	0.5
4+ Legs	1.25	1	0.75	0.5	0.5

* Cannot exceed 0.5 with railway wheels, harnessed animals, or airplane chassis.

† If designed to use harnessed animals, treat as *3 Wheels*.

Ground Pressure/Off-Road Speed

Ground pressure determines how easily a vehicle negotiates difficult terrain, such as mud or rough ground. Off-road speed is the top speed a vehicle can obtain off a dry road, grass or dirt airstrip, or a similar flat, smooth, firm, prepared surface.

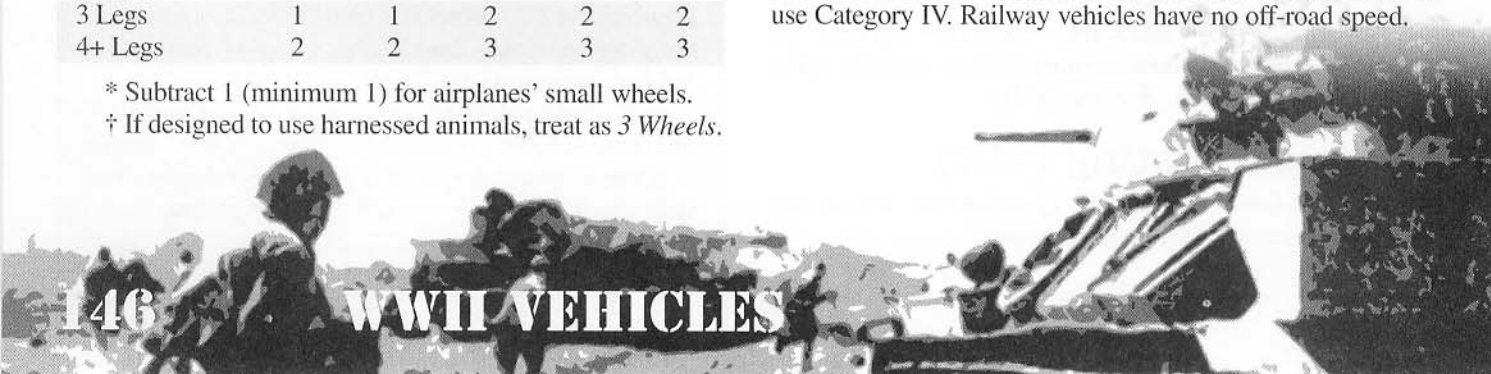
To determine both attributes, first find the vehicle's contact area by dividing its *motive subassembly's* surface area by:

Motive Type	*Factor*	*Motive Type*	*Factor*
Off-Road Wheels	33	Tracks	5
Railway Wheels	66	Halftracks	20
All Other Wheels	50	Skitracks	10
Legs (use the combined surface area of all legs)			12.5

Divide the loaded weight in pounds by the contact area to find ground pressure. The table indicates off-road speed:

Ground Pressure	*Description of GP*	*Off-Road Speed Category I*	*II*	*III*	*IV*
150 or less	extremely low	full	full	4/5	2/3
151-900	very low	full	4/5	2/3	1/2
901-1,800	low	4/5	2/3	1/2	1/3
1,801-2,700	moderate	2/3	1/2	1/3	1/4
2,701-7,500	high	1/2	1/3	1/4	1/6
7,501-15,000	very high	1/3	1/4	1/6	1/8
15,001+	extremely high	1/4	1/6	1/8	no

Off-Road Speed: This is the fraction of its normal top speed that a vehicle can reach when traveling across country. Those with legs use Category I, those with tracks Category II. Vehicles with halftracks; skitracks; or all-wheel drive with standard, heavy, or off-road wheels use Category III. Airplanes and all other ground vehicles except railway vehicles use Category IV. Railway vehicles have no off-road speed.



Water Performance

A vehicle can float if it is waterproof, sealed, or submersible, and loaded weight does not exceed its flotation rating.

Flotation Rating

Any non-ship chassis, or any submarine, has a flotation rating of 312.5 lbs. × body VSPs. Those with mediocre hydrodynamic lines have a flotation rating of 285 lbs. × VSPs, average lines 260 lbs. × VSPs, and fine lines 240 lbs. × VSPs. Add the flotation rating of any pontoons (p. 138). If loaded weight is heavier than flotation rating, the vehicle sinks. Most seaworthy vessels travel at lighter than 90% of flotation rating.

Water Top Speed (wSpeed)

First, calculate the vehicle's *hydrodynamic drag (Hdr)*: Find the cube root of the loaded weight. Multiply it by itself.

Divide the result by the *hydrodynamic lines factor (Hl)*, which is 1 if the vehicle has no hydrodynamic lines, 5 if mediocre lines, 10 if average lines, or 15 if fine lines. The basic ship chassis in this system has fine lines. The formula is:

Hdr = [(cube root of loaded weight) squared] / Hl

Round to the nearest whole number.

Next, determine the vehicle's *aquatic motive thrust (Ath)*. Screw propellers, hydrojets, jet engines, airscrews, rockets, oars, and aquatic harnessed animals contribute their usual motive thrust. Tracked, legged, and wheeled drivetrains with off-road wheels contribute 2 lbs. of thrust per kW of motive power. Add up everything that will be used at once.

Finally, divide aquatic motive thrust by hydrodynamic drag. Find the cube root of the result. Multiply the cube root by 6 to find wSpeed. The formula is:

wSpeed = [cube root of (Ath/Hdr)] × 6

Round to the nearest mph.

A vehicle with harnessed animals may not have a top speed higher than the slowest animal's Move × 2 mph. In this case, this would usually represent a barge being towed down a canal by draft animals walking down paths along the banks.

Planing: If aquatic thrust is at least [(Hl × 5) + 5]% of loaded weight, the vehicle *doubles* its top speed by planing over the top of the water.

Streamlining: If top speed is 50 mph or higher, add 5% to it if the vehicle has Fair streamlining, 10% if Good or better streamlining. This applies only to airplanes in this system.

Water Acceleration (wAccel)

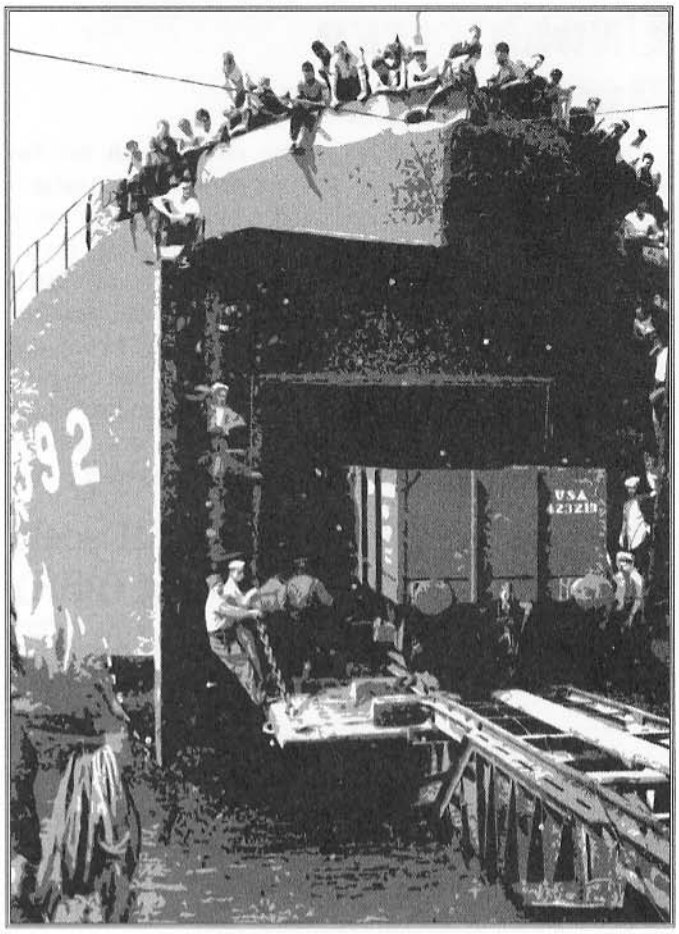
Divide *aquatic thrust (Ath)* by loaded weight, then multiply by 20 to figure wAccel. The formula is:

wAccel = (Ath / loaded weight) × 20

Round to the nearest tenth of a mph/s if the result is under 1 mph/s, otherwise to the nearest mph/s.

Water Maneuver Rating (wMR)

The wSR is 0.25 for vehicles with bodies up to 20 VSPs in size, 0.1 for bodies of 21-200 VSPs, 0.05 for 201-20,000 VSPs, or 0.02 for 20,001+ VSPs.



Water Stability Rating (wSR)

The wSR is 1 for a body up to 20 VSPs in size, 2 for bodies of 21-200 VSPs, 3 for 201-2,000 VSPs, 4 for 2,001-20,000 VSPs, 5 for 20,001-200,000 VSPs, or 6 for 200,001+ VSPs.

Add 1 if the vehicle has average hydrodynamic lines, 2 if it has mediocre or no hydrodynamics.

Water Deceleration (wDecel)

Divide the wMR by the *hydrodynamic lines factor (Hl)* described under *Water Top Speed*. Multiply the result by 100. The formula is:

wDecel = (wMR / Hl) × 100

Round to the nearest mph/s, or tenth of a mph/s if under 1.

The maximum value for wDecel is 10 mph/s. A vehicle can add half its wAccel (rounding up) to wDecel when engines are operating; show the improved wDecel in parenthesis – e.g., 2 (6) – since it won't be available at all times.

Draft

Draft represents the minimum depth of water, in feet, in which the vessel may travel without running aground. To calculate it, find the cube root of loaded weight. Divide the cube root by 15. Multiply the result by the *hydrodynamic lines draft factor (HlD)*, which is 1 if no hydrodynamic lines, 1.1 if mediocre lines, 1.2 if average, or 1.3 if fine. The formula is:

draft = [(cube root of loaded weight) / 15] × HlD

Round to the nearest one-tenth of a foot.

Underwater Performance

Submarines are built on a ship chassis with the *Sub* option. They will have a set of water-performance statistics (see p. 147) for travel on the surface, and a separate set of underwater statistics. Calculate the water performance first.

Although not truly a "submersible," a ground vehicle could travel on a river bottom or seabed if it doesn't float (see *Flotation Rating*, p. 147), has a waterproof or sealed body, and its motive system and passengers require no outside oxygen.

True submersibles *do* need to float; sinking to the bottom will render them unable to move. Submarines are designed like ships, with loaded weight less than their flotation rating.

Underwater Deceleration (uDecel)
Underwater Stability Rating (uSR)
Underwater Maneuver Rating (uMR)

Use the water statistics (wDecel, wSR, wMR) for these.

Underwater Top Speed (uSpeed)

First, calculate the sub's *submerged hydrodynamic drag (HdrS)*: The sub's flotation rating already was calculated on p. 147. This is also its *submerged weight (Swt)*; i.e., it fills its ballast tanks with water to reach this weight and achieve neutral buoyancy. Find the cube root of submerged weight. Multiply the cube root by itself. Divide the result by 4 (or by 1 if calculating for a vehicle without the *Sub* option). The formula is:

HdrS = [(cube root of submerged weight) squared] / 4

Round to the nearest whole number.

Next, determine the sub's *submerged motive thrust (Sth)*. Screw propellers, hydrojets, rockets, and (very exotic) harnessed animals contribute their usual motive thrust. Legged drivetrains contribute 2 lbs. of thrust per kW of motive power. Add up everything that will be used at once – but note that most WWII power systems will not work underwater.

Finally, divide submerged motive thrust by submerged hydrodynamic drag. Find the cube root of the result. Multiply the cube root by 6 to find uSpeed. The formula is:

uSpeed = [cube root of (Sth / HdrS)] × 6

Round to the nearest mph.

A vehicle with harnessed animals may not have a top speed higher than the slowest animal's Move × 2 mph.

Underwater Acceleration (uAccel)

Divide *submerged aquatic thrust (Sth)* by submerged weight, then multiply by 20 to calculate uAccel. The formula is:

uAccel = (Sth / Swt) × 20

Round to the nearest hundredth of a mph/s if the result is under 0.1 mph/s, otherwise to the nearest tenth of a mph/s.

Draft

Submerged draft is simply the cube root of the submarine's submerged weight (as explained for *Underwater Top Speed*) divided by 3.

Crush Depth

This is how many yards deep the submarine may travel before water pressure collapses its hull.

Find the lowest DR on any facing of the body or any subassembly. Add 10 to it. Then multiply by a factor dependent on the ship chassis size: 3 if Small Boat, 6 if Medium or Large Boat, 12 if any Cutter, or 24 if any larger chassis. Divide the result by the body's Size Modifier.

Ground vehicles may also need to determine crush depth if traveling underwater. For them, find the lowest DR as per submarines and add 10 to it. Multiply by 12 for anything built on a tracked chassis, or 6 for anything else. Then divide by the body's Size Modifier.

Long-Term Travel Speeds

Very few vehicles will routinely travel at the *top speed* indicated in these performance calculations. Long periods at top speed test the limits of engine and structural design, and greatly increase maintenance per mile traveled.

Most WWII vehicles usually travel at roughly their *cruising speed*, which requires a high but not unreasonable output from the engines. This would be the speed used when in a hurry to get somewhere, as is usually the case in war.

Those not in a hurry could instead travel at their *routine speed*, which saves a great deal of wear and fuel.

Vehicles that aren't trying to get somewhere, but rather loiter in a particular area – such as patrolling ships, submarines, and aircraft – may opt to travel at *patrol speed*, which leisurely covers the assigned area while vastly extending the vehicle's fuel endurance.

This table illustrates the various long-term travel speeds:

	Fuel Use %	*% of Top Speed Ground/Air*	*Water*	*Maintenance Interval* ×
Top Speed	300%	100%	100%	×0.25
Cruising Speed	200%	80%	90%	×0.5
Routine Speed	100%	60%	70%	×1
Patrol Speed	25%	30%	45%	×2

Multiply the vehicle's standard fuel consumption (p. 128) by the *Fuel Use %* to find fuel usage. Multiply the top speed by the *% of Top Speed* for the vehicle's mode of travel. Multiply the *Maintenance Interval* (p. 144) as indicated. Most naval vessels will need to crew the ships for top speed, even if they will spend most of their time at patrol speed. Aircraft may not travel at slower than their stall speed, of course.

Aerial Performance

Planes, helicopters, autogyros, and airships all use these aerial statistics. Planes and autogyros also will have a set of ground-performance statistics, which should be calculated first. When calculating loaded weight, do *not* subtract the lift generated by an airship's hydrogen or helium.

Stall Speed

Stall speed is the minimum speed in mph that an airplane or autogyro must maintain to stay airborne. To find it, add up the surface area of all wings and rotors; treat STOL wings as having 150% of their actual area. Add in 10% of the body's surface area. The total is the *lift area*. Divide loaded weight by lift area and find the square root of the quotient. Then multiply by a *streamlining factor (Sl)* of 14 if no or fair streamlining (all helicopter and most airplane chassis), 14.7 if good streamlining, or 15.4 if very good. The formula is:

stall speed = Sl × square root of (loaded weight / lift area)

Round stall speed to the nearest mph. The aircraft's gSpeed must be 71% of stall speed (or wSpeed 61%), or it can't take off. (The plane glides just a few feet above the ground or water until it reaches its full stall speed.) It can still be towed (like a glider) or launched into flight.

Helicopters use lift from their rotors to stay airborne; maximum lift is 10 lbs. per kW of motive power to the rotors. Airships have a maximum lift, described for each chassis. Both have a stall speed of 0, and may even fly backward or sideways at up to 5% of their forward top speed.

Takeoff and Landing: Vehicles with a stall speed need a minimum distance to take off or land, measured in yards. Complicating matters, carrier-based planes often take off assisted by catapults or land aided by arrestor hooks.

To figure distances, take the plane's stall speed and subtract 20 if taking off via catapult or 80 if landing via arrestor hook. Divide the result by gAccel for takeoffs or gDecel for landings, to determine *run time in seconds (t)*. Then use the formulas:

takeoff run in yards = (40 × t)* + [gAccel × (t × t)]

landing run in yards = (160 × t)† + [gDecel × (t × t)]

* Only if catapult launched.

† Only if using arrestor hook and wire.

For further realism, subtract any headwind (coming at the plane) from stall speed or add any tailwind (traveling with the plane). Also, increase these figures for less than perfect conditions. A grass field will increase takeoff distance by 10% or (potentially much) more. A wet runway can triple landing runs!

Aerial Acceleration (aAccel)

First, determine the vehicle's *aerial motive thrust (Amt)*. Aerial propellers, *powered* helicopter rotors, jet engines, and rockets contribute their usual motive thrust. Add up everything that will be used at once. Divide the total by loaded weight then multiply by 20. The formula is:

aAccel = (Amt / loaded weight) × 20

Round to the nearest mph (hundredth of a mph for airships).

Aerial Top Speed (aSpeed)

First, find the vehicle's *aerodynamic drag (Adr)*: Add up the surface areas of the chassis and all subassemblies. Also add in the surface area of the wheels for planes with the Fixed Strut option. Divide by the *streamlining factor for drag (SlD)*, which is 1 for no streamlining (helicopters), 2 if fair (most airplanes), 3 if good, or 5 if very good (airships). Add to the result the total of these *drag factors (D)*: 10 for each person in an exposed seat, 15 for each person in exposed standing room, the total surface area of any vehicles carried on decks or external cradles, and 5 per loaded hardpoint. (Aircraft with many external cradles or hardpoints usually should have two sets of aerial statistics, one for loaded performance and one for unloaded.) The formula is:

aerodynamic drag (Adr) = (surface area / SlD) + D

Round to the nearest whole number.

To determine top speed, divide the *aerial motive thrust (Amt)* found under *Aerial Acceleration (aAccel)* by the *aerodynamic drag (Adr)*. Multiply by 7,500, then find the square root of the result. The formula is:

top speed = square root of [(Amt / Adr) × 7,500]

Round to the nearest mph. A helicopter chassis cannot exceed an aSpeed of 150 mph. Only airplanes with very good streamlining, DR 5+ on all facings, and nonpropeller motive systems may exceed 600 mph.

Aerial Maneuver Rating (aMR)

Airships have an aMR of 0.125.

For other aircraft, add up the sum of all wing and rotor hit points. Divide the total by loaded weight. Multiply the result by 180, or 210 if a plane with high-agility wings. The formula is:

aMR = (wing and rotor HPs / loaded weight) × 180*

* Use 210 if an airplane with the High-Agility option.

Round to the nearest half or whole number.

Small and medium helicopters have a minimum aMR of 2, large helicopters 1.5.

Aerial Deceleration (aDecel)

Multiply aMR by 4.

Aerial Stability Rating (aSR)

This is 1 for an aircraft with a body under 20 VSPs in size, 2 for bodies of 20-199 VSPs, 3 for 200-1,999 VSPs, 4 for 2,000-19,999 VSPs, or 5 for anything bigger.

Subtract 1 for anything other than an airplane chassis, or for an airplane with the Biplane option.

VEHICLES IN ACTION

This section builds upon pp. B135-139, 187-188 and ***Compendium II*** to simplify the content of ***GURPS Vehicles***, which should be consulted by those seeking greater detail.

Routine Travel

Routine driving requires one skill roll per 8 hours, or per 4 hours at night or on bad roads. Routine flying requires rolls on takeoff and landing, per hour under 500', or per 10 minutes under 100' in congested areas. (Carrier landings take a -1 per full 20 mph of stall speed, but +4 if using an arrestor hook.) For both modes of travel, roll twice as often in bad weather.

Routine water travel requires skill rolls when docking or undocking, when passing through narrow straits, when maneuvering near other vessels, per day during bad weather or around icebergs, or per hour during storms.

A missed roll means a serious situation develops, with a critical failure indicating a minor mishap. On a normal failure, roll against operator skill again; the minor mishap only develops if the second roll fails, with a major mishap on a critical failure. Operators with Fatigue at 3 or less automatically fail the second roll; roll only to see if it's a critical failure!

In short-occupancy vehicles, travel costs 1 Fatigue per 2 hours, 2 if driving. Fatigue is ×4 if driving off-road, piloting at 500' or less, or steering a watercraft or airship in bad weather.

VEHICLE MOVEMENT

The following rules assume vehicles are being used on the standard ***GURPS*** hex map, with 1" equaling 1 yard. Speeding vehicles will rapidly zip off the map, but in WWII combat many vehicles will be moving fairly slowly.

When a vehicle enters combat, place its counter facing in the proper direction, then record its current speed, and depth or elevation if appropriate. These statistics – plus accumulated G-force – will have to be updated turn by turn.

The vehicle moves when its operator would normally begin his turn. His move, on most turns, will consist simply of operating the vehicle. He may increase speed by up to the vehicle's Accel or *safely* decrease speed by Decel at this time (see *Extra Braking*, p. 151). After that, the vehicle *must* move 1 hex per 2 mph of current speed (round down). It must move straight forward unless it executes a bend maneuver (see below).

Aircraft and subs may use a percentage of forward speed to change elevation, instead. Each lost hex of forward movement raises or lowers the vehicle 1 yard. A turn must be spent at level elevation before switching from diving to climbing or vice versa. At the *end* of the turn, climbing decelerates and diving accelerates *aircraft only* by 20 mph/s × (percent of speed devoted to climb or dive). Diving acceleration can exceed aSpeed.

Turning (Bends)

To change its course, a vehicle must execute a *bend*. (This isn't called a turn, to avoid confusion with a turn of game play.) A bend is measured in degrees. It pivots the vehicle right or left. (Pivot the counter from a rear corner.) For instance, taking a right at the next corner would be a 90° bend (usually). Drifting across lanes on the highway would be a roughly 5° bend followed by an identical bend back in the original direction after the lane change.

Bends create *G-force*. A vehicle may execute any number of bends during its turn, but each additional bend is rated for its own G-force plus that of all previous bends in that turn. For instance, a 0.5-G bend following two 0.25-G bends would rate as a 1-G bend. At the start of each new turn, accumulated G-force drops back to 0.

A vehicle may safely execute bends with accumulated G-force up to its maneuver rating (MR). Each bend in excess of MR will require a *control roll*, see p. 151. The roll takes a penalty of -1 per 0.25 Gs by which the bend exceeds MR. Double this if MR is under 1, or quadruple it if MR is under 0.5.

Calculating G-Force

The G-force imposed by a bend maneuver equals (vehicle speed × bend degrees) / 1,200, rounded to the nearest 0.25 G. For instance, a tank moving at 18 mph turning 17° would execute a (18 × 17 / 1,200) = 0.255 or 0.25-G bend. Bends of more than 2 × MR cannot be attempted in realistic campaigns.

The maximum safe bend is (1,200 × MR) / speed. A 0.02-MR battleship churning through the sea at 34 mph could only safely execute a (1,200 × 0.02) / 34 = 0.705 or 1° bend!

If bending in line with map hexes, a bend from facing a hex side to adjacent point (or vice versa) is 30°, while from hex side to hex side is a 60° bend. For other bends, a protractor is useful.

Each bend exceeding 3 Gs can cause vehicle occupants to gray out or black out. See p. CII131.

Riders and High Gs

Passengers riding on top of the vehicle must make a ST roll for every bend exceeding 0.5 G. Apply a -2 at 1 G, -4 at 1.5 G, etc. Apply an additional -4 if the vehicle is performing a steep climb or dive, or a roll. Failure means they fall down, or fall off on a failure by 4 or more. They automatically fall off if the vehicle operator fails a control roll.

MAP OPTIONS

These rules don't require a map. The GM can simply set up a scenario – "A surfaced U-boat appears out of the fog 200 yards dead ahead. What do you do?" – and use the mechanics for bends, hazards, collisions, etc. to game out the results.

Similarly, GMs may want to resolve huge battles with the mass-combat rules on pp. CII112-129, but have PCs play out their actions using these movement and combat rules.

Alternately, any of scores of WWII boardgames could convert into maps and counters for this system. Simply divide the number of hexes moved by the number of yards that each hex on the gameboard represents.

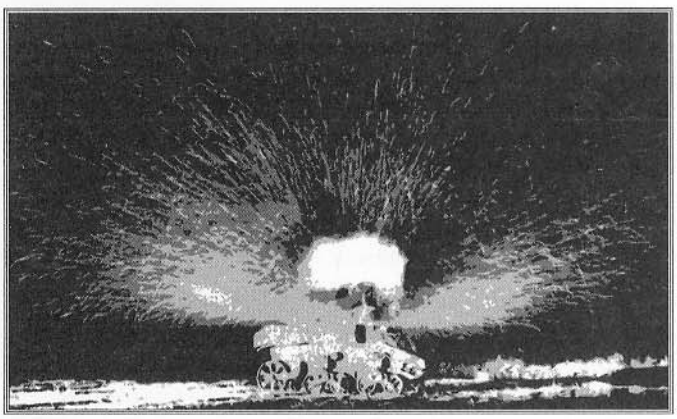
Hazards

In addition to extreme maneuvering, various hazards can also force control rolls. These include *extra braking*, *obstacles*, and *taking damage*.

Universal Modifiers

The control rolls resulting from all hazards take an additional speed modifier of -1 for every 20 mph × MR that the vehicle is moving, rounding down.

They also take a further -1 for every 0.25 G in bends by which the vehicle has exceeded its MR when it encounters the hazard. Double this if MR is under 1, or quadruple it if MR is under 0.5.



Extra Braking

As his turn begins, a vehicle operator may elect to exceed the vehicle's Decel to slow it more rapidly. Ground vehicles may brake at up to 4 × Decel, others at 2 × Decel. This requires a control roll, at -1 per 5 mph/s by which braking exceeds Decel, rounding down. Double the penalty if Decel is under 10 mph/s, or quadruple it if Decel is under 5 mph/s.

Obstacles

A variety of potential pitfalls fall into this category, including potholes, entering turbulence, a log floating just beneath the surface of the water, etc. Each particular one would have its own modifier, from +5 (a small dip in the road) to -5 (a mountain pass with a 100-mph downdraft) or more.

Taking Damage

Crushing or explosive damage of 5 points or more per ton of target weight creates a hazard. The modifier to the control roll depends on damage per ton *before subtracting DR*:

DAM per Ton	*Modifier*	*DAM per Ton*	*Modifier*
4 or less	No Hazard	50-99	-6
5-9	0	100-199	-8
10-19	-2	200-499	-10
20-49	-4	500 or more	-12

For instance, a 38-ton tank that endures a cannon shot doing 246 points of damage would take (246 / 38) = 6.47 points per ton, suffering a hazard with no penalty prior to speed or excessive-maneuvering penalties.

If a collision caused the damage, every operator who actively sought the collision gets a +2 on the ensuing control roll.

Control Rolls

Each bend exceeding MR or hazard forces a vehicle operator to make a control roll. He rolls against the proper vehicle-handling skill (Driving, Piloting, Shiphandling, etc.) with the modifiers as described above. Additional modifiers include:

Land Modifiers		*Vision Modifiers*	
Poor or gravel road	-0†	Well lit area at night	-2*
Wet road or runway	-1†	Poorly lit area at night	-4*
Ice or packed snow	-2†	Unlit area at night	-6*
Oil on road or runway	-2†	Total darkness	-10*
Non-off-road wheels driving off road	-2	Rain or mist	-1**
		Heavy rain, light snow	-2**
		Smoke screen	-3**
Water Modifiers		Dense fog, blizzard	-4**
Choppy water	-1		
Rough seas	-2	*Air Modifiers*	
Storm	-3	High winds	-1 or -2
Major storm	-6	Major storm	-4

† Additional -1 if wheeled vehicle.

* Ignore if using headlights, Night Vision, radar, or infrared. *Exception:* Total darkness negates Night Vision.

** Ignore if using radar. Halve if using infrared.

Land Modifiers: Skitracks improve to -0 on ice or snow.

Water Modifiers: Vision penalties apply only if the watercraft is maneuvering near land or other vessels.

Air Modifiers: Double the penalties when flying within 300' of the ground. Vision penalties apply only if the aircraft is flying within 300' of the ground or close to other aircraft.

Failing a Control Roll

If a control roll fails, *subtract the vehicle's Stability Rating (SR)* from the amount by which the roll was missed, and consult the appropriate table below. Treat a critical failure as having missed by at least 10, unless it was worse!

The operator spends his next turn fighting to regain control; he cannot maneuver. Gunners lose any aiming bonuses and suffer a -1 per point by which the control roll failed until the operator regains control. Any standing occupants make a DX roll at the same penalty to stay upright. If they could conceivably fall out, they make another DX roll, at no penalty, to avoid it.

If multiple failures occur, only the worst result remains in effect at any one time. For instance, a tank that is skidding when it rolls for a vault quits skidding and begins the vault.

Out of Control

If a vehicle's operator is knocked out of action in any fashion, a ground vehicle with fewer than three wheels or four legs will go into a roll. Other vehicles treat it as an automatic hazard by rolling 1d+2, subtracting SR, and consulting the appropriate table.

If the vehicle is still moving afterward, watercraft, airships, and harnessed animals continue ahead at their current speed. Other ground vehicles decelerate by 5 mph per turn. Airplanes and helicopters lose 5 yards of altitude and 5 mph each turn until they stall or crash.

Ground Loss of Control

Failure	*Result*
0 or less	Skid if caused by a bend, otherwise a Veer.
1 or 2	Spinout.*
3 or 4	Roll.
5 or more	Vault.

* Treat as a roll for vehicles with harnessed animals, legs, or fewer than three wheels.

Skid: The vehicle moves 5" in the direction it was moving *before* the bend. Subtract 10 mph from the current speed. Any tracked vehicle must make a HT+2 roll or shed a track, which drops gSpeed to 0 until a minor repair is made (p. 144).

Veer: Change facing by 30°, randomly left or right. Any tracked vehicle must make a HT+1 roll or shed a track.

Spinout: All tires and wheels take 1d damage per 20 mph of speed, rounding up. Tracked vehicles must make a HT-2 roll or shed a track. The vehicle begins to spin. It continues to move in the same direction *throughout* the spin, but rotates 12° per 1" of movement. It rotates in the direction it was bending, or a random direction if a hazard. Each turn it decelerates by 20 mph; the spin stops when speed reaches 0 mph. The driver can only attempt a control roll at -4 as each turn begins. A successful roll ends the spin, and automatically points the vehicle back toward its original facing.

The vehicle turns 90° then rolls in the direction it was facing before it turned. Each hex of rolling counts as 2 hexes of ordinary movement. At the end of every rolling turn, the body and every subassembly attached to its top, underside, right, and left take 10d damage per ton of loaded weight. Top DR protects the body and top subassemblies, right DR right subassemblies, etc. The roll flings away any harnessed animals (see p. 153 for damage) or cycle-seat occupants. The vehicle decelerates by 20 mph per turn and cannot be controlled until it stops. Then roll 1d: on a 1-3, it is right side up, otherwise it has overturned and must be righted before driving. Vehicles with fewer than three wheels or five legs always end up overturned. Vehicles with two legs can right themselves in two seconds. All occupants suffer whiplash (p. 154).

Vault: The vehicle leaps skyward, sails 1d vehicle lengths, crashes into the ground, skids another 1d vehicle lengths, and stops. Treat as a head-on collision (see p. 154) with the ground, inflicted on a random facing (roll 1d6, with 1-2 meaning the front, 3 back, 4 right, 5 left, 6 top) followed by a sideswipe with the ground on a random facing (roll 1d6, with 1-2 meaning left, 3-4 top, 5-6 right). The vehicle ends up on the same side that endured the sideswipe. All occupants suffer whiplash (p. 154).

Water Loss of Control

If adding water increases loaded weight past 100% of the vessel's flotation rating, it sinks at a rate of 1 yard per second!

Failure	*Result*
0 or less	Minor Swamping. If hazard, also Veers.
1 to 4	Major Swamping. If hazard, also Veers.
5 to 7	Capsize.
8 or more	Capsize *and* Hull Stress.

Minor Swamping: The watercraft decelerates by 5 mph and takes on 1d × (2% of loaded weight) tons of water.

Major Swamping: The vessel decelerates by 10 mph and takes on 1d × (3% of loaded weight) tons of water. Everyone on deck must make a roll against the best of DX, Boating, or Seamanship, or be washed overboard!

Veer: The watercraft turns randomly 30° to the left or right.

Capsize: The vessel takes on (20% of loaded weight) tons of water and capsizes! If it doesn't sink, treat as a ground vehicle roll, except damage is halved. Anything in the open and not secured is tossed overboard. The vehicle is holed and taking on more water (see p. 156). A submarine or legged vehicle can right itself in two seconds; other vessels will require outside aid.

Hull Stress: Roll vs. the vessel's HT. Failure means the body takes damage equal to 0.5 points × the amount the roll failed by × body area. DR does not protect.

Underwater Loss of Control

Depth changes may make the sub surface or hit bottom!

Failure	*Result*
0 or less	Minor Depth Change. If hazard, also Veers.
1 to 4	Major Depth Change. If hazard, also Veers.
5 or 6	Hull Stress.
7 or more	Major Hull Stress.

Minor Depth Change: The vehicle decelerates by 5 mph, and either gains or loses (roll randomly) 5 yards of depth.

Major Depth Change: As above, but double effect.

Veer: The sub turns randomly 30° to the left or right.

Hull Stress: As Major Depth Change, plus roll vs. HT+5, with a -1 per 20% of crush depth the vessel is currently at. Failure means the hull takes 0.5 points damage × the amount the roll failed by × body area. DR does not protect.

Major Hull Stress: As above, but without the +5 to HT.

Aerial Loss of Control

Altitude changes may cause crashes, while speed changes may cause stalls!

Failure	*Result*
0 or less	Energy Loss if caused by bend, otherwise Veer.
1 or 2	Severe Energy Loss if caused by bend, otherwise Energy Loss and Veer.
3 or 4	Tailspin.
5 or more	Disaster.

Energy Loss: The vehicle loses 5 yards of altitude and decelerates by 5 mph per 0.25 G of attempted bend.

Veer: The aircraft veers 30° to right or left; roll randomly.

Severe Energy Loss: Same as Energy Loss, but double effect. Each engine or jet has a 1-in-6 chance to quit working; pilots can make a Piloting-4 roll each turn to restart one. A rotor loses 1d-1 × 10% of its original hit points to rotor strain.

Tailspin: The vehicle begins to spiral down. It must use 100% of its speed to dive each turn. Each turn, it will roll 180° and turn 30° in the direction of its last bend, and wings will lose 1d-1 × 10% of their original HPs. An airship loses that percentage of its lifting gas, instead. Rotors lose 2d-2 × 10% of original HPs. The pilot may try a control roll to pull out of the spin each turn, at -5 plus all hazard modifiers that apply.

Disaster: A wing breaks off, the rotor fails, etc. As per tailspin, but there's no chance of pulling out of it! Bail out!

Special Movement

The following special circumstances often arise:

Falling or Leaping

People falling or leaping out of a vehicle take normal falling damage (p. 204) plus 1d for every 5 mph of speed. Falling vehicles accelerate at 20 mph/s until they reach terminal velocity, calculated as the vehicle's aSpeed with motive thrust equal to loaded weight in pounds.

Moving in Reverse

Ground vehicles at 0 mph can shift into reverse, except motorcycles. Top speed is halved (maximum 20 mph), as is gAccel. The vehicle must return to 0 mph to return to forward movement. Control rolls are at -4 unless the vehicle has rear-facing duplicate controls, as did some WWII armored cars.

Terrain and Off-Road Movement

Ground vehicles usually use their off-road top speed (see p. 146), but see pp. B187-188 for special circumstances.

Snow or ice reduces most vehicles to 2/3 their normal speed for the terrain type, but doubles speed for skitracks.

Getting Stuck

Mud, swamps, etc. will halve off-road speed unless the vehicle has extremely low ground pressure or legs. A vehicle with high ground pressure or worse may get stuck; make a Driving-4 roll every 10 minutes if high GP, every minute if very high, or every 10 seconds if extremely high. Stuck vehicles cannot move; their drivers can shift into reverse and make a skill roll at -5 every 3 seconds to free the vehicle. Failure by 5 or more means the vehicle is permanently stuck, until towed out.

Slopes

Uphill slopes decelerate ground vehicles. Downhill slopes accelerate them. Both add 1 mph/s per 4.5° of slope; this does not count against a vehicle's own gAccel or gDecel, which can be used to offset or increase a slope's effects. Either sort of slope can propel a vehicle past its top forward or reverse speed!

A 90° or greater slope is an unclimbable obstacle. Ground vehicles can drive *over* obstacles with a height in feet less than (vehicle Size Modifier + 1) × 2 feet for legs, × 1 for tracks, × 0.5 for halftracks or off-road wheels, or × 0.25 for skitracks or other wheels. This is a +0 hazard (see p. 151). Anything with a greater height is a collision (see p. 154), instead.

Railway Movement

A vehicle with railway wheels can only move on railway tracks, and must execute bends to follow the rails. On *any* failed control roll, the vehicle jumps the tracks, immobilizing it.

Exceeding Top Speed (No Engine)

A vehicle that loses an engine or otherwise is moving faster than its top speed must decelerate by 5 mph if on ground, 2 mph in water, or 1 mph in the air. The operator may choose to decelerate more. Diving planes don't decelerate until the dive ends.

Running Aground

Any watercraft that enters water shallower than its draft will run aground. Any sharp rocks or reefs will do damage as a sideswipe collision, or a head-on if their gradient is steep. Taking on extra weight in shallow water may also ground a vessel.

The crew may jettison items to raise draft. Even if lightened enough, grounded vessels remain stuck 50% of the time.

Currents and Winds

Ocean currents increase or decrease a watercraft's speed, or push it sideways, by the current's speed. They average 5 mph. Winds have the same impact on aircraft.

Gliding

Gliders decelerate by 1 mph/s unless diving. A Piloting (Glider) roll can offset this, or gain a net 1 mph/s aAccel on a critical success. The roll takes a penalty of [loaded weight / (wing area × 25)], rounded down, times 3. Multiply STOL wing area by 50%. Roll once a minute for routine flight.

Dive! Surface!

Preparing a sub for diving requires 5 turns, plus 1 turn per 10 tons of loaded weight if a roll against the crew's average Sailor skill is made exactly. Add 2 turns per point by which it failed, or subtract 1 per point by which it succeeded.

If a submarine exceeds its crush depth, roll vs. its HT+4 every minute, at -1 per 20% below rated depth. A failed roll inflicts 0.1 points of damage × its body surface area per point the roll failed by (minimum 1 hit). DR does not protect. On a critical failure, the hull buckles and the submarine is destroyed!

No-Wheels Landings

Treat landing without any landing gear on land as a half-damage sideswipe collision at stall speed. Any plane can land on water normally without any gear, but most will start sinking.

Stalls

An aircraft that decelerates below its stall speed levels out in one turn if climbing; afterward, it devotes 1d+2 × 10% of speed to diving. The pilot may only make the dive *steeper*, and gunners cannot fire. The dive will accelerate the plane. If it reaches stall speed again, the pilot may make a Piloting roll each turn at -1 per full (10 mph × aMR) speed to regain control.

Helicopter Agility

Each turn, copters may trade 2 mph/s of aAccel to change altitude by 1 yard or to drift 1 yard left or right while keeping the same facing; 5 mph/s of aAccel can be traded for a 1-turn +0.25 to aMR. A hovering copter may also switch to sideways or reverse movement, at one-half its usual aMR and aAccel.

Airship Flight

Airships can get a free altitude change of 10 yards per turn, by dumping 10% of 1 day's ballast; see p. 124. (The gas is dumped first, *then* the ballast, to descend.) Landing requires a ground crewman per 5 tons of mass, twice that in bad weather.

Collisions

Collisions happen automatically when a vehicle's course intersects another object or the ground. Collisions do crushing damage; armor DR does protect, but see *Whiplash*, below.

Any colliding object (vehicles, people, etc.) *inflicts* a basic collision damage of (body HPs / 200)d6. Multiply this by:

Head On: Multiply basic collision damage by the sum of the vehicles' speeds if their *directions of movement* are within 30° of facing each other. Damage usually is to the front of both vehicles, unless one was moving in reverse or sideways.

Rear End: Multiply basic damage by the faster vehicle's speed minus the slower vehicle's if the directions of movement are within 30° of being identical. Damage usually is to the front of the faster vehicle and back of the slower. The slower vehicle cannot inflict more damage than the faster vehicle inflicts.

T-Bone: Multiply basic damage by the striking vehicle's speed if the directions of movement are not within 30° of being alike or opposite. Damage usually is to the front of the striking vehicle and side, top, or underside of the struck object. The struck object cannot inflict more damage than the striking vehicle inflicts. *Collisions with stationary objects are T-bones.*

Sideswipe: Calculate damage as for a head-on or rear-end collision, then divide by 4 (rounding down) if two objects would normally pass one another (either moving in the same or opposite directions), but one bends, skids, or changes elevation into a collision while already side by side with the other. Damage usually is to one side, the top, or the underside of each object.

Landscape Collisions: If a vehicle hits the ground, a hill, etc., it inflicts *and receives* its own basic collision damage times its own speed. Reduce damage by -2 per die for collisions with water or -1 per die for collisions with snow, soft mud, etc.

The Aftermath

After assessing damage, check for a *drivethrough*: If a vehicle inflicts at least twice as much damage as it receives, it drives through. Its speed is not changed. The other vehicle is pushed aside and takes a -4 to any hazard control roll.

A drivethrough also is an *overrun* if the vehicle's body Size Modifier is 3 or more higher than the struck object's. Overruns don't push the other object aside, they go *over* it, doing additional damage to its top of 1d per ton of weight (round down). The overrunning vehicle suffers no hazard from the collision.

Otherwise, effects are:

Head On: Both vehicles come to a dead stop.

Rear end: Both take on the average of their previous speeds.

T-bone: Both vehicles have their speeds halved, unless the striking object inflicts less than 5% of the struck object's base body HPs, in which case the struck object drives through!

Sideswipe: None, other than damage and potential hazard.

Vehicles now check for a hazard based on collision damage received (see p. 151), unless performing an overrun.

Whiplash

People take 1d-2 damage per 20 mph of speed change in a collision. Only Toughness provides DR. Double damage if not wearing a seat belt, which only pilots (and not all of them) wear regularly in WWII!

Detection

When an object enters line of sight (or within 10 miles for passive sonar), roll vs. a sensor operator's Electronics Operation (Sensors) skill or lookout's Vision roll with these modifiers:

- Add the sensor's Scan rating (or +10 for Vision rolls).
- Add or subtract the object's Size Modifier. (Use the body's Size Modifier for a vehicle, +1 for airplanes.)
- Subtract the Speed/Range Modifier from p. 201 except that speed is *subtracted* from range, not added to it. Each underwater yard of range counts as 5 yards.
- Subtract -4 for *any* distraction, including other duties.
- Apply the following special modifiers:

Radar	
Ground radar vs. air object or vice versa	-5
Object *not* silhouetted against sky	-4
LOS passes through:	
Water	-2 per yard
Rain or snow	-1
Light woods	-1 per 50 yards
Dense foliage	-1 per 5 yards
Radar jammer's effect	-2 to -4
Chaff cloud	-2 per yard, minimum -5
Active Sonar	
Used out of the water	-6
Light Woods in LOS	-1
Dense Foliage in LOS	-2
Passive Sonar	
Object is moving	+4
Object is *not* in silent-running mode	+3
Background noise	-1 to -10
(Own engines usually -5, depth charges -10!)	
Active Infrared	
Object silhouetted against sky	+2
Object using rockets	+2
LOS passes through:	
Water	-1 per yard
Rain or snow	-1 per 50 yards
Blizzard	-1 per 5 yards
Light woods	-1 per 50 yards
Dense foliage	-1 per 5 yards
Vision	
Bad light	-1 to -9
Vehicle vision characteristics	see p. 144
Object is person in concealment	see p. 201
Camouflage scheme	-2 to +2; see p. 140
LOS passes through:	
Dense smoke	-1 per yard
Dense foliage, water, fog, blizzard	-1 per 5 yards
Light mist, open woods	-1 per 50 yards

If penalties other than speed/range exceed -9, no roll can be made to detect new objects and previously detected objects disappear. Try again if conditions improve.

If the roll succeeds, the object is spotted. If it fails, count up the *Speed/Range Table* by as many lines as the roll failed by. That operator or lookout will spot the object at the indicated range (divided by 5 underwater), as if a success by +0. A critical failure is a false contact or something equally misleading.

For radar and sonar, a success by 0-2 provides bearing and range (sufficient to target the object). Success by 3-4 provides speed and Size Modifier. Success by 5 or more provides some clue as to type of object. After initial contact, additional rolls can be made (by the original or other spotters) every 10 seconds at +4 for prior contact until a success by 5 or more.

LOS

Vision and most sensors require line of sight. In *perfect* conditions, two standing men at a combined 12' high can see each other 7.35 miles away. As combined height changes, the horizon shifts with the square root of the difference. A ship's lookout 102' high searching for a 6' man creates a combined height of 108' or 9 times 12'. The square root of 9 is 3, so spotting could take place at 7.35 × 3 = 22 miles. Atmospheric haze usually reduces vision range to half or less of ideal.

Combat

WWII vehicular combat uses the ***GURPS*** advanced rules with some additions.

Firing

Vehicle gunners take their turns normally, unless movement penalties prohibit them from firing. They may take the Wait maneuver to fire later, even in the middle of their vehicle's move. *Don't forget to finish the interrupted move.*

Vehicle gunners may aim while firing and take no Recoil penalty. Unless provided with special mounts (p. 132), vehicular weapons can only fire within 15° of straight out from their facing; a turret (or rotating open mount) and its weapons may have a different facing than the body. If the vehicle operator is firing vehicular weapons, his effective Gunner skill is limited to his vehicle operation skill-3. Other special rules include:

Direct Fire: The gunner must target the body or a particular subassembly. Past 1/2 Damage range, he may only target the body. If he rolls exactly the number needed to make a hit, he hits the vehicle but not the targeted structure, unless the target has no subassemblies. The GM should choose another hit location, weighted by the Size Modifiers of his options. Only exposed structures may be targeted on a target in defilade, such as a tank behind a ridge with only its turret showing over the top.

Indirect Fire: See p. 202 for rules, but use the listed indirect range, not 2.5 × maximum range as cited elsewhere.

Common Targeting Modifiers

Target Position and Cover	
Shooting at rider on cycle seat or on deck (unless prone)	+0
Shooting at person in exposed seat, prone on deck,or using open-mount weapon	-3
Shooting at occupant through window	-4
Target in a clump of light woods	-2
Target in dense forest or jungle	-4
Legged vehicle, prone without cover	-4
Legged vehicle, prone with cover	-7
Targeting System	
Targeting using active sonar	+1
Targeting using radar	+2
Movement	
Good road or in the air	-1
Bad road or in the water	-3
Off-road or in rough waters	-4
The following can reduce the above penalty, but never provide a net bonus:	
Firing vehicle has SR 5 or more	+1
Open mount	+1
Weapon installed in body, pod, superstructure, wings, or turret	+2
Stabilized	+1
Failed control roll this turn	-1 × amount failed
Target flying, both it and firing vehicle moving, and gunner is *not* vehicle operator	-4
Weapon System	
Firing hand weapon from inside vehicle	-2
Vehicle operator firing hand weapon	-4

*Also see **Firing**, below.*

Bombing: Bombs usually miss, but near misses (see *Scatter*, p. 156) often are good enough. Treat as direct fire, but Gunner (Bombs) takes a -14 penalty. (A few WWII bombs were streamlined and use a -9 penalty, instead. Assume an unstreamlined bomb unless the description says otherwise.) Apply a -4 if no bombsight. Bombsights allow normal Aiming, and improved bombsights provide a +2 when aiming. Altitude counts in range to target.

Planes with aDecel of 20 mph/s or greater may *dive-bomb*: Each uninterrupted turn in which they use 50% or more of speed in diving toward the target reduces the Gunner penalty by 1 for up to 9 seconds of diving. Treat as part of the Aim maneuver. This bonus only applies to bombs dropped from hardpoints by the pilot – and anyone stationary near the target takes no speed penalty to fire back at the diving plane!

Torpedoes, Rockets, and Missiles: These take (range/Speed) turns to hit a target, making them easier to dodge (see below). Targets may add up all bends between spotting the weapon and it reaching them, and make a Dodge roll, at +1 per 15° of bends, rounded down. Battery-driven torpedoes are +0 to spot; everything else is +3 to spot.

Missiles have a guidance or homing system, as do some torpedoes. Guidance systems are controlled by wire or radio. The firer makes a Gunner roll at +4 to launch the weapon; failure means it crashes. The firer must keep the target in sight, and the weapon in wire or radio contact, and make an unmodified Gunner roll for each turn of flight. The weapon veers off course on a failed roll; a successful roll at -3 on the next turn brings it back on target. Vehicles carrying gunners using wire guidance must sit still or follow the weapon at less than its speed. If control is lost, the guided weapon moves straight ahead or crashes.

Firing a homing weapon is treated as if detecting the object (see p. 154). Use the guidance system's skill as the sensor Scan rating. Any success allows launch. The weapon moves toward the target, bending up to 30° per turn to keep course, until LOS is broken (ignore for passive sonar), non-range modifiers become -10 or worse, maximum range is reached, or it hits. A gunner may launch multiple, identical homing weapons with a single Electronics Operation (Sensors) roll.

Dodging

Vehicular PD may allow a defense roll or aid a Dodge, but see the optional rule on p. CII57. A vehicle may Dodge if it executed at least 15° of bends in its previous turn. Dodge score is operator skill/4 for most vehicles, skill/3 for aircraft or three or more legs, or skill/2 for two legs. Combat Reflexes apply.

Scatter

Attacks that miss or were dodged will land *somewhere*. Look up the amount that the attack missed by on the *Size and Speed/Range Table*, p. 201. The amount in the *Linear Measurement* column indicates how far away the attack landed, with a minimum of 1 yard and maximum of 10% of the range to the target. Determine direction of miss per *Grenades*, p. 201.

Hitting the Target

Successful attacks strike the targeted assembly on its facing pointed at the firing vehicle. Use the table on p. CII62 for critical hits, or apply double damage. Use the unmodified damage rolled to check for a hazard (p. 151), then subtract the facing's DR. *Steel* and *wooden* armor work normally against all dam age, except that wood is flammable. *Nonrigid* DR is quartered in collisions, maximum DR is 1 vs. impaling attacks, and every 5-6 rolled on the damage dice for other attacks indicates a point of damage that bypasses DR. *Open-frame* armor protects normally against collisions, but has only a 2-in-6 chance of applying its DR against solid projectiles and adds no DR vs. flame or explosive damage.

Apply remaining damage to the assembly's hit points.

When a body or subassembly reaches 0 HPs, it becomes *disabled*. All components within it quit working. If the body is disabled, ground vehicles take a -10 hazard, watercraft begin to sink, and aircraft go to the Disaster heading on the *Aerial Loss of Control* table, p. 152. At -1 × hit points, and every -5 HPs thereafter, the vehicle must make a HT roll or the assembly is *destroyed*, which means it is disabled, can never be repaired, and all assemblies that it supports are disabled. Destruction is automatic at -5 × HPs. The assembly is blown to bits at -10 × HPs. Other effects include:

Holing: An assembly that loses 10% of its HPs (20% if heavy compartmentalization, 50% if total) loses any sealing or waterproofing. If the damage is underwater, the assembly takes on 1 lb. of water per lost HP per minute. After each minute, roll 1d; the flooding stops on a 5-6 (3-6 if heavily compartmentalized, 2-6 if totally compartmentalized). Torpedoes always hit underwater; cannon fire has a 1-in-3 chance to do so unless aimed at the top armor. Holed vehicles that take on water past their flotation rating will sink, per the hazard table on p. 152.

Motive-System Damage

Damaging motive subassemblies has special effects. Hazards only apply if the target was moving.

Wheels: If the target has 1-2 wheels, disabling any wheel drops gSpeed to 0 and inflicts a -10 hazard. If 3 wheels, disabling the front or both back wheels drops gSpeed to 0 and inflicts a -7 hazard; losing one rear wheel halves gSpeed and inflicts a -4 hazard. If 4 or more wheels, each lost wheel drops gSpeed by 10% and inflicts a -2 hazard; gSpeed is halved when half of all wheels are lost; gSpeed becomes 0 with a -6 hazard when all wheels on two corners are lost.

All wheels except railway wheels carry tires. Wheel attacks from the side hit the tire instead 50% of the time, 100% of the time from other directions. Tires have as many HPs as their wheels have, but only PD 2, DR 2. Disabling one is the same as disabling its wheel, except replacing it is an easy repair.

Legs: Each lost leg reduces gSpeed by the percentage of the legs that it represents; i.e., 25% if four legs, 17% if six legs, etc. When all legs on one corner or side are lost, the vehicle may only crawl at 1 mph or fight while prone or sitting.

All Tracked: Any target with tracks drops to gSpeed 0 and takes a -2 hazard upon losing one track. Any attack doing 10% or more of a tracks' HPs has a 2-in-6 chance of slipping or jamming the track, even before disabling. This has the same effect as disabling, but is an easy repair *from outside the vehicle*.

Wings or Rotors: Disabling any of these immediately inflicts a Disaster on the *Aerial Loss of Control* table, p. 152.

Damage to Occupants

If an attack penetrates an occupied structure, roll 1d for every 100 points of penetrating damage (round up). Each 6 means one random or GM-chosen occupant takes 50 points or half the penetrating damage, whichever is less. If the penetrating damage exceeded the structure's original HPs, each 5-6 is a hit of 100 hits or the penetrating damage, whichever is less.

Fire and Explosion

Enemy shells don't kill WWII vehicles as often as do the fires and explosions that they create. Whenever a vehicle is hit by a flame attack (high explosive or any variant, fragmentation, a flamethrower, API, APEX, or Molotov cocktails), roll 3d vs. penetrating damage, or vs. *base* damage if wooden armor. If the roll is equal to or less than the damage, the vehicle catches fire.

When a structure containing fuel tanks or hydrogen takes more than half its HPs in damage from a single attack, roll 3d vs. the Fire number of the fuel. (See p. 144; hydrogen is Fire 17.) Add +4 for flame attacks. A roll under the modified Fire number means the vehicle catches on fire.

Catching on fire does 2d to the structure, and another 2d every 10 seconds, ignoring DR. Heavy compartmentalization subtracts 2. Total compartmentalization subtracts 4. If the fire does 8 or more hits, it starts another fire. A fire that does 4 or fewer hits dies, as does a fire that destroys a structure.

Each 10 seconds that a structure with fuel tanks or hydrogen burns uses up 1d × 5% of that structure's *full* capacity. (If hydrogen, lift drops by that amount, too.) At the end of each 10 seconds, roll 3d vs. *half* the Fire number. If the roll is under that, the fuel or hydrogen explodes. Gas, diesel, and jet fuel do 6d × 15 per remaining gallon, hydrogen does 6d × 10, and rocket fuel does 6d × 25. If self-sealing fuel tanks, reduce the explosion to 25% of what it would normally do.

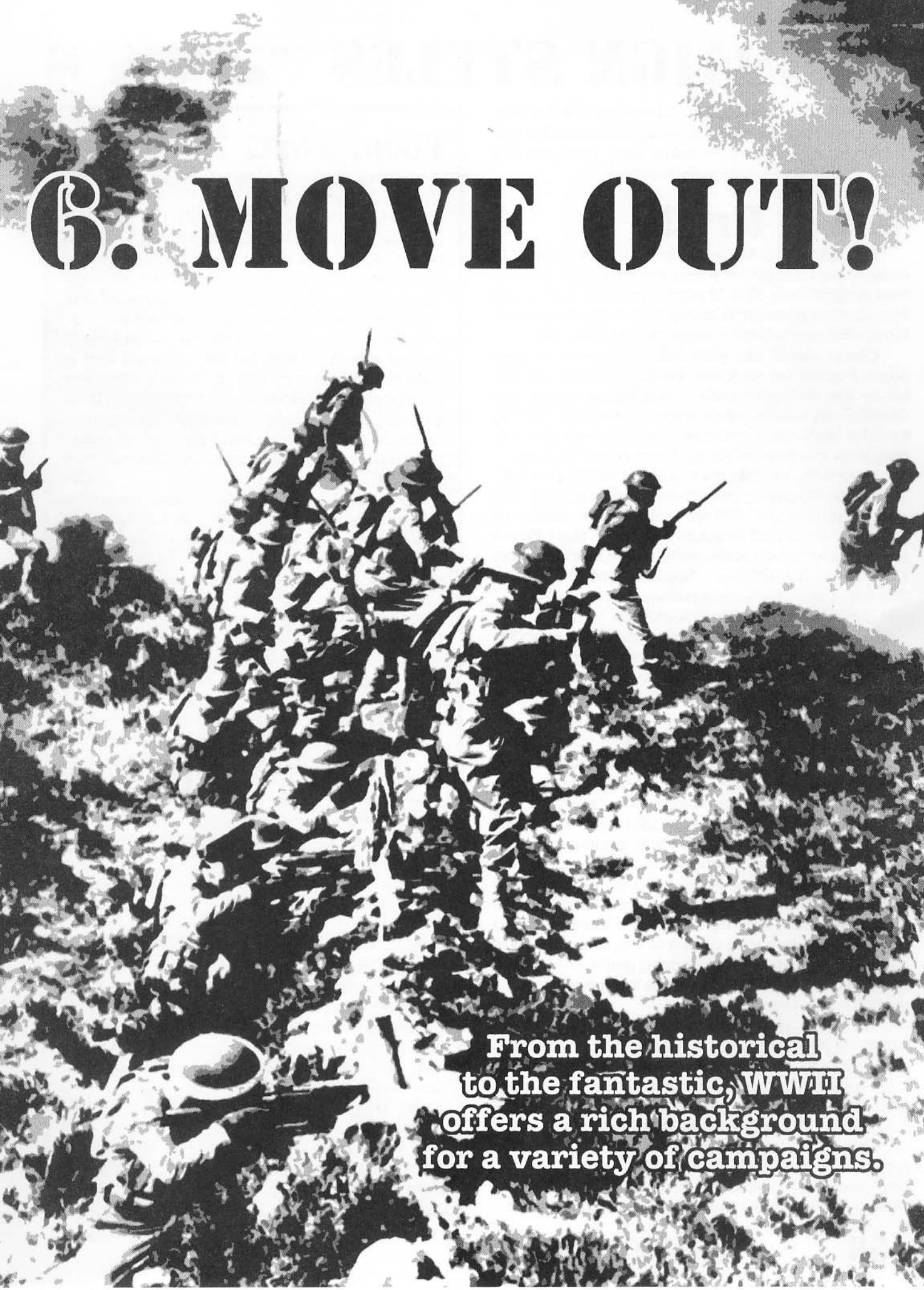
Fire extinguishers roll 3d every 10 seconds to put out *each* fire. They must roll an 8 or less, -1 for every fire going on and +1 for each extra module. Spare crew members can also roll to put out a *single* fire every 10 seconds; they must roll a 6 or less and take 2d on a 17 or 18. Fireproof clothing's DR does protect.

Occupants of areas on fire take damage per p. 204.

Ammunition Explosions

If a structure containing explosive ammunition, rockets, missiles, or flamethrowers loses 5% of its HPs or is on fire in a turn, roll 1d. On a 6 (5-6 if a flame attack did the damage), the ammo explodes. Apply the damage from 1d shots (or however many are left, if fewer) to the structure. DR does not protect.

6. MOVE OUT!



From the historical
to the fantastic, WWII
offers a rich background
for a variety of campaigns.

CAMPAIGN STYLES

A multitude of models exist for treating WWII as anything from despair-ridden tragedy to high adventure. The GM and players must choose from among many styles, even in a campaign that mostly sticks to the historical.

War Is Hell!

This style of play stresses the hardships and heartache of taking up arms. The players portray ordinary folks in uniform, often designed using 50 to 75 points. Their motives may vary from idealistic patriotism to lashing back at the enemy in raw hatred – but most will strive simply to survive the carnage.

Combat should take place infrequently in these campaigns. Play sessions can revolve around much more mundane but no less challenging goals – dragging an antitank gun through a rain-slickened jungle, not freezing to death, enlisting the aid of locals. The players should spend as much time worrying about their troopers' Fatigue scores as their hit points.

When battle does take place, it should be lethal and ugly. The GM should employ the optional bleeding rules (p. 203) and roll for infections. (Off the battlefield, the diseases on pp. CII167-174 should frequently come into play.) Players should have backup characters ready, because if their unit takes a prominent role in fighting, someone *will* end up a casualty. This sort of campaign does not promote long-lasting PCs.

The GM should feel free to heighten the tension for those players who *do* manage to keep their soldiers alive, reminding them that eventually their number will come up, too. Real combat veterans felt exactly this sort of increasing stress, perceiving the law of averages as a noose tightening around their throats.

The 1,000-Yard Stare

Fright Checks (p. 197) should become a standard component of campaigns utilizing this style. The GM may require one when the soldiers first enter combat, as a battle takes each nasty turn, even afterward as the adrenaline wears off. Particularly gruesome events should inflict hefty penalties.

To reflect combat realistically, the Delusions, Phobias, and other permanent disadvantages imposed by failed Fright Checks should compete with points gained through experience, so that most surviving characters will see their point totals *decline* over time. In this sort of war, only a fraction of combat veterans improved their fighting qualities with experience. Many more declined in quality as the stresses of combat turned their psyches into rubble.

The "1,000-yard stare" demonstrated the traditional first step in this psychological spiral. It did not take much time on the front lines for the average rifleman to realize that he was certainly going to die soon, no matter how honed his soldierly skills. This realization, coupled with fatigue, could cause a dead-eyed, zombielike state among those unable to cope with it.

This style of campaign will not suit everyone. It offers rich opportunity for roleplaying, but mostly in a black vein, and turns character advancement on its head by stressing character *erosion*. Some will find it an intriguing experience, however.

Food, Fuel, and Ammo

All but the most cinematic campaigns can use supplies as a dramatic focus. Even the relatively well equipped U.S. forces sometimes faced local shortages in food, fuel, and ammo. In realistic campaigns, NCOs and officers should need to make Administration rolls to avoid leaving their unit with a shortfall that they could have prevented – other shortfalls will occur regardless of how ardently the troops pester the quartermaster.

Foraging (p. B128) can help find enough to eat or Survival enough to drink, but the GM should keep in mind that soldiers previously in the area often have picked it clean. A skill penalty often would apply. In the grimmest circumstances – midwinter Stalingrad or among an isolated Japanese island garrison – all sources of food other than human corpses or amputated parts simply ran out.

Fuel usually proved as hard to scrounge up – the civilians in most war zones didn't own cars and didn't have their own supplies of gasoline or diesel. At this technology level, alcohol provided an emergency fuel at best, but historically some mechanized troops in a fix resorted to it. This would require one or more Mechanic rolls to tune an existing engine for the alcohol, and perhaps Distilling rolls to make the fuel. At best, a makeshift conversion would burn 3 gallons of alcohol where 1 gallon of gas or diesel would have sufficed. The engines would break down rapidly, as well; the large quantity of water in alcohol-based fuels would rapidly erode cylinder walls and soften compression rings.

Ammunition shortages can trigger intriguing roleplaying. Usually, the side using the greater firepower had a decided advantage in battle, so those troops facing ammo shortages must juggle a delicate balance of doing what's best for this fight or what's best for the next one. When ammunition completely dried up, soldiers often had to divert secondary or specialized weapons to roles for which they weren't designed.

Midnight Requisition

Soldiers often tried to obtain all of the above supplies from military depots that were closed to them. U.S. front-line units even came to glamorize this sort of theft as indicating a "can do" spirit among eager troops who couldn't get the rear-echelon paperpushers to keep up with them. The truth was that unauthorized disbursements made quartermasters' nearly impossible job even harder. Troops caught committing these thefts were not treated kindly.

Troops also took supplies from the civilian population around them. Rarely did this sort of procurement result in punishment.

Gritty Heroes

This style balances realism and heroism. The players can choose to represent those rare individuals who overcome or simply don't feel the stress of combat, who might even thrive on it. This isn't unrealistic, just uncommon. Soldiers of this caliber should require 75 to 150 points.

The GM should loosen the reins a bit to reflect this reality. Combat can take place more frequently by applying the merciless conditions described in *War Is Hell!* to the opposition but not the PCs. If "buck fever" (p. CII65-66) is inflicting a -5 on all of the enemy's fire, but not that of the PCs, combat will become a bit one-sided – exactly what the player characters need to survive this style of play.

The GM should still require the occasional Will roll or Fright Check, particularly at climactic moments, to keep the players on their toes – however, the overriding "unspoken agreement" gives the PCs excellent odds of surviving as long as they fight hard and smart.

Troopers in these campaigns usually will improve with experience, though GMs might require their players to spend many of the points on new levels of Military Rank by promoting them. This can provide a solid gaming reason for the old cliché about sergeants refusing battlefield commissions!

Battlefield Salvage

A technologically oriented campaign of this sort might focus on the PCs as ad hoc inventors, salvaging any weapons or vehicles left on the battlefield to create their own custom armaments. Historically, high-initiative U.S. and German troops often resorted to salvaged arms to flesh out their firepower or add to their mobility.

Masters of the makeshift will ignore the nationality of origin for their finds – the Germans gladly used equipment from dozens of countries, and G.I.s sometimes impressed Wehrmacht vehicles after hastily applying a coat of olive-drab paint. Likewise, the salvaged vehicle's ultimate function need bear only passing resemblance to its original design. Weapons and accessories may be swapped out, engines replaced, armor paneling added – the design rules in Chapter 5 can guide any such projects.

FUBAR

Like all large forces in WWII, the U.S. Army faced immense organizational challenges. In a few years, the Army's size – and the complexity of its job – mushroomed by more than an order of magnitude. This created strain in budgeting everyone's time properly, fully training new soldiers, making decisions that weren't divorced from the full reality of their impact, moving materials to match the men, etc.

At the bottom of the organizational pyramid, the enlisted men and junior officers repeatedly encountered these shortcomings. They routinely had to "hurry up and wait." Their fellow soldiers sometimes displayed profound ignorance of crucial knowledge sets. Orders often seemed ignorant of the circumstances. U.S. soldiers began using the acronyms SNAFU – for "*s*ituation *n*ormal, *all f*ouled *u*p" – and FUBAR – for "*f*ouled *u*p *b*eyond *a*ll *r*ecognition" – "fouled" being the less pithy of options beginning with "f."

GMs can mine drama or humor out of this very real condition of being caught in the bureaucracy's gears. At whim, armor units with no fuel can be ordered to advance 20 miles overnight, hungry soldiers can receive a crucial air drop only to find the supply containers full of accordions, and so forth.

The lower ranks also contributed to SNAFU. PCs in leadership positions should be challenged to keep their men from contributing more than their share. For each week of game time, the GM can pick randomly among Administration, Leadership, and Teaching, and make PCs in command roll vs. the selected skill. (Note that Teaching rolls will often be at default for all except drill instructors.) Apply a modifier of 12 minus the subordinates' average Soldier skill. Squad leaders roll at no further modifier, platoon leaders at an additional -1, company commanders at -2, etc.

On a failed roll, someone down the PC's chain of command has royally screwed up – falling asleep on sentry duty when the general drives up, loading smoke shells instead of HE, etc. On a critical failure, things are truly FUBAR; this could represent a "friendly-fire" incident, the whole unit being poisoned by a bad batch of homemade liquor, etc. The skill rolled against should steer the nature of the problem.

The Ultimate Horrors

The Holocaust – in which the Nazis gassed and burned millions of Jews in their grim death camps – could provide a powerful backdrop and motivating force for a campaign in any of these styles. Before using this watershed event as a plot device, however, the GM should absolutely ensure that his players will be comfortable with the direction that he intends to go. Many people regard the Holocaust as a topic of the utmost sensitivity.

The Japanese brutality toward Allied POWs and Chinese civilians requires similar caution. Players may perceive an accurate portrayal as exploitative and racist.

Perhaps most prickly of all are the small-scale atrocities by troops of all flags, including the Allies. A player who doesn't flinch at the hell of Auschwitz might get fighting mad over a depiction of U.S. Marines slaughtering unarmed prisoners. Know your players.

Dashing, Daring, Do

WWII also lends itself to cinematic feats of heroism, with intrepid heroes mowing down scores of enemy soldiers while fulfilling missions crucial to the war effort. Soldiers capable of this sort of adventuring should possess at least 150 points.

Most often, fiction casts the Western Allies in the hero role. Conversely, their opponents tend to be nearly faceless uniforms. The GM will not even need to bother writing up detailed NPCs for the hordes of sentries and hapless infantry that the heroes will face. If he does so, the cliché or stock disadvantages described on p. 69 will often be the rule, whereas in realistic campaigns Axis soldiers should display a much wider variety of personalities.

In extremely cinematic campaigns, the GM may want to mine the *Silly Combat Rules* on pp. CII76 and CII78 for options further enhancing the heroes' survivability and lethality.

Cinematic troops usually should have access to the very best equipment, some of it only marginally historical. Explosives might be a special compound doing a bit more damage per pound, radios might be tiny and well-concealed, etc.

Conversely, the GM may want to design unique and monstrous fighting vehicles for the heroes to overcome, in the vein of Sgt. Fury comics. Incredibly oversized tanks could be presented as posing much more of a threat than they would have in real life, with only a handful of brave men poised to stop them.

Special Units

In theory, real-life commando units seem perfect for this sort of rip-roaring adventure, but in practice they were not always that much better than conventional forces. Their historical exploits don't often lend themselves to truly cinematic portrayal; some players may complain about the misrepresentation.

One solution is to simply create a new special force, one so secret that it eluded history's observation. This means one doesn't have to explain why their exceedingly urgent missions did not get recorded, either, and allows for any sort of strange mix of nationalities, backgrounds, and skill sets.

Making It Matter

Some GMs don't like historical campaigns because everyone already knows the results of major battles; they perceive the players as having no chance to impact the results. Of course, this assumes that the campaign desires to keep to the historical – much of the fun in an ahistorical campaign comes precisely from trying to pry history off its proven track.

This drain on drama can be avoided in two ways. First, no WWII battle had such extreme results that things could not have gone better or worse for any participant. The GM should place the PCs in a position such that they must succeed for the historical results to play out. Otherwise, even a defeat could be worse. The PCs will be the ones taking out that crucial bunker on Omaha Beach, or the ones closing the gap at Kursk so that the Soviets can't inflict *more* damage. (For what it's worth, this isn't an unrealistic approach. Of the thousands of men fielded in an army, often only a handful at a crucial point turn the tide in a battle.)

Second, the players' foreknowledge of the results often can be realistically folded into the drama, because the troops on the ground often had a very good idea of their odds. D-Day may have been a total crapshoot in the minds of many G.I.s, but several Germans at Kursk expected the battle to play out much as it did. If the players know their characters are about to take a beating or break through, their characters often will, too. Let them invest that foreknowledge in the gameplay.

Ultimately, the GM shouldn't have to work too hard to keep foreknowledge from spoiling play. Even in the overwhelming U.S. drive through Germany, a few G.I.s died. Even in the catastrophe of Stalingrad, a few Germans escaped. The players should be invested in their own characters' fates, not the results writ large.

National Features

The preceding three pages apply to any army-based campaign. The following notes also apply to campaigns centered specifically on one of the major combatants.

Britain

Most British campaigns shouldn't be too grim in tone, because most Brits simply didn't condone that outlook. In fact, a quintessentially British campaign could include a good deal of humor that might seem out of place to American players.

Many British units can be rather cosmopolitan in make-up, with troops from across the empire and even the odd American who joined the fighting before his country did.

In the beginning of the war, the British often began offensives that quickly turned into defensive battles, which often didn't allow much good to be done in either role. After the U.S. forces arrived, they joined them in predominantly offensive operations. They conducted some counterinsurgency work, primarily around the Mediterranean.

The United States

U.S. campaigns may tend toward an earnest tone, as Americans with no doubt as to their moral right roll up their sleeves to get the job done so they can get back home. This isn't entirely realistic – few people retain a white-hat self-image after actively engaging in combat – but it's a good ambiance for units newly arriving in the war.

Some campaigns may want to use the Hollywood cliché U.S. squad, with each soldier having a distinctively ethnic name – perhaps O'Brien, Pulowski, Grayson, Huffman, Red Foot, Dumas, Pastorini, Goldman, and so forth. Traditionally, these names weren't used to develop character relations much. They simply consisted of a bit of color intended to make a statement that wasn't entirely true . . .

The United States fought overwhelmingly on the offensive in Europe, with only rare engagements requiring the troops to take defensive stands. Those garrisons in the Pacific when that theater opened often fought defensively, as did many of the early island invaders once they gained their first foothold, but by 1943 Pacific operations were almost exclusively offensive, as well. U.S. troops very rarely had to engage in counterinsurgency operations against resistance fighters.

The Soviet Union

Campaigns centered on Soviet enlisted might take on a strange mixture of cheer and fatalism. Many of the rank and file tended to enjoy themselves when they could, calmly accepting that tomorrow might never come for them. A campaign centered on officers or commissars might yield a completely different tone, full of Machiavellian intrigue and infighting.

Supplies should play a large role, as they were often short.

Soviet forces began the war almost exclusively fighting defensive battles, unless they were completely overrun and managed some quick forays against German rear units. In 1942 and 1943, they seesawed between huge offensives and desperate defensive stands. By 1944, almost all action was offensive, with some counterinsurgency work thrown in.

Taking Leave

Don't forget that soldiers take leave! Whether three months at home or a few days in an occupied town, leave provides an excellent opportunity to get away from combat scenarios and groom more personal situations. A girlfriend or the lass just met in a bar, black marketeers, gangs of street orphans, military police, hostile natives, an elderly farmer who can't keep up with his chores – all provide scenario seeds of a distinctly different nature from the usual kill or be killed.

Germany

For players and GMs willing to address several sensitive issues, a German-based campaign can be an interesting challenge. Standard units could take on the role of pawns caught in the game, simply fighting to survive and without the power to cast judgment on their nation's role. Overall, paratroop units often fought with a great sense of chivalry; casting them as noble servants of an ignoble cause isn't entirely off the mark. S.S. units ranged from simply elite units to the fundamentally depraved, best left as NPCs. From 1944, an interesting twist would make the PCs the NCOs and officers in charge of a platoon of Russian or eastern European POWs. These leaders would need to get their charges to fight, but not to fight *them*.

From late 1943, German units faced an increasing supply shortage. In particular, fuel was scarce.

The Germans began the war fighting expertly on the offensive, routinely making huge risks pay off. By 1942 they had mostly settled down to counterinsurgency in Europe, while alternating deft offensives with often impromptu defensive stands in the east. By late 1943, they effectively were conducting only defensive stands and increasingly limited counterinsurgency raids, with the most notable exception being the Ardennes offensive in December 1944 (see p. 33).

Japan

A realistic campaign doesn't leave a lot of room for individualism; basically one followed orders until the last order killed you. Some might enjoy composing haikus or songs portraying their character's angst over this state of affairs. Also, playing a Japanese soldier is a good chance to ignore sophisticated tactics – at some point in the fight, a good trooper's job was simply to charge close enough to use his bayonet.

Supplies should always play a large role, no matter how cinematic the campaign. The Japanese never had enough.

The Japanese always tried to stay on the offensive, but by 1943 they usually were pinned into defending their island holdings. Their continuing efforts to mount true offensives in Burma and elsewhere repeatedly met with disaster in the late war years. China remained a huge counterinsurgency theater for them throughout the war. Note that, although the Japanese often failed to recognize when to dig in and *defend* a location, they often recognized when to *abandon* one. Leaving before overwhelming opposition arrived wasn't as shameful as not charging to meet it when it did arrive . . .

The Air War

A campaign based on aviators offers a lot of advantages. The flyers will spend a good deal of time at a base, often near friendly civilians, giving plenty of opportunity to develop interpersonal relations. Particularly for fighters, the style of combat is individualistic and therefore particularly satisfying for many players. And, of course, flying remains a romantic military specialty.

The vehicle-combat rules in Chapter 5 can prove rather unwieldy for mapping out the high-speed, agile exploits of aerial combatants. A specialized aerial system will appear in a future ***WWII*** release. For now, the GM may want to use the mapless guidelines on p. 150 to "take a snapshot" of each dogfight's crucial moments. Or the system in ***GURPS Vehicles*** may be used if that book is available. For cinematic fights, the GM may want to adapt the *Space Opera Combat System* on pp. CII106-111, which is simply a space conversion of classic WWII cinematic dogfights.

Most of the above options don't involve a map, but if the PCs form a bomber crew the GM may still want to have a map of the plane's *interior* to hand. For instance, a B-17's hull would be 25 hexes long, tapering at each end from 1 to 4 hexes wide. This can be very handy in determining precisely who can do what job when, in assessing explosive damage, etc.

Enemy planes don't represent the primary threat to aviators, unless they're German pilots facing the Anglo-American invasion. Most pilots more commonly encountered flak from ground- or ship-based antiaircraft guns. Bombers and patrolling fighters usually maintained a speed and elevation that gave these AA guns very low odds to hit – but with a lot of them firing repeatedly, eventually one would hit if a plane loitered long enough. Torpedo and dive bombers had to get in much closer, and routinely gave AA guns an excellent chance to shoot them down. Use the standard rules for range and speed penalties.

Equipment breakdowns were a common challenge for WWII aviators, even when not triggered by enemy fire.

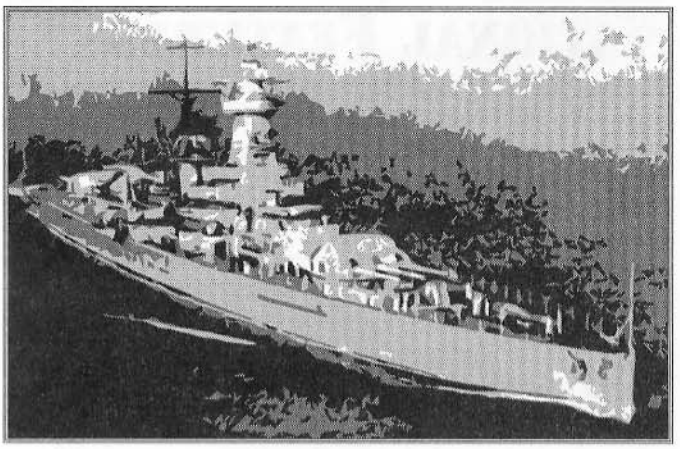
The POW Campaign

For Anglo-American forces, aviators were the great majority of German POWs; they were being shot down in numbers long before any ground forces returned to Europe.

An aviation-based campaign can instantly transform into a POW campaign. The movie *The Great Escape* describes the lengths that these flyers would go to in order to break out and attempt to return home. It also portrays the risks they faced once the increasingly fed-up Germans got tired of chasing down uppity prisoners.

The movie's portrayal of Stalag Luft III portrayed fairly typical prison-camp construction: one or more compounds with cheap wooden barracks, extensive lines of razor wire fencing off each compound, and guard towers with spotlights keeping the entire fenceline in intermittent view. Additional guards on the ground often kept attack dogs on a leash.

A notable exception was "escape-proof" Oflag IV C, based in the old stone Colditz Castle, perched atop a rocky hill and housing proven escape artists. More escapees reached home from Colditz (20) than from any other German POW camp . . .



The War on the Seas

A naval campaign can take on many different characteristics, because a first-rate navy included hundreds of different occupations. Even a ground-force or aviation campaign can take on a naval "filter," if centered on marines or naval aviators. The PCs might instead be the complete crew of a torpedo boat, making suicidal runs against enemy capital ships by night; a hard-hat salvage and rescue team, facing very different but no less real hazards than most sailors; or a beachmaster unit, given imperial authority to straighten out the unloading of men and supplies during an amphibious assault.

Larger-scale naval units are easily gamed given the right perspective; GMs should not avoid naval campaigns just because a battleship has 2,000 or more NPCs. In action, the battleship can act as an extension of its captain, no less than does a giant battlesuit in an anime mecha campaign. Using the rules in Chapter 5, plotting the ship's actions is little more difficult than charting those of the captain as an individual, the primary difference being that it sports more guns.

Other players may portray department heads under one player's captain, or each PC might be at the helm of his own ship in a destroyer task force or U-boat wolf pack. These commanders would naturally congregate together to socialize on shore, so the dynamics of a traditional campaign remain the same as long as one perceives the ships as essentially part of each PC's equipment. They are simply pieces of gear that always require training, often need cajoling, and present their captain with a lot of petty feuds and grievances to clean up.

The Seabees

The U.S. Navy began the war using civilian contractors for construction in the Pacific, but soon came to realize these men needed some training as soldiers as wells. These new *C*onstruction *B*attalions became known as the Seabees.

Seabees were recruited for their construction skills, and their 325,000 members included men who had built the Boulder Dam, the first U.S. expressways, and the Empire State Building. This made some of them too old to mold into traditional soldiers. Equipped with construction vehicles, explosives, other heavy gear, and all of this knowledge, they rapidly transformed several undeveloped Pacific islands into combat bases. A colorful campaign could be based upon these semimilitary, can-do specialists, blocking bullets with bulldozer blades.

A WWII TRAVELOG

The following provides a brief review of the terrains and conditions of WWII, grouped by Survival skill specialty.

Woodlands

This would be the default terrain for much of Europe, particularly Germany, and much of the Soviet Union.

Woods are a forgiving terrain for infantry, but rough on vehicles. Natural water and food are usually found without skill penalties. Firing artillery into trees rarely helps an offensive – trees usually dampen fragmentation more than they augment it, and the resulting debris is that much harder to cross.

Plains

Most of the Soviet Union consists of this terrain, as well as the northern coast of eastern Europe, with a few portions of France being plains interspersed with isolated hills.

Food and water can be difficult to find, except near a stream or river. The GM may apply a penalty to foraging rolls. Conversely, a plain planted with wheat or other cereals could quickly feed a lot of troops, if retreating defenders haven't burned it.

Troops in Russia could spend weeks crossing its vast plains without spotting a significant landmark, greatly contributing to agoraphobia. This also made Orienteering difficult; the GM may impose a penalty if nothing but the stars points the way.

Desert

The African campaign fought over this sort of territory almost exclusively, as did much lesser affairs in Iran and Iraq.

Deserts usually possess an extreme temperature differential between day and night – men broiling at noon can freeze at midnight. Experienced troops learned to keep their heavy coats on in the morning – already chilled, the garment served to insulate them from the *heat* for a little while.

The desert simply soaked up supplies. Fuel trucks often burned three gallons of gas to deliver one. Men lived for extended periods on water rations classified as grossly insufficient today. They had to; no more was to be had. German troops really did fry eggs on their panzers. Without the luxury of washing their hands, troops often suffered outbreaks of disease. The flies contributed, too. They homed in on any moisture, crowding in the corners of men's eyes and darting into open mouths.

The desert cities around the war zones often housed a romantic mix of local leaders and businessmen, colonials of all nationalities (even hostile), intelligence agents, and the odd off-track adventurer. The sands themselves continued to host wandering nomads throughout the war. These peoples tended to support the Germans – they were *very* tired of the British – and displayed an uncanny ability to disappear before any fighting started, only to reappear to scavenge the battlefield.

Wheeled vehicles mostly stuck to roads. Tracked vehicles ruled the mostly flat expanses of the northern Sahara – this was perfect tank country, though special filters had to be installed to keep the fine sand from instantly breaking down these or any other vehicles. Usually, this sand also served to notify everyone for miles around when a vehicle was on the move.

The GM may impose severe penalties to Orienteering, especially if a sandstorm conceals the stars.

Off the beaten track, dunes sometimes towered far overhead. A skilled driver could get a truck over these imposing obstacles, even at frightening angles. This absolutely required sand channels (long strips of canvas or metal) to free the vehicle, as it frequently became stuck. These soft vehicles became extremely vulnerable to tanks or airplanes if caught in the open. Dry creek beds, called wadis, often provided concealment, but if one wasn't close to hand, the game was up.

Mountains

Much of Italy, China, and Crete would qualify as this terrain type. A small portion of the fighting in the Soviet Union and central Europe also took place in mountainous expanses.

Most major combatants fielded especially trained mountain troops, skilled in climbing and using only equipment that could be broken down into mule loads. Even in Italy, with its relative profusion of roads, mule-equipped units often outpaced their motorized contemporaries.

Those roads that did exist often featured torturous climbs and harrowing hairpin turns. Such roads were easy to defend, hard to fight across. Controlling one often meant controlling a disproportionate amount of terrain beyond it. Mountains in general favored the defense, unless the defending units could be flanked, in which case the difficulties in moving could work *against* them.

Jungle

Burma, the Philippines, and the majority of the islands that Gen. MacArthur's campaign drove through in the southern Japanese zone featured plenty of this terrain. Jungle-covered islands looked attractive from a faraway ship's deck. Closer in, the smell hit, informing visitors that they were entering one of nature's massive compost heaps.

Many men could get use to the odor; few came to accept the heat and humidity, which could sap those at rest in the shade. Rain fell constantly, causing either mold or rust to attack every piece of equipment not under constant maintenance. Plenty of water was to be had, but the wise either drank shipped-in stores or freshly collected rain. Jungles do not provide as many food sources as some might think, and many of those were *alien* to men from Newark or Manchester.

Disease became an even greater problem than in the mud of Great War trenches. Some campaigns suffered 10 or more disease casualties for every combat casualty. Swarms of mosquitoes transmitted malaria; hostile microorganisms swarmed in the swamps. The slightest scratch became an unhealing sore as infections outpaced weakened immune systems.

Even without the heat and disease, most jungles are impassible to vehicles, nearly so on foot. Stunted, slippery, and steep trails were the rule, not the exception. Unless someone had passed by within a few days, the trail would have to be reopened by hacking with a machete, a process that quickly brought most men to their knees from exhaustion. Any open areas often grew grass over a man's head, with blades capable of slicing open a hand with a casual touch.

As in mountains, blocking the few roads that existed could effectively isolate large areas.

Probably no other terrain was worse suited for combat. Some of the hottest fighting of WWII took place in jungles.

Island/Beach

Most of the islands taken during the U.S. Navy's central Pacific campaign best qualify as this terrain. They had no jungles; some didn't boast a single tree. They often were barren lava outcroppings sprinkled with a coarse gray or brown sand. They often didn't support much life on their own merits; any roll to live off the land would take large penalties. Basically, they were a place to suffer high heat and humidity, and totally rely upon shipborne provisions.

Arctic

Russian winters easily got this cold, making this skill replace Plains or other specializations for their duration.

At these extreme temperatures, weapon and engine parts often seized up, rendering them inoperable. A tracked vehicle with overlapping road wheels also could be immobilized by having mud splash up between the wheels by day – then freeze as solid as concrete at night. Nighttime temperatures often forced soldiers to ignore basic tactics – they sheltered in houses even though the foe knew they would be there, because the alternative was freezing to death. Frostbite could do irreversible damage in minutes. Simply exposing oneself for a bowel movement could be lethal.

Swampland

Some of the Pacific terrain would qualify as a swamp – although the line between a jungle and a swamp can be a fine one. Russia also possessed many temperate swamps, including the huge Pripet Marshes.

The Germans tried to nullify some Soviet swamps by cutting down their timber to build corduroy log roads (triple fatigue for anyone riding a vehicle on one of these). The Pripet in particular remained a constant thorn in their side, sheltering Soviet resistance fighters and driving an impassable wedge between their Army Groups North and Center.

Urban

A great deal of WWII combat took place in cities, or at least in their rubble.

Given the breakdown in command and control that often occurred in such a chaotic environment, troops sometimes ended up living off the land, as it were. In cities in particular, the first troops often have easy pickings while later troops find little to eat – the civilians either carried their food off or left it in easy-to-find locations.

Survival skill overlaps with Tactics in this environment. One simply did not travel on the streets in daylight unless desiring to draw enemy fire. The safest method of travel was to burrow through the walls of adjoining buildings. This meant clearing each building room by room; the important spots to cover were low in each room's corners, where untrained troops almost invariably made their stand.

When forced onto the street, WWII urban-combat veterans watched windows with a religious zeal while hugging the walls. (Later troops discovered this wasn't prudent, because flat-angle ricochets skim along these surfaces, and now teach that the best spot is about 2' away from the wall, but only a truly inspired WWII-era soldier would deduce this.)

Urban locations greatly favor infantry and the defense. Vehicles have very short life expectancies in contested streets, because infantry can ambush them with relative ease.

Radioactive

This skill wasn't available in WWII – but could have applied at Hiroshima and Nagasaki after the atomic bombs.

Instantaneous radiation exposures from the bombs themselves measured roughly 10-20 rads 1 mile from impact, with some cases as high as 30 to 100 rads at that range. The fallout drifted away from the cities proper, but suburbs within 10 miles suffered up to 100 rads/year. This level rarely caused gross symptoms in adults, but substantially impacted pregnancies.

The radiation level declined over time, of course, but rose again in the early 1950s when the United States and Soviets began testing hydrogen bombs in the Pacific and Siberia.

CROSSOVER CAMPAIGNS

WWII has long fascinated writers and readers as the nexus of a variety of alternate histories and realities. With its vast assortment of genre and sourcebooks, ***GURPS*** provides the perfect tool to explore these possibilities. Books that provide the most obvious potential include:

GURPS Special Ops

Along with the upcoming ***WWII: Hand of Steel***, this can provide a great deal more insight into small, specialist groups of soldiers performing vital missions. All of the special missions described in ***Special Ops*** can transplant into the WWII milieu.

The lines between military action and pure intelligence-gathering often blurred during the war, so ***Espionage*** can also be a handy tool. Just about all of the spy gear described within it could be made available, at least in prototype form.

Many of these operations will require the commandos or operatives to travel deep into remote territories, where the general living conditions and cultures of ***Russia*** and ***China*** still apply. A great deal of daily life, and the native resources available to intrepid commandos, will still employ the primitive tools and processes described in ***Low-Tech***.

GURPS Supers

Superheroes were invented just as the war began in Europe, and many still believe the war years were the best years for four-color adventurers.

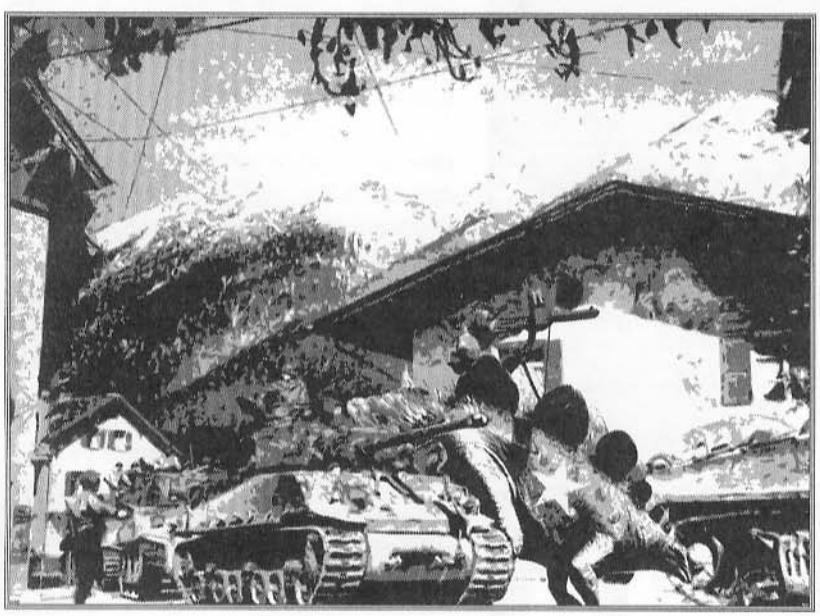
Supers, with its relatively low-powered mechanics, lends itself well to the era's sensibilities, when the mightiest heroes tossed panzers rather than planets, the speediest outraced locomotives rather than light, and no one in brightly colored tights laughed off a 16" shell.

Historically, superheroes had a strange relationship with the war. Many stayed at home, fighting saboteurs and invading Axis villains. A few fought abroad as soldiers in their secret identity, transforming into costumed crusaders when the going really got tough. Others ignored the war in their costumed exploits, other than in the occasional appeal to buy war bonds . . .

GURPS Time Travel

A world in which the Nazis won (Reich-5 in ***Alternate Earths***) already forms a core component of ***Time Travel*** scenarios, but the possibilities remain endless. The fate of an entire world could rest upon a single rogue time traveler whispering a few words in the right ear – convincing Stalin of Hitler's plans, assuring Hitler the bomb would work, or notifying Roosevelt that the carriers were churning toward Pearl Harbor. The ***Who's Who*** books describe many of these key figures.

The GM can twist what seem like obvious causes and effects in meddling with history. A rogue element could travel back to assassinate Hitler, but to make things *worse* for the Allies, by bringing to power a militant but more moderate faction that understands the need to keep its treaties and consolidate its gains. The PCs could need to undertake the morally unnerving mission of *protecting* Hitler from the attempt.



GURPS Cliffhangers

WWII and two-fisted '30s adventuring go hand in hand. As in the Indiana Jones films, the players' knowledge and characters' ignorance of the upcoming storm can provide powerful plot devices, setting up Axis authorities as the black hats and the PCs as the broad-shouldered heroes who make the difference between winning or losing the war before it even begins.

Countless subgenres can be inserted into this free-for-all, from racing Nazi agents to the wonders of a hidden subcontinent crawling with ***Dinosaurs***, to foiling Japanese spies intent on purloining the contents of ***Warehouse 23***, to chasing U-boats filled with mad scientists bent on raising ***Atlantis***.

This sort of over-the-top adventuring can keep on blazing right through the war years, atomically upgunning its oversized lizards and importing threats from beyond the stars with the help of ***Atomic Horror***.

GURPS Martial Arts

Boxing had long been one of the western world's most popular sports before the war, and the Pacific fighting brought many westerners into their first contact with eastern forms of hand-to-hand fighting. Though difficult to implement as a genre of its own – just about *everybody* carried guns – ***Martial Arts*** can be used to flesh out the fighting skills of all sorts of troops.

Many Japanese practiced Judo as an athletic skill; possessing skill in it would not raise eyebrows. The perfect officer would round out his Katana skill with the full suite of Kenjutsu skills and maneuvers. Some form of Karate, Kempo, or Jujutsu would be appropriate for officer or special-troop training. It's hard to imagine the Japanese society of the time willfully employing masters of Ninjutsu, but who knows? Sumo would be rare among soldiers. Uechi Ryu would be rare anywhere. The Korean laborers impressed into Japanese service might resort to Hapkido or Tae Kwan Do to fight their way to freedom. The Filipino resistance fighters facing the Japanese will often possess some form of Escrima. Though perhaps not worldly enough to *notice* the Japanese occupier, Kuntao and Pentjak Silat masters also might join the fight on other islands.

Many Americans took up what amounted to Professional Boxing in their youths, and if they used it much outside the high-school or college gymnasium, some elements of Streetfighting were often incorporated. Military Hand-to-Hand was not uncommon for elite troops, though the British might have stressed unarmed methods a bit more. Those brave souls who had practiced Professional Wrestling before the war might somehow pass their physical and end up in uniform. The nearly unpadded football of the era also incorporated many dirty tricks; a Brawling-based style with maneuvers in Eye Gouging, Face Attacks, Ground Fighting, Head Butt, and Roundhouse Punch (for clothesline tackles) would not be out of order . . .

British commandos would often learn Military Hand-to-Hand. Some skill in Professional Boxing would not be unusual for enlisted men, mixed with Streetfighting often enough. Burmese natives might just be teaching an early form of Bando to British and Indian troops during the war, while a few of the Indians might already know Kalaripayit. The various Arab forces eager to see the Germans boot the British from the Middle East might employ the Hashishin style to help move matters along.

Chinese resistance fighters might easily know Aikido, Goju Ryu, Kung Fu (including its *many* derivatives), or Pakua. Those versed in An Ch'i would be rare but valued agents. Equally as rare, but passed on by *somebody* during this period, would be Chin Na, Hsing-Yi Chuan, and Wudong.

Some German and French old-guard officers may retain a late evolution of one of the fencing styles. (Also see ***Swashbucklers*** for more detail on these.) Formal duelling died out *very* late in German society.

Continental Europeans are only a bit less likely to know Professional Boxing than their Anglo-American counterparts. Streetfighting is even more likely, especially for former political agitators (not just Nazi brownshirts), in Germany. French resistance fighters might easily possess Savate.

Some of the Brazilian troops fighting in Italy could possess skill in Capoeira.

Alternate Tech

The stylized jousting of ***Mecha*** can easily be inserted as retrotech into a WWII campaign. The following rules add mecha to Chapter 5's modular design system. They feature particularly heavy and expensive legged structures, to represent that this technology is being introduced well before its historical time.

Legged Chassis and Transmission

Chassis	VSPs	Wght.	Cost	HPs	Armor	SA	Top	Size
Small Legged	15	3,900	$680	300	10 lbs./$2	100	33	+2
2 DR 25 Legs	3			150	57 lbs./$11.50	95		+2
Medium Legged	30	7,100	$1,300	510	17 lbs./$3.50	170	57	+3
4 DR 35 Legs	3			115	90 lbs./$18	150		+3
Large Legged	50	11,000	$1,970	720	24 lbs./$5	240	80	+3
6 DR 45 Legs	3			100	120 lbs./$24	200		+3

Each leg has the listed VSPs available for components and the listed HPs.

	— *Weight* —		
Transmission Type	***per kW***	***Base***	***Cost***
Legged	16	720	$2

Stomping

A legged vehicle with a body Size Modifier 2 or more higher than a colliding object's may step over or stomp it instead of colliding (see p. 154). Stepping over the other object evades the collision entirely.

Stomping on it may inflict damage. The stomped object may Dodge normally. If the dodge fails, the stomp does damage – 6d×5 for a light legged chassis, 6d×4 for a medium legged chassis, or 5d×3 for a heavy one, +1 point per ton of stomping-vehicle weight (round up). Usually, this is applied to the top of the stomped object. A stomp doesn't count as an attack, but a legged vehicle can only stomp one target per two legs each turn. If another vehicle initiates a ground collision with a legged vehicle large enough to stomp it, collision damage is applied to the legs.

Weapon Arcs of Fire

Weapons in the legged vehicle's body have normal arcs of fire. Many legged chassis deploy turrets on the body's right and left facings, where the arms would be on a fully humanoid mecha. These, too, have normal arcs of fire.

Weapons also can be mounted in the legs. These can fire in any direction that the leg is pointing, but can't be used if the vehicle is moving. If the vehicle is standing still, weapons in up to half its legs may be fired.

GURPS Space

Translating the combatants of World War II into a science-fiction setting might require inventing a Seventh Reich striking out against the inhabitants of a Stellar Soviet. ***Space*** will walk GMs through shaping these societies and their technology.

Alternately, visitors from beyond the solar system might drop in during the fighting, as already well explored in popular fiction. If the aliens arrive *armed*, any fighting is likely to be very one-sided – see ***GURPS Traveller: Ground Forces*** for a vehicle-design system compatible with Chapter 5's, but that builds panzer-shattering grav tanks and personnel carriers. Earth's forces will have to take up very unconventional warfare; ***New Sun*** includes a brief discussion of low-tech vs. high-tech forces, but does not treat the subject in depth.

GURPS Fantasy

There's nothing about Yrth that a company of U.S. Marines wouldn't improve. Given the realistically high Will required to storm a Japanese beach, all the mages of Megalos should be welcome to try to pry their weapons away from the visitors.

To be fair, the wizards probably would win the day before any WWII-era arrivals figured out the new realities of combat. But any survivors who eluded capture long enough to learn the lay of the land might spring a few of their own surprises. In a sort of reversal of ***Technomancer***'s magic-aided technology, all sorts of WWII-era equipment could be emulated using magic to power it. And the advanced operational and tactical principles of WWII should be as elusive to the knights and legionnaires of Yrth as fireballs and seek spells would be to commandos or dogfaces.

GURPS Magic

Some say the modern world began in 1917, but a few diehards believed they knew better during WWII. Some top Nazis consulted astrologers and held onto belief in dark, mysterious forces that eluded the notice of ordinary men. Perhaps they were right, and the grappling of the mundane masses simply provided a backdrop for more shadowy and powerful struggles.

The Third Reich might field special battalions of foul creatures from ***Undead***, while their concentration camps serve as focal points for ***Spirits***. Perhaps their mass-extermination programs point back to the vast conspiracy described in ***Cabal***, with the Nazis particularly targeting the one society most versed in the ways of the real universe . . .

Once aware of magical influences on the world, the United States might quickly incorporate technology into its battlefield usage, fielding soldiers and equipment much like that described in ***Technomancer***, only a generation or two earlier.

The Soviets might counter with even earlier and more intensive research into ***Psionics***, fielding telekinetic soldiers, capable of far more devious tricks than bending spoons, as well as telepathic commissars, NKGB agents, and spies.

Not to be left behind in the paranormal powers arms race, the British might ally with the creatures of ***Celtic Myth***, giving them powerful but difficult partners on both the mundane and magical fronts.

Some players will not long enjoy a purely military campaign, feeling that realistic military restrictions on initiative stifle their enjoyment. For them, a resistance- or espionage-based campaign should provide the greater levels of initiative that they seek.

These campaigns also allow for a realistic, small group composed of individuals with widely different backgrounds. For instance, in real life, the Jedburghs were specially trained soldiers parachuted into France before and after D-Day to arm and organize the French resistance. These three-man teams usually included one American, one Brit, and one Free French soldier, but a few Dutch, Belgian, and Canadian troops also entered the mix. A PC party could include these three soldiers plus attached French Maquis, some of whom will be rabid Communists, others stout Republicans, with perhaps even the odd royalist mixed among them. A few Jedburgh teams went on to fight in Burma, where they could incorporate Indian guides, Burmese natives, or even Australians.

Axis military forces will play a much different role in this sort of campaign. In a military setting, these troops may be a formidable challenge (in a realistic campaign) or even hapless cannon fodder (in a cinematic campaign). In a resistance- or espionage-based campaign, these troops should become the GM's 800-lb. gorilla, an overwhelming force that threatens to obliterate the unconventional fighters without notice. Resistance fighters and spies did their work against a few bored sentries at a time; a well-armed front-line force, particularly one specifically engaged in counterinsurgency, is something they should take on only at extreme risk. Historically, many resistance forces in eastern Europe did grow large enough to take on regular combat troops, but at that point their work became more military and less unconventional in nature.

The Resistance

See pp. 55-60 for brief descriptions of the world's resistance movements, and p. 85 for a generic synopsis of how a resistance group forms.

The GM probably will want to start a pure resistance campaign at the beginning, with ordinary civilians reaching out to their contacts, not sure which of them might be a secret German informer, not sure whether stormtroopers will come bursting through their door at 3 a.m., not sure where they'll find the training and equipment to become effective. When starting from scratch in this fashion, enough training to invest another half-point in Guns (Rifle), or a pistol, could represent a large reward at the end of a game session. A light machine-gun and ammunition for it would qualify as a windfall.

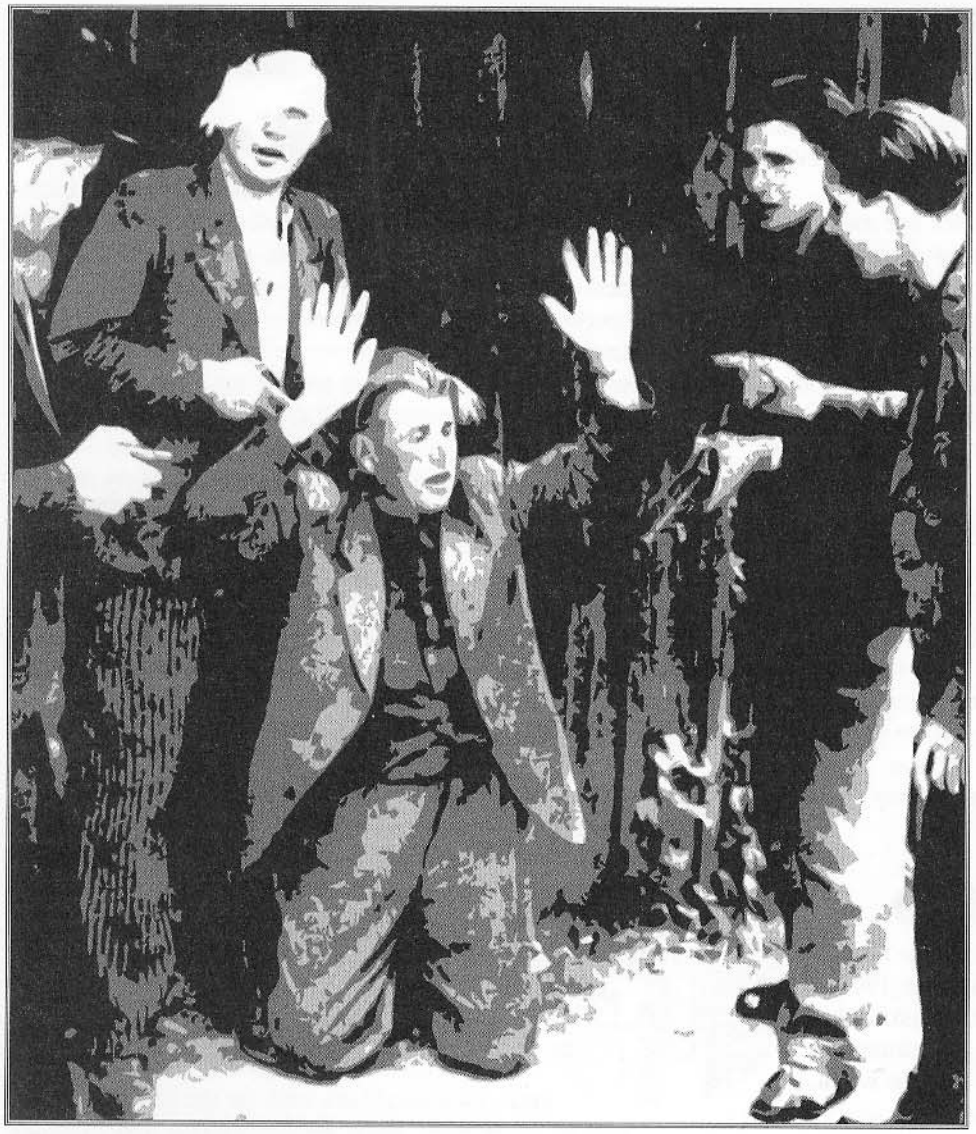
Communications were even more important than firepower. Groups that could communicate among themselves, and to the regular Allied forces, could pick much more effective assignments, receive crucial outside aid, and pass on important information to those who could use it. A group with good communications could contribute to the war effort by simply *watching* the invader, and passing on what they learned. In the Pacific, a primary form of resistance was "coast-watching," in which natives or trained military personnel hid themselves on occupied shorelines and monitored Japanese shipping. This network provided crucial intelligence to Allied naval planners, while rarely firing a shot.

The Other Side

Not everyone fought the Axis invaders. Many individuals collaborated with Nazi Propaganda Minister Paul Joseph Goebbels' "New Order," which only embraced Nordic people before 1941, but afterward came to welcome anyone who would quit resisting occupation. Even some resistance groups allied themselves with the Axis; usually, these were guerrillas who feared their Communist counterparts more than the invaders.

These collaborators – neighbors, family members, former friends – may represent a larger threat to resistance groups than the occupying forces. They *knew* the guerrillas, their habits, their goals – and they knew that if the resistance won, they likely would lose everything. They often posed as sympathetic to the resistance, worming their way toward sensitive information before the Gestapo or Kempeitai arrived. Some informers were legitimate resistance fighters that the secret police had uncovered. Holding family members hostage, the police blackmailed these individuals into becoming turncoats.

Despite its New Order, Germany found itself assigning more and more troops to internal security of conquered lands. The increasingly frustrated Hitler issued his "Night and Fog" decree in December 1941, ordering the execution of all resistance fighters. This order did not have to be carried out immediately – resistance fighters and spies could be held for questioning, or thrown into concentration camps to await their turn. Few resistance fighters escaped Axis capture, unless the war ended before their death sentence was carried out.



Espionage

Gathering and communicating information was a primary activity for all sorts of behind-the-lines missions, but in a pure espionage campaign the information-gatherers won't be armed and hiding out from the occupying force. They'll be working out in the open – often filling important positions within the enemy's infrastructure – and surviving almost entirely on stealth.

By WWII, most governments had formed the modern espionage infrastructure of assigning intelligence "handlers" to semifictitious diplomatic postings. A Soviet agricultural undersecretary in the Berlin embassy often would spend most of his time recruiting, teaching, and assigning native German spies to gather Nazi secrets.

Of course, once any fighting started, diplomats had to leave hostile countries, breaching the communications chain for spies. Usually, this was worked around by having the spy report to a friendly "neutral" – a diplomat or businessman from a neutral country who frequently visited the spy's locale.

WWII-era espionage was transitioning from the talented amateurs of WWI to the thorough professionals of the Cold War. The Soviets already had established schools for both handlers and spies, and many of their people were top quality. The Great War's adventurism still appealed to the Germans, whose espionage efforts were often transparent. The British and U.S. governments took *catching* spies – counterespionage – very seriously, but often proved overeager in their own espionage. Crafty locals (and, after the war, ex-Nazi spy handlers) often could gull Anglo-American handlers by telling them what they wanted to hear. The Japanese maintained good counterespionage by prying into all aspects of domestic life, and good espionage by motivating with terror – their spies usually worked to keep their heads, rather than for political ideology or money.

The GM should freely use this mixed quality to keep players guessing in an espionage campaign. They should encounter spies who leave such obvious tracks that the question becomes whether they're really that amateur or was the evidence faked. Other spies, particularly Soviet ones, will pop out of the woodwork only after their pursuers track down their attendance at two campus socialism meetings 20 years earlier. British handlers should expect a lie for every truth from their own local spies, in an effort to con money or other resources out of them. American handlers should expect a 5-to-1 ratio. Then add any scheming by the "neutral" intermediaries that the war required.

Military Missions

The Special Air Service, Brandenburger, and other commando-style units described in Chapter 2 made quick forays behind enemy lines. Smaller, even more specialized units, such as the previously described Jedburghs, entered Axis territory and stayed there for extended periods. The SOE (see p. 41) or OSS (see p. 44) fielded most of these units.

All of these military units faced conditions much like those of resistance fighters while in the field. Outnumbered and outgunned, they had to depend on acting invisibly, striking quickly, and avoiding any counterattack in force. They held the advantage over resistance groups of much better training and equipment, but they usually took on much more difficult missions.

Even if these units did not have arming and training the local resistance as their primary mission, they often relied upon local resistance units to help them enter or exit occupied territory, or to augment their manpower during an attack. This left them exposed to the same loyalty issues that the resistance itself faced – were their local contacts loyal to the Allied cause or leading them into a trap? Behind-the-lines missions contributed significantly to the perils of special operations.

ON THE HOME FRONT

A WWII campaign doesn't have to go anywhere near the fighting to be interesting. A great deal of drama and adventure can take place back home.

Seemingly able-bodied men of service age might have to explain why they're out of uniform. (*If* they're out of uniform – many servicemen never left their own country.) In WWI, some women in Britain handed out white feathers, indicating cowardice, to any man they encountered on the street in civilian clothes. While WWII's civilians recognized the need to retain men in essential jobs, and that physical disabilities do not always make themselves obvious, some questions still arose.

The First Reactions

Americans had but a few days to wait before the war impacted them in 1939. Even as President Roosevelt was urging U.S. citizens to remain neutral, a U-boat was sinking the liner *Athenia* with Americans aboard. U.S. merchant sailors soon refused to sail to Europe without extra pay. U.S. cities on the East Coast began air-raid exercises a short time afterward, well before the United States entered the war. Some participants just stood around and watched, not taking the affair too seriously.

The Lull Period

U.S. domestic life went through a strange interlude between September 1939 and December 1941. More and more Americans realized the war probably would entangle their country, but the peacetime routine only gradually gave way. For instance, the war hazards were not what prompted the White House staff to begin closing the gates to the grounds at night in 1939 – too many motorists were parking beneath the trees for a bit of romance.

The fascinating case of Grover Cleveland Bergdoll did not bode well for federal agents' preparedness to catch Axis spies. When the war began, the WWI draft-dodging millionaire was just going to court after easily slipping in and out of the country and hiding out in his own Philadelphia mansion for seven years.

In November 1939, the U.S. public waged its own limited war – over the date of Thanksgiving Day. Roosevelt had moved it up a week from the last Thursday in November, but half the nation refused to conform.

In 1940, the attitude toward the war began to shift with the German invasion of France in June. Roosevelt expressed America's dismay and the Red Cross began a $10 million drive to aid Europe's victims. Meanwhile, the New York World's Fair opened its gates to 190,000 for the 1940 season.

With the increasing tensions, the armed forces were not waiting to be caught at peacetime strengths. The enlisted ranks grew 40% from 1939 to 1940, 550% by the time the United States actually began fighting. The '40 numbers would pale in comparison to 1945 manpower – but well before Pearl Harbor and for the first time in most of their lives, American men of the proper age were beginning to consider enlistment.

During the War

After Pearl Harbor, the U.S. government rapidly established wartime controls. These included censorship, seizure of property owned by non-U.S. citizens, and the suspension of competitive bidding despite WWI-era concerns about war profiteering. Like most combatants, even Germany, the United States did not put its economy on an entirely war footing. Consumer goods continued in production even as war production exploded. Women joined the workforce in increasing numbers to fill the manpower shortages that resulted.

Mobilization required population relocations on an even greater scale than during the Great Depression. The West Coast became one long boom town, as the U.S. Navy and its contractors rapidly created a military-industrial complex to feed the Pacific fighting. The Okies who had relocated to California in the 1930s to pick lettuce soon found themselves making more money putting warplanes together. Washington, D.C., also saw rapid population increases, as the federal government's rate of growth outpaced even its "New Deal" expansion. Workers were needed to fill the Pentagon and other new offices.

In these areas, housing and other goods could be very hard to come by. This contributed to a substantial wartime inflation despite price controls on many staples.

Crime

These population shifts also created record crime. More Americans than ever did not know their neighbors well, for the first time single women often were living by themselves, and everyone experienced new levels of stress. Homicides rose substantially in many cities. Law enforcement became fully aware of serial killings, probably through both an increase in frequency and improvements in police methodology.

Rationing

Rationing and price controls began in mid-1941 under the Office of Price Administration. The restrictions included staple foods such as sugar, coffee, and meat, and crucial war materials such as rubber, silk, and nylon. Women's hosiery became precious (effectively a form of currency as real as the U.S. dollar) and U.S. paratroops were well aware that their chutes contained a small black-market fortune in silk.

The OPA implemented civilian gas rationing via coupon books in mid-1942. An A sticker (and accompanying book) allowed purchase of 4 gallons each week. Roughly half of civilian automobiles had B (10 gallon) or C (unlimited) stickers instead, issued to vital war workers, doctors, legislators, and others. Commercial trucks used unlimited T stickers.

Rationing created a black market, virtually overnight. Estimates are that 5% to 30% of gasoline sales involved stolen or counterfeit stickers. Meat and sugar were other prime commodities in the United States.

Civil Defense

In 1941, the Office of Civilian Defense, under the leadership of former New York City Mayor Fiorella LaGuardia, was already beginning the massive public campaigns which would come to define the war on the U.S. home front: scrap drives, Victory gardens, blackouts, etc.

The U.S. public supported scrap drives fervently, as the donations gave them the feeling of doing something useful for the war effort. Unfortunately, that was about all that the drives did. Even though the drives collected mountains of old pots and pans, car bumpers, tires, newspapers, etc., most of the material could not be recycled. Much of it stood in heaps, while junk dealers made a tidy fortune selling the usable stuff to the government.

Victory gardens became a required feature of patriotic homes. This OCD program to increase food production worked well – by 1944, 40% of the vegetables eaten in the United States came from its 18 million victory gardens.

U.S. blackouts included a "yellow" signal to start a 15-minute period in which everyone put out their lights, spotters took their stations, and emergency crews stood by. The "blue" signal started the blackout. A "red" signal sounded if suspicious aircraft were actually spotted, at which point all road traffic had to stop, the air-raid sirens began wailing, and searchlight crews turned on their equipment. The continental United States never actually suffered an air raid, apart from a handful of effective balloon-borne incendiaries wafted over by the Japanese, but a civilian aircraft flying at night stood good odds of triggering all of the above.

The OCD also supervised the civilians watching the skies and coasts of the United States.

Propaganda

The U.S. government already possessed the most sophisticated – if not the most aggressive – propaganda machinery in the world. Upon entering the war, it enlisted Hollywood filmmakers and a compliant press corps to form a seamless "face" for the war effort.

They had great material – painting the Nazi and Japanese regimes as evil did not tax anyone's imagination – and succeeded spectacularly at their work. Though many elements of U.S. society warned against joining the war, or even supported the Germans prior to Pearl Harbor, afterward they instantly shut up or joined the call to arms. Any sort of public debate or dissension, as seen during the Vietnam conflict, would have been downright alien in the 1940s. The United States and Britain wore the white hats, the Russians were doing the right thing, and the Nazis and Japanese wore the black hats – end of story.

A variety of media reinforced this message. War posters appeared everywhere, distributing vital information or simply reminding the public of the evil they fought. Newsreels brought a sanitized version of the fighting into theaters back home. For the first time, the radio became a powerful tool for reaching all of America, all at once. The Office of War Information coordinated a large percentage of these efforts.

U.S. propaganda's most striking success was in instantly transforming the loathed Stalin into "Uncle Joe" when the Soviets joined the Allied cause – then back into the most fearsome enemy of capitalism once U.S. interests no longer needed the Red Army to keep Hitler occupied.

The Press

Before the war, newspapers drove U.S. journalism. Powerful publishers dispatched hordes of fast-talking, aggressive reporters to hustle down stories. Most cities had at least a morning and evening paper; New York City alone had seven major newspapers and scores of smaller presses.

The Internment Camps

In early 1942, the U.S. government decided to create 10 internment camps and force more than 100,000 Japanese-Americans to wait out the war in them.

Hastily erected in Arizona and other western states, these camps did not provide good living accommodations. The barracks-style housing was little more than tarpaper shacks, frigid at night and sweltering during the day. Coupled with less-than-ideal medical support and food supplies, these conditions caused many of the internees to fall ill. Many died who might have survived under improved conditions.

Those interned included Issei, elderly Japanese who immigrated to the states at the turn of the century; Nisei, U.S.-born second-generation Japanese-Americans; and Kibei, second-generation Japanese-Americans educated in Japan. Some Nisei and Kibei males eluded the camps by joining the armed forces and fighting in Europe. The beginning of hostilities caught many other Kibei in Japan, where they were detained, and many died in the U.S. bombings of the home islands.

While the U.S. internment camps did not hold a candle to the hardships in their German, Soviet, and Japanese counterparts, the government has since recognized the essential wrongness of their very existence. Reparations to survivors continue to this day.

Standards of accuracy and objectivity were not always high, and the publishers often held distinct political positions that their reporters were expected to reinforce to some degree in their coverage.

These men descended upon the war, both at home and abroad, but rapidly lost their monopoly to the infancy of broadcast journalism. The radio quickly became a legitimate media, and many savvy newspapermen rapidly made the transition to radio. Meanwhile, in New York City, a fledgling television industry had begun.

The U.S. armed forces also dispatched their own small army of still and motion-picture cameramen, who often covered the fighting from the front lines.

The Political Landscape

President Roosevelt and the military effectively took over the country during the war. Roosevelt even suggested that Congress adjourn, basically implying that the legislators should get out of the way. Unsurprisingly, they refused.

Powerful businessmen often came to head the dozens of new agencies created during the war. Known as "dollar a year" men because they drew only that token salary, most of them took this as an opportunity to serve their country. Others used their power and influence to improve their business positions.

The federal and local governments were still shaking out their relationships with organized labor during the war years. While unions did not quit being front-page news during the war, strikes and demands were tempered by the realities of the war effort.

Business Unlike Usual

Those chief executives who did not join the government sometimes contributed greatly to the war effort through private production. Men such as shipping magnate Henry Kaiser and airplane-maker Reuben Fleet built empires on government contracts. European industry declined by two-thirds and farming by half during the war years, and U.S. exports raced to meet the shortfall.

By 1946, the U.S. economy had shaken off the last traces of the Great Depression that had lingered when the war began. Many an individual fortune was made in the process.

Racism

The United States remained a racist society during World War II. The proper term for an African-American at the time was "Negro," but African-Americans, American Jews, American Indians, Mexican-Americans, and Japanese-Americans rarely heard themselves referred to politely. For African-Americans, "separate but equal" segregation was supposed to be the legal standard in civilian life. In reality, the separate was rigidly enforced and the equal ignored.

The armed forces also segregated the 1 million African-Americans who served, as well as most Japanese-Americans, in separate units which usually had white officers. Some units also had a high proportion of Indians because of their base region in the states, but Indians, Hispanics, and Jews routinely served among "white" troops. These soldiers – and their families back home – sometimes had twofold missions. Many U.S. Jews sought aid, revenge, and publicity for the Holocaust's survivors. On a politically organized level, African-Americans sought to leave the war having done their duty and gained more tangible civil rights.

Port Chicago

One of the Navy's new ammunition depots was Port Chicago, just north of San Francisco. The Navy assigned ill-trained, African-American ratings to handle the dangerous job of loading this ammunition onto ships. They worked nonstop to meet the never-ending demand for their labor, and took pride in their speed.

At 10:18 p.m. on July 17, 1944, a huge explosion enveloped the loading docks – 5,000 tons of ammunition loaded on two merchant ships and several rail cars had detonated. Buildings 50 miles away were damaged, the shock wave was felt in Nevada, and all 320 men on duty killed. Of the dead, 202 were the African-American enlisted men, accounting for 15% of all African-American WWII fatalities.

Many of the surviving African-American loaders refused to return to that one, hazardous task, enduring courts-martial and hard labor for their stand. Beyond prompting the tightening of Navy regulations on loading ammunition, Port Chicago became a symbol of U.S. segregation and its costs, both military and civilian. By 1948, the armed forces would be leading U.S. society onto a long, hard road toward desegregation.

Other Home Fronts

In the rest of the world, home-front life worked in much the same way. Goods were rationed or unavailable; sometimes rationing *led* to unavailability. Gas rationing was less important, because relatively few households had anything to burn it. Governments employed propaganda to keep their civilians focused on war aims. Women, children, and the elderly entered the workforce to both replace the men in uniform and increase production. In Germany and Japan, free women mostly worked farms, not in the factories.

Great Britain

As soon as the war began, Britain relocated 3 million non-combatants, mostly children, from London and 28 other major cities to the countryside, a move that caused a good deal of trauma as families split up. The home islands then went on full alert for the bombing raids that would arrive soon enough. Air-raid alerts were a very different thing in England, where city residents huddled for hours in the underground (subway) tubes while German bombs destroyed their homes and set raging fires. Some Londoners became used to the carnage and stayed outdoors to view the spectacle, but most chose a sleep-deprived discretion over valor.

The British black market also thrived, with clothing and liquor being particularly valuable commodities.

Soviet Union

The Soviets had little "home front" per se, because the Germans overran the populous areas of the vast country. Most major cities experienced fighting. Moscow's residents were ordered out to dig its ring of defenses, Leningrad's population starved and labored as something of a civilian defense auxiliary, and Stalingrad's remaining civilians huddled in the riverbank's caves and prayed for relief.

In the sparsely populated eastern interior and seaboard, the war had less impact. Men of military age were constantly siphoned away, but the Soviet transportation net could not have drained away much production, even if these hunting and fishing villages had possessed much excess capacity to divert. The remaining troops around Vladivostok and the Chinese border remained on alert for Japanese aggression.

Stalin shrewdly did not attempt to get his people to fight for a Communist regime that many had come to distrust or hate. Soviet propaganda instead appealed for defense of "Mother Russia," a nationalistic approach that the Communists would have found unthinkable before the war. The tactic worked magnificently, as many citizens who would not have raised a rifle for the party laid down their lives for the motherland.

Germany

The Nazis had their work cut out for them, because the general reaction to invading Poland was not exultation, but dismay. Older Germans remembered the Great War's privations in their bones. Goebbels bombarded the public with hamhanded propaganda, but the legendarily cynical Berliners and others mocked these clumsy efforts. The Nazis succeeded more in appealing to men of fighting age than the public at large.

Home-front life quickly became austere – the troops ate better than the people who fed them – but not grim until the Allied bombing campaigns reached full swing in 1943. In eastern Germany, things became much worse when the Soviets invaded in 1944. The front-line troops usually conducted themselves well, but those behind them raped, pillaged, and extracted sordid vengeance. Anglo-American troops invading in the west committed similar crimes, but on a much smaller scale. Germans in the east fled to the west when they could.

The Nazis preferred placing their concentration camps out of the way in Poland, but had established some at home. Nearby civilians were left to ponder the railroad traffic, odors, trench-digging, and other evidence at these sites . . .

Japan

The Japanese civilian population lived in a meager fantasyland. Their already low living standards became lower during the war, but they could comfort themselves with the fact that they were winning the war – because that's what the military told them. Not until the war's end did they discover that they had been told lies, with victories magnified and defeats concealed, painting a nearly fictional account of Nippon's great conquests.

Though they suffered no foreign troops on the home islands, the Japanese may have endured even more damage from Allied bombing than Germany. Their highly flammable cities became seas of ash, with tens of thousands of homeless survivors streaming out of them. The atomic bombs left others dying of the strange new horrors of radiation poisoning. By the end, most Japanese were living in very primitive conditions. An item as prosaic as a bicycle represented wealth.

GURPS® LITE FOR WWII

An Introduction to Roleplaying

STEVE JACKSON GAMES

What is **GURPS**?

GURPS stands for "Generic Universal RolePlaying System," the RPG from which these rules are condensed. Why is it called that? Well . . .

"Generic." ***GURPS*** starts with simple rules, and builds up to as much *optional* detail as you like. This abridged version presents the "core rules" that most GMs start with.

"Universal." The basic rules system is designed to emphasize realism; therefore, it can fit *any* situation – fantasy or historical; past, present, or future.

"RolePlaying." This is not just a "hack-and-slash" game. The rules are written to make true roleplaying possible – and to encourage it. ***GURPS*** is a game in which you take on the persona of another character and pretend, for a little while, to *be* that person.

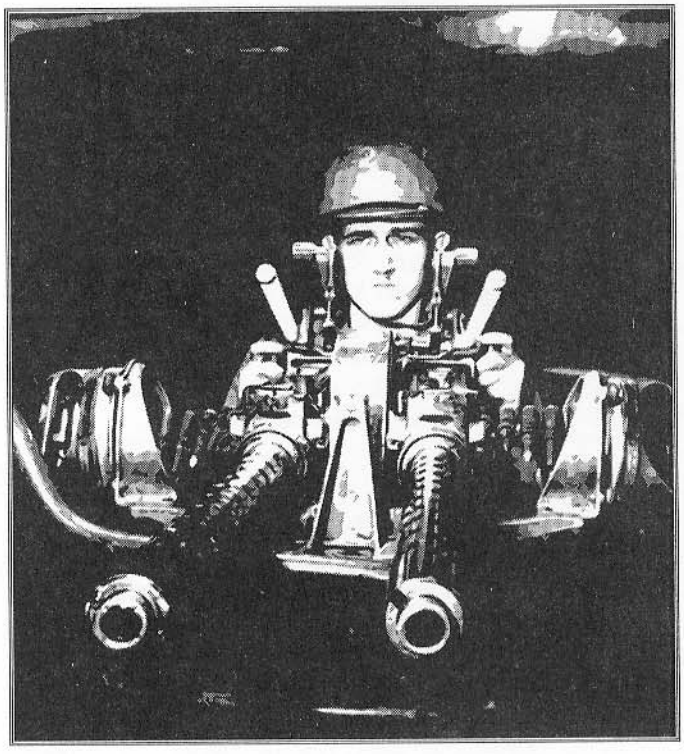
"System." Over 150 different books have been published for ***GURPS,*** in eight different languages (so far). It is one of the recognized standards for roleplaying, worldwide.

About **GURPS Lite**

This is the boiled-down "essence" of ***GURPS:*** all the fundamental rules, but not the options and embellishments that often confuse new players. Once you're comfortable with these rules, you can pick up the ***GURPS Basic Set*** and jump right into the action. Experienced GMs will, we hope, find this a valuable tool for introducing new players to the game.

Materials Needed for Play

To play, you will need these rules, three six-sided dice, pencils, and scratch paper.



GURPS RULES • STEVE JACKSON
GURPS LITE ABRIDGED RULES • SEAN PUNCH
EDITING • STEVE JACKSON AND THE ***GURPS*** BRAIN TRUST
ILLUSTRATION AND DESIGN • GENE SEABOLT

GLOSSARY

Like any hobby, gaming has a jargon. To help you understand the concepts and terms used in ***GURPS*** and other *roleplaying games,* we'll start with a few definitions:

Roleplaying Game (RPG): A game in which a *Game Master* guides several players through an *adventure* in which they play the parts of imaginary individuals, or *characters,* in a fictional or historical *game world.* ***GURPS*** is a roleplaying game.

Game Master (GM): The referee, who chooses the *adventure,* talks the players through it, and judges the results.

Character: Any being (person, animal, whatever) played by the GM or a player in a RPG.

Non-player Character (NPC): Any character played by the GM. The GM may control many characters, major and minor.

Player Character (PC): Any character played by one of the players. Typically, each player controls a single character.

Statistics (Stats): Numbers rating a character's abilities, used to determine what each one can and cannot do. See p. 177.

Party: A group of PCs taking part in an *adventure.*

Game World: A background for play and setting for an *adventure* – for example, Earth during World War II.

Adventure: The basic "unit" of play in a RPG, sometimes called a *scenario.* A RPG is never over until the players want to end it, but a single adventure will have a beginning and an end. It may last through several sessions of play, or be done in a single evening.

Encounter: One "scene" of an adventure; a meeting between the PCs and one or more NPCs.

Campaign: A continuing series of adventures. A campaign will usually have a continuing cast of PCs, and the same GM (or team of GMs).

GURPS uses six-sided dice only. To figure combat damage (and several other things), the "dice+adds" system is used. If a weapon does "7d+1" damage, this is shorthand for "roll seven dice and add 1 to the total." Likewise, "3d-1" means "roll three dice and subtract 1 from the total." If you see just "6d," that means "roll six dice." For really huge numbers, dice can be multiplied; for instance, "6d×2" means "roll six dice and multiply by 2."

GURPS Lite has only three basic "game mechanics": *success* rolls, *reaction* rolls, and *damage* rolls.

Success Rolls

A "success roll" is a die roll made when you need to "test" one of your skills or abilities. Sometimes you roll; sometimes the GM rolls for you. For instance, you might test, or *roll against,* your Strength (ST) to stop a heavy door from closing.

Roll 3 dice and add them together for a success roll. If your roll is *less than* or *equal to* the skill or ability you are testing, you succeeded. Otherwise, you failed. For example, if you are rolling against Strength, and your ST level is 12, a roll of 12 or less succeeds. Thus, the higher the stat you are rolling against, the easier it is to make the roll.

When the GM Rolls

Normally, the player rolls dice for his own character. There are two exceptions:

1. In a situation in which the character shouldn't be able to tell whether he has succeeded – especially when he is trying to get information. The GM rolls in secret. If the roll succeeds, the GM gives the player true information. If the roll fails, the GM lies or gives no information at all.

2. In a situation in which the player simply shouldn't know what's going on. This includes most Sense rolls (see pp. 196-197). The GM should simply roll in secret and inform the player of any consequences of which his character would be aware.

Modifiers and Effective Skill

Sometimes you will have *modifiers* (*bonuses* or *penalties*) to a roll. For instance, if you were trying to stop a *very heavy* door from closing, you might have to roll against Strength at a penalty of -2 (or ST-2, for short) because the door is heavy. In that case, with a Strength of 12, you would need to roll a 10 or less to succeed.

Likewise, for an especially easy task, you would get a bonus to your attempt. You might roll "Animal Handling+4" to make friends with a very friendly dog. If your skill were 12, a roll of 16 or less would succeed.

Your *effective skill* for a given task is your *basic skill* (your actual level in that skill) plus or minus any appropriate modifiers. In the example above, your basic skill is 12 but your effective skill is 16. You may not attempt to roll if your *effective* skill is less than 3, unless you are attempting a defense roll (see p. 199).

Critical Success and Failure

A *critical success* is an especially good result on a skill roll; a *critical hit* is a critical success scored on an attack (see p. 199). You score a critical success as follows:

- A roll of 3 or 4 is always a critical success.
- A roll of 5 is a critical success if your effective skill is 15+.
- A roll of 6 is a critical success if your effective skill is 16+.

The GM determines what happens when you roll a critical success. This is always something good; the better the roll, the better the "bonus" he gives you.

A *critical failure* is an especially bad result on a skill roll. You score a critical failure as follows:

- A roll of 18 is always a critical failure.
- A roll of 17 is an ordinary failure if your effective skill is 16 or better, and a critical failure if your effective skill is under 16.
- Any roll of 10 greater than your effective skill is a critical failure. That is, 16 on a skill of 6, 15 on a skill of 5, and so on.

The GM determines what happens on a critical failure. It's always something bad; the worse the roll, the worse the result.

Automatic Success

Some things are totally trivial. No roll is required when common sense says that both failure and critical success are impossible; however, if there is any chance of failure, a roll is required. Finding your corner store requires no roll. Hitting a target at point-blank range, even for an experienced soldier, does – after all, even the most meticulously maintained rifle can misfire due to bad ammunition or bad luck.

Repeated Attempts

Sometimes, you have only one chance to do something; other times, you can try over and over until you succeed. Occasionally, you will not know whether you succeeded or failed until it's too late to try again. Finally, there will be times when you are injured by failure but can afford to fail a few times. The GM can use common sense to distinguish among these, according to the situation in which the characters find themselves, but as a rule:

- If the first failure kills them (or destroys the object of the attempt), that's that.
- If a failure causes damage of some kind, assess the damage and let them try again after a "reasonable" time passes.
- If a failure causes no damage, let them try again after a reasonable time, at a -1 penalty for each attempt after the first.

Contests of Skill

At times, two characters will need to compare their relative skills to settle a competition. A *Contest of Skill* is a quick way to resolve the situation without playing it out in detail. When a Contest of Skill is called for, both characters make their success rolls in the appropriate skill. Any appropriate modifiers are used.

There are two types of Contest:

A *Quick Contest* is usually over in a second; e.g., two people grabbing for the same weapon. Each character makes his skill roll. If one succeeds and the other fails, the winner is obvious. If both succeed (or fail), the winner is the one who succeeded by the most, or failed by the least. A tie means nobody won.

A *Regular Contest* may take some time; e.g., arm wrestling. Each character tries his skill roll. If one succeeds and the other fails, the winner is obvious. If both succeed or both fail, the characters' relative positions are unchanged and they may try again.

The time each attempt takes will depend on the activity, and is up to the GM to determine. In a combat situation, each attempt takes one second. In a library-research scenario, with the fate of the world hanging on who finds a certain obscure reference first, each attempt could represent days of time.

If both characters have a very high skill, the Contest could go on indefinitely. Therefore, shorten it as follows: if both skills are over 14, reduce the higher one to 14, and subtract the same amount from the lower one.

Eventually, one character will make his roll and the other one will miss. At this point, the one who made his roll is the winner of the Contest.

Reaction Rolls

A "reaction roll" is a roll made by the GM to determine how his NPCs react to the PCs. This roll is always optional, and the GM may predetermine reactions instead; however, it's often more fun to let the dice control the reactions.

To check reactions, the GM rolls 3 dice and consults the *Reaction Table* (below). The higher his roll, the better the NPCs will react, and the better treatment they will give the PCs.

Reaction rolls are typically made in potential combat situations, during commercial transactions, in response to requests for aid or information, and to determine the attitude and loyalty of NPC hirelings.

Reaction Modifiers

A *reaction bonus* is a factor that makes the NPCs more friendly; a *reaction penalty* is something that will make them less friendly. There are several types of reaction modifiers:

First, many PCs will have *personal* modifiers for appearance, social standing, etc. that add to (or subtract from) reaction rolls.

As well, the *situation* can result in a reaction modifier. Offering someone a bad business deal, or trying to convince someone not to attack you when you're badly outnumbered, might give you a penalty. Offering a good deal, or dealing with an old and trusted hireling, could give a bonus. This is left up to the GM.

Finally, *appropriate behavior* by the players should always influence reaction rolls. A good approach should be worth a +1 modifier – or more! – while a wholly inappropriate approach might give a -1 or -2 penalty on the reaction roll.

Reaction Table

Roll 3 dice and apply any reaction modifiers.

0 or less: Disastrous. The NPC *hates* the characters and will act in their worst interest. Nothing is out of the question: assault, betrayal, and ignoring a life-or-death plea are all possible.

1 to 3: Very Bad. The NPC dislikes the characters and will act against them if it's convenient to do so: attacking, offering grossly unfair terms in a transaction, and so on.

4 to 6: Bad. The NPC cares nothing for the characters and will act against them (as above), if he can profit by doing so.

7 to 9: Poor. The NPC is unimpressed. He may make threats, demand a huge bribe before offering aid, or something similar.

10 to 12: Neutral. The NPC ignores the characters as much as possible. He is totally uninterested. Transactions will go smoothly and routinely, as long as protocol is observed.

13 to 15: Good. The NPC likes the characters and will be helpful within everyday limits. Reasonable requests will be granted.

16 to 18: Very Good. The NPC thinks highly of the characters and will be quite helpful and friendly, freely offering aid and favorable terms in most things.

19 or better: Excellent. The NPC is extremely impressed by the characters, and will act in their best interests at all times, within the limits of his own ability – perhaps even risking his life, wealth, or reputation.

Damage Rolls

A "damage roll" is a roll made in a fight to see how much harm you did to your foe. Many things can affect the final damage done by an injury: armor protects the wearer, certain weapons can do extra damage if they get through the armor, and some "critical hits" bypass the damage roll altogether. All of these things are explained under *Combat* (see pp. 198-203).

CHARACTERS

Creating a character is the first part of the game, and one of the most important. The whole idea of roleplaying is to take the part of another person – a "character" that you create.

GURPS lets you decide exactly what kind of hero that you will become.

The usual way to create a character is to *design* him, just as though he were a character in a story you were writing. Start by deciding what type of person you want to be. You can take your inspiration from a fictional hero or heroine – or create your new "self" from the ground up. Once you have some idea what sort of person you want to play, it's time to bring him to life!

Character Stories: A "character story" is the history of a game character, written by the person who plays that character. This is a great aid to roleplaying. You might even want to write the story first (or at least some of it), and *then* work out your character's actual stats. A story can really help bring your character to life. You don't have to do it – but it's recommended.

If you write the story down, you should show it to the GM, but not necessarily to the other players. After all, your character probably has some secrets, even from his friends.

Character Points

When you create a character, the GM will give you a certain number of *character points* to "spend" on your character's abilities. See *Starting Points* (p. 62) for some recommended point totals. These rules assume heroic characters built with 100 points; most ordinary people have only 25 points.

The following sections describe things you can spend your character points on. Positive traits (e.g., great strength, wealth, above-average appearance, and skills) *cost* points in proportion to their value. Negative traits (e.g., weakness, bad sight, poverty, and fear of heights) *give* you extra points that can be used to buy more positive traits.

Attributes

Four numbers called "attributes" are used to define your basic abilities:

Strength (ST), a measure of "brawn" or physical muscle.

Dexterity (DX), a measure of agility and coordination.

Intelligence (IQ), a measure of brainpower, alertness, adaptability, and general background experience.

Health (HT), a measure of energy and vitality. HT also stands for "hits" – the amount of physical damage a character can take. When you have taken "hits" equal to your Health score, you soon fall unconscious. Further injury can kill you.

An attribute of 1 is the lowest score permitted for a human. There is *no* upper limit to any score. For each attribute, a score of 10 represents the human average; anything from 8 to 12 is in the range considered "normal." Scores above 16 are definitely unusual; scores above 20 are superhuman!

The four attributes are considered equally valuable. The point cost for beginning attributes is given in the table, below. Note that a score of 10 in any attribute is *free,* since 10 is "average." Scores below 10 have a negative cost – in effect, they "give you back" some points!

Character Point Costs

Level	*Point Cost*	*Level*	*Point Cost*	*Level*	*Point Cost*
1	-80	7	-20	13	30
2	-70	8	-15	14	45
3	-60	9	-10	15	60
4	-50	10	0	16	80
5	-40	11	10	17	100
6	-30	12	20	18	125
				+1	+25

Image and Looks

This section addresses your character's *intrinsic* "social" traits: appearance, manner, and bearing. Traits with positive point values (e.g., above-average Appearance, Voice) are considered *advantages* (p. 182). Those with negative values (e.g., below-average appearance, Odious Personal Habits) are treated as *disadvantages* (p. 183), and obey all the usual rules for disadvantages. Still others (e.g., height and weight, handedness) merely add "color."

Appearance — Variable

You are free to set the physical appearance of your character in any way you like. However, outstanding good (or bad) looks are considered an advantage (or disadvantage). Good looks cost points; bad looks give you bonus points to spend elsewhere. Reaction-roll modifiers due to Appearance apply only to people who can see you.

Hideous Appearance: Any sort of disgusting looks you specify: hunchback, severe skin disease, wall-eye . . . preferably several things at once. -4 on reaction rolls. *-20 points.*

Ugly Appearance: As above, but not so bad – maybe only stringy hair and snaggle teeth. -2 on reaction rolls. *-10 points.*

Unattractive Appearance: You just look vaguely unappealing. -1 on reaction rolls. *-5 points.*

Average Appearance: No bonuses or penalties of any type; you can blend easily into a crowd. No point cost or bonus.

Attractive Appearance: You may not enter beauty contests, but you're definitely good-looking. +1 on all reaction rolls. *5 points.*

Handsome (or Beautiful) Appearance: You *could* enter beauty contests! +2 on reaction rolls made by the same sex; +4 on reaction rolls made by the opposite sex. *15 points.*

Very Handsome (or Beautiful) Appearance: You *do* enter beauty contests, and you win. +2 on reaction rolls made by the same sex; +6 (!) on reaction rolls by opposite sex. *25 points.*

Charisma — 5 points/level

This is the natural ability to impress and lead others. Anyone can acquire a semblance of charisma by good looks, good manners, and intelligence – but *real* charisma works independently of these things, and you either have it or you don't. It affects all reaction rolls made by humans (but not beasts). *5 points per +1 reaction bonus.*

Handedness — No point cost

Decide whether you are right- or left-handed. These rules assume you are right-handed unless you decide otherwise or pay the points to be ambidextrous. If you decide to be left-handed, and combat damage is rolled to your right hand, it happens to your left instead. There is no point bonus or penalty for being left-handed.

Whenever you try to do anything significant (fire a pistol, forge a letter, etc.) with your "off" hand, you will be at a -4 penalty. This does not apply to things you *normally* do with your off hand.

Ambidexterity — 10 points

You can use both hands with equal skill. You do not suffer the -4 penalty for using an "off hand" like most people do, and can fight (or act) with either hand (though not necessarily both at once). Should some accident befall one of your arms or hands, assume it is the left one.

Height and Weight — No point cost

Players are free to select height and weight for their characters, within reason. The table below can be used to determine "average" height and weight. Average height is based on your ST score. Weight, in turn, is based on your height. As much as 6" variation in height and 40 lbs. variation in weight is believable, but anyone with a better-than-average Appearance should have a weight within 20% of "average" for his height.

Height and Weight Table

ST	*Height*	*Weight*	*ST*	*Height*	*Weight*
–	5'2" or less	120 lbs.	10	5'9"	150 lbs.
–	5'3"	130 lbs.	11	5'10"	155 lbs.
5-	5'4"	130 lbs.	12	5'11"	160 lbs.
6	5'5"	135 lbs.	13	6'	165 lbs.
7	5'6"	135 lbs.	14	6'1"	170 lbs.
8	5'7"	140 lbs.	15	6'2"	180 lbs.
9	5'8"	145 lbs.	16+	6'3"	190 lbs.

For each inch of height over 6'3", add 10 lbs. to average weight. This table assumes a male. For a female, subtract 2" from average height and 10 lbs. from average weight. Weight is always determined after height.

Fat — -5/-10/-20 points

You are unusually heavy.

Overweight: Determine weight normally for ST, and then increase it by 30%. Being overweight carries a reaction penalty of -1 among health-conscious societies and in areas where food is in especially short supply. *-5 points.*

GURPS®

CHARACTER SHEET

Name ______
Player ______
Appearance ______

Date Created	Sequence
Unspent Points	Point Total

Point Cost		
	ST	FATIGUE
	DX	DAMAGE Thrust: ____ Swing: ____ Kick: ____ ____: ____
	IQ	
	HT	HITS TAKEN

MOVE	BASIC SPEED (HT+DX)/4	MOVE Round Off
SWIM		

ENCUMBRANCE		MOVE
None (0) = 2×ST	____	____
Light (1) = 4×ST	____	____
Med (2) = 6×ST	____	____
Hvy (3) = 12×ST	____	____
X-hvy (4) = 20×ST	____	____

ACTIVE DEFENSES

DODGE	PARRY	BLOCK
= Move	Weapon/2	Shield/2

BODY PROTECTION

	Head	Body	Arms	Legs	Hands	Feet	ALL
PD							
DR							

OTHER PD	OTHER DR
Shield: ____	

SKILLS — Point Cost — Level

ADVANTAGES, DISADVANTAGES, and QUIRKS

Point Cost — Point Cost

SUMMARY	Point Total
Attributes	
Advantages	
Disadvantages	
Quirks	
Skills	
TOTAL	

Fat: Determine weight normally for ST, and then increase it by 50%. This gives -1 on *all* reaction rolls; HT may not be greater than 15. *-10 points.*

Extremely Fat: Determine weight normally, and then *double* it. This gives -2 on all reaction rolls; HT may not be greater than 13. *-20 points.*

In all three cases, the extra weight counts as encumbrance (p. 194) that you cannot get rid of. (*Exception:* this does not count against you when swimming.) If you are Fat or Extremely Fat, normal clothes and body armor will not fit you, and you will be at -3 to Disguise, or to Shadowing if you are trying to follow someone in a crowd. The GM may assess additional penalties in cramped quarters (tanks, submarines, etc.). Fat people get +5 to their Swimming roll (+2 if merely Overweight).

Skinny -5 points

You are notably underweight. After figuring your height, take "average" weight for that height and cut it by 1/3. You may not take Handsome or Very Handsome appearance, and your HT may not be more than 14. Normal clothes and body armor will not fit you, and you will be at -2 to Disguise, or to Shadowing if you are trying to follow someone in a crowd.

Odious Personal Habits -5/-10/-15 points

You behave, some or all of the time, in a fashion repugnant to others. The worse your behavior, the more bonus points you receive. Specify the behavior when the character is first created, and work the bonus out with the GM. Body odor might be worth -5 points, spitting on the floor would be worth -10 points; -15-point habits are left to the imagination of those depraved enough to want them. For each -5 points your habit is worth, subtract 1 from all reaction rolls made by someone in a position to notice it.

Voice 10 points

You have a naturally clear, resonant, and attractive voice. You get a permanent +2 bonus on the Bard (or Public Speaking) skill, and on the following Influence Skills (p. 189): Diplomacy, Savoir-Faire, and Sex Appeal. You also get a +2 on any reaction roll made by someone who can hear your voice.

Social Standing

This section contains rules for defining your character's *extrinsic* social traits – his place in society. As for *Image and Looks,* above, traits with positive point values are advantages, while those with negative values are disadvantages. Most of these traits only have significance within the character's own society.

Clerical Investment 5 points/level

This is the social/political advantage of being invested as a cleric of your religion. It represents your status and influence within the church. You have a number of powers and privileges that a layman lacks, including a +1 reaction bonus *per level of rank* from followers of your religion and those who respect your faith. You will be addressed by a title – Father, Rabbi, Reverend – and may perform ceremonies such as marriage and last rites. Most ordinary clerics will have 5 points in this advantage.

Duty Variable

You have a significant responsibility toward others, and are personally committed to that responsibility. A Duty typically reflects your obligations as a member of an intelligence agency, a military or police force, or a similar organization. By definition, a Duty is imposed from outside. The GM rolls at the beginning of each adventure to see if each character will be "called to duty" in that adventure. The point cost of a Duty depends on the frequency with which it is demanded (all rolls are on three dice):

Almost all the time (roll of 15 or less): *-15 points.*

Quite often (roll of 12 or less): *-10 points.*

Fairly often (roll of 9 or less): *-5 points.*

Occasionally (roll of 6 or less): *-2 points.*

To be significant, a Duty should be dangerous. An ordinary job is not a Duty. If a Duty does not require you to risk your life, at least occasionally, reduce its value by 5 points, which negates those less frequent than "quite often."

On the other hand, an *Extremely Hazardous Duty,* where you are "on duty" all the time and risk death or serious injury, is worth -20 points. This is typical of front-line fighters in total war.

See p. 64 for more detail on military Duties.

Legal Enforcement Powers 5/10/15 points

You are an officer of the law, with all the accompanying rights, powers, and restrictions. In some jurisdictions, this amounts to a license to kill; in others, it's little more than the right to carry a badge and write parking tickets.

The point cost is determined by the rights and privileges of the character's branch of law enforcement. Generally, a policeman with local jurisdiction, the ability to arrest suspected criminals, the right to perform searches with an appropriate warrant, and *possibly* the right to carry a concealed weapon, has 5 points' worth of Legal Enforcement Powers.

Someone with national or international jurisdiction, *or* not obligated to respect the civil rights of others, *or* free to engage in covert investigations, *or* able to kill with relative impunity, has 10 points' worth of Legal Enforcement Powers.

An officer with three or more of the above abilities has 15 points of Legal Enforcement Powers.

Legal Enforcement Powers usually go hand-in-hand with an appropriate Duty disadvantage (above), and a Reputation (see below), which may be an advantage, a disadvantage, or both.

Military Rank 5 points/level of Rank

Military Rank reflects your position in a military organization. Each level of Rank gives authority over those of lower Rank – regardless of personal ability. Typically, enlisted men have Rank 0, NCOs have Rank 1-2, and officers have Rank 3+. Generals or the equivalent are Rank 7 or 8 (the maximum level of Rank). The title associated with a given level of Rank depends on the organization; see *Sample **GURPS** Military Ranks* (p. 63) for examples.

Military Rank gives a Status bonus, which need *not* be paid for separately; see *Status* (p. 66) for more information. Military Rank almost always involves a significant Duty (see above).

Reputation Variable

Some people are so well-known that their reputation actually becomes an advantage or a disadvantage. For game purposes, reputation affects the *reaction rolls* made by NPCs. The details of your reputation are entirely up to you; you can be known for bravery, ferocity, or whatever you want. If you have a reputation, your name or your face, or possibly the military decorations pinned to your uniform (see *Reputation (Medals),* p. 63), will be enough to trigger a "reputation roll" to see if the people you meet have heard of you. Roll once for each person or small group you meet. For a large group, the GM may roll more than once if he likes.

There are three components to your reputation: *Type of Reputation, People Affected,* and *Frequency of Recognition.*

Type of Reputation affects the reaction modifier that you get from people who recognize you. For every +1 bonus to a reaction roll (up to +4), the cost is 5 points. For every -1 penalty (up to -4), the cost is -5 points.

People Affected modifies the value of your reputation. The larger the "affected class" (people who might have heard of you), the more your reputation is worth, as follows:

Everyone you will meet in your campaign: use listed value.

Large class of people (e.g., all people of a particular nationality, profession, or religion): 1/2 value (round down).

Small class of people (e.g., everyone from a specific town, every officer who fought in a particular battle): 1/3 value (round down).

If the class of people affected is so small that, in the GM's opinion, you would not meet even one in the average adventure, your reputation doesn't count at all.

Frequency of Recognition also modifies the value of your reputation. The more often you are recognized by members of the "affected class," the more important that reputation is (all rolls are on three dice):

All the time: no modifier.

Sometimes (roll of 10 or less): 1/2 value, rounded down.

Occasionally (roll of 7 or less): 1/3 value, rounded down.

Social Stigma -5/-10/-15 points

You are of an ethnicity or sex your culture considers inferior. The "stigma" must be obvious to anyone who sees you; otherwise, it's a Reputation. The point bonus depends on the reaction penalty:

Second-class citizen (e.g., a woman in many societies, a non-Aryan Western European in the Third Reich): -5 points. -1 on all reaction rolls except from others of your own kind.

Valuable property (e.g., a woman in WWII-era Japan): -10 points. This usually takes the form of limited freedom or lack of intellectual respect.

Minority group (e.g., a black or Hispanic person in WWII-era U.S.A., a Slav in the Third Reich): -10 points. -2 on all reaction rolls made by anyone except your own kind, but +2 on rolls made by your own kind.

Outsider, outlaw, or barbarian (e.g., *any* non-Japanese in Japan during WWII): -15 points. This only applies if the "barbarian" is outside his own culture. You get -3 on all reaction rolls, but +3 from your own kind when met outside your home culture.

Anyone who takes a Social Stigma disadvantage must be bound by it . . . roleplay the difficulties it causes!

Status 5 points/level of Status

Status is an indication of your *class* in society. Anyone can determine your Status by looking your dress and your bearing. If you have very high Status, your *face* may be easily recognized.

Status is measured in "social levels," ranging from -2 (hobo, refugee) to 8 (absolute dictator, divine emperor); the meaning of specific Status levels is given on the *Status/Cost of Living Table* (p. 66). The point cost is 5 points per level of Status; e.g., Status 5 costs 25 points, while Status -3 is a *disadvantage* worth -15 points.

High Status: High Status means you are a member of the ruling class in your culture. As a result, others in your culture (only) defer to you. High Status carries various privileges; these are up to the GM. Because of the relationship between Status and Wealth (see below), a Wealth level of Wealthy or above lets you pay 5 fewer points for high Status. In effect, you get one level of Status free. Military Rank can also give a Status bonus; see p. 63 and p. 179.

Low Status: You are a servant, criminal, or slave. Note that this is not the same thing as a Social Stigma (p. 180).

Status as a Reaction Modifier: When a reaction roll is made, the *difference* between the Status of the characters involved can affect the reaction. *Higher Status usually gives you a bonus.* If you have Status 3, for instance, those of Status 1 would react to you at +2. *Negative Status usually gives a penalty.* If your Status is negative, those of higher Status will react badly to you. Take the difference between your Status and the NPC's as a reaction penalty, but no worse than -4. *Lower Status may give a penalty.* If you are dealing with an NPC who is basically friendly, your Status won't matter (as long as it's positive). But if the NPC is neutral or already angry, lower Status makes it worse.

Wealth

Wealth governs how much money you start play with, how much money you earn per game month (though this depends on your specific job, too), and how much time you must spend earning your living. All characters get the "standard" starting wealth unless they paid extra character points for high wealth (the Wealth advantage) or took the disadvantage of low wealth (the Poverty disadvantage); "wealth levels" are explained below. Characters with a "settled" lifestyle should put 80% of their starting wealth into home, clothing, etc., leaving only 20% for "adventuring" gear.

GURPS uses a $ sign to indicate money, regardless of the specific currency. Standard starting wealth is $1,500 (1,500 U.S. dollars) during World War 2. For more on how wealth works in this era, see *Wealth* (p. 63).

Wealth Levels Variable

Dead Broke: You have no job, no source of income, no money, and no property other than the clothes on your back. Either you are unable to work, or there are no jobs. *-25 points.*

Poor: Starting wealth is only 1/5 the standard starting wealth. You spend 50 hours per week at your job. Some jobs are not available to you, and no job you find will pay you very well. *-15 points.*

Struggling: Your starting wealth is only 1/2 the standard starting wealth. You spend 40 hours per week at your job. Most jobs are open to you, but you don't earn much. *-10 points.*

Average: You have the standard starting wealth. You spend 40 hours per week at your job. No point cost or bonus.

Comfortable: You work for a living, but your lifestyle is better than average. You spend 40 hours per week at your job. Your starting wealth is twice the standard starting wealth. *10 points.*

Wealthy: Your starting wealth is 5 times the standard starting wealth; you live very well. Your job takes only 20 hours per week. This level of wealth, and higher ones, may not be chosen without the GM's permission! *20 points.*

Very Wealthy: Your starting wealth is 20 times the standard starting wealth. You spend only 10 hours a week looking after business (this is hardly a "job"). *30 points.*

Filthy Rich: Your starting wealth is 100 times the standard starting wealth. You spend 10 hours a week on business. You can buy almost anything you want without considering the cost. *50 points.*

Multimillionaire: Once you have purchased Filthy Rich, you may buy additional levels of Wealth. Each level increases your wealth by a factor of ten (e.g., the first level would increase total wealth to 1,000 times standard starting wealth). Each level also grants a free level of Status, to a maximum bonus of +2 over the free level already given for high Wealth. *25 points per level.*

Friends and Foes

Many characters have NPCs who are especially well or ill disposed toward them. Powerful friends you can call upon in times of need are an *advantage;* weaker friends you must defend are a *disadvantage,* as are powerful enemies.

Frequency of Appearance: When a character has friends or enemies like this, the GM rolls dice once per adventure to see if they will get involved. The chance on three dice of a powerful friend showing up or otherwise aiding you, or of a weaker friend or an enemy somehow complicating your life, is called his *frequency of appearance.* This adjusts the NPC's value as an advantage or disadvantage, after all other factors have been considered, as follows:

Appears almost all the time (roll of 15 or less): triple cost.

Appears quite often (roll of 12 or less): double cost.

Appears fairly often (roll of 9 or less): listed cost.

Appears rarely (roll of 6 or less): half cost (round up).

A Note on Power Level: The rules below all assume 100-point PCs; in a more (or less) powerful game, adjust the point values of these NPCs by the same amount.

Dependents — Variable

An NPC for whom you are responsible is a *Dependent,* and is considered a disadvantage. This may be your child, sidekick, spouse, or anyone else you feel an obligation to look after. If your Dependent is in trouble and you don't go to his aid immediately, the GM can deny you bonus character points (see p. 194) for "acting out of character." Furthermore, you can never get any character points for a play session in which your Dependent is killed or badly hurt.

The Dependent is created just like any other character, but instead of the 100 points used to create a PC, you use 50 points or less. A Dependent built with 0 or fewer points is worth -16 points, one who is built with 1 to 25 points is worth -12 points, and one built with 26 to 50 points is worth -6 points. A Dependent built with 50+ points is not worth any bonus points.

The more important the Dependent is to you, the more points he is worth. For an employer or acquaintance to whom you may weigh risks in a rational fashion, *halve* the values above. For a friend you must *always* protect, unless something even more important is on the line, use the values above. For a loved one whose safety always comes first, *double* the values above.

Finally, pick a frequency of appearance (see above) that fits the "story" behind the Dependent.

No character may ever earn points for more than two Dependents at once.

Allies — Variable

Allies are loyal comrades who are competent enough to accompany you on adventures. Having an Ally is an advantage. An Ally is an NPC, and should be played as such. Allies are usually agreeable to the suggestions of their PCs, but they are not puppets. As well, a PC should receive no character points for any play session in which he betrays, attacks, or unnecessarily endangers his Ally.

An Ally character is created just as though he were a PC. An Ally built on 51-75 points is worth no points, but must be protected like a Dependent. An Ally built on 76-100 points costs 5 points, while one built on 101-150 points costs 10 points. An Ally built on over 50 points more than his PC is actually a *Patron* (see below).

An Ally who has special abilities – for instance, political power out of proportion to his point value – may cost an extra 5 to 10 points, at the GM's discretion.

As for a Dependent, pick a frequency of appearance that fits the "story" behind the Ally.

Note that NPC Allies must all pay the points to have their PC as an Ally. For a 100-point PC, this will cost 5 points.

Patrons — Variable

The most powerful NPC friends are known as *Patrons.* Like Allies, Patrons are NPCs, created initially by the player but controlled by the GM. A Patron may be an advisor, protector, or employer (but you can have a job without having a Patron; a Patron is more than an ordinary boss – see *Patrons,* p. 63). Unlike an Ally, a Patron does not adventure with a PC. Instead, the Patron offers advice, knowledge, equipment, influence, etc.

The point value of a Patron depends on his (or its) power. A single powerful individual (created with at least 150 points), or a group with assets of at least 1,000 times standard starting wealth, is worth 10 points. An extremely powerful individual (created with at least 200 points), or a reasonably powerful organization (assets equivalent to at least 10,000 times standard starting wealth), is worth 15 points. A very powerful organization (assets equivalent to at least a million times standard starting wealth) is worth 25 points. A national government or giant multi-national organization (net worth basically incalculable) is worth 30 points.

If a Patron supplies useful equipment, that increases the point value if you can use the equipment for your own purposes. In most cases, this adds 5 points to a Patron's cost. If the equipment is worth more than the standard starting wealth of the campaign, it adds 10 points.

Like an Ally, a Patron who has special abilities may cost an extra 5 to 10 points, at the GM's discretion.

Finally, pick an appropriate frequency of appearance.

Enemies — Variable

An NPC or organization that is working against you, or just trying to kill you, is an *Enemy.* You are responsible for determining the nature of your Enemy when you first create your character, and must explain to the GM why this Enemy is after you. The GM always has the right to veto your choice of Enemy if it seems silly or would be too hard to fit into the campaign.

To be worth points as an Enemy, your nemesis must be personal, not simply a common foe of everyone around you. If you are a soldier, the opposing forces in wartime do not qualify as Enemies: you are no more their target than anyone else fighting on your side. However, a crazed enemy sniper obsessed with killing you personally (for whatever reason) *would* be a legitimate Enemy.

The point value of an Enemy is governed by his (or its) strength: the more powerful the Enemy, the more points he (or it) is worth as a disadvantage. A single above-average individual (created with 50 points) is worth -5 points. A single very formidable individual (created with 100 points), or a group of 3 to 5 "average" 25-point people, is worth -10 points. A medium-sized group (6 to 20 people) is worth -20 points. A large group (20 to 1,000 people), or a medium-sized group that includes some formidable or superhuman individuals, is worth -30 points. An entire government or some other utterly formidable group is worth -40 points.

Once you know the base point value of the Enemy, pick an appropriate frequency of appearance.

Since too many Enemies can disrupt a game, no character may take more than two Enemies, or total more than 60 points bonus from Enemies.

Advantages

Advantages are innate abilities. In general, a character may only be given advantages when he is first created. After that, there is no way to gain or "earn" them without the GM's special permission.

Each advantage has a cost in character points. For some advantages, this is fixed. Others are bought in levels, at a certain point cost for each level. A character may have as many advantages as he can afford. Many advantages referred to in *Character Templates* (p. 68) are not listed here. These appear in ***GURPS Basic Set*** or ***Compendium I.*** Those solely using ***GURPS Lite*** should choose from the advantages listed below.

Absolute Direction — 5 points

You always know which way is north, and you can always retrace a path you have followed within the past month. This ability *does* work underground or underwater. Gives a +3 bonus on your Navigation and Orienteering skills.

Absolute Timing — 5 points

You have an accurate mental clock. You always know what time it is, down to the second, unless you have been knocked unconscious by drugs or injury. You can measure elapsed time with equal accuracy. Sleep does not interfere with this, and you can wake up at a predetermined time if you choose. Changes of time zone also have no effect.

Acute Sense(s) — 2 points/level

You have better-than-average senses. *Acute Hearing* gives you a bonus to your IQ whenever you must roll to hear something, or when the GM rolls for you. *Acute Taste/Smell* gives you a bonus when rolling to notice a taste or smell. *Acute Vision* gives you a bonus when rolling to see something. Each acute sense is a separate advantage, and costs 2 points per +1 bonus to your roll. E.g., Acute Hearing +6 costs 12 points.

Alertness — 5 points/level

A general bonus to *any* Sense roll (pp. 196-197), or when the GM rolls against your IQ to see if you notice something. This advantage can be combined with Acute Senses. Costs 5 points per +1 bonus to your roll.

Animal Empathy — 5 points

You get +2 on any reaction roll by a wild animal, and +4 from a tame one. You also get a +4 bonus on Animal Handling, Riding, Teamster, and other "animal" skill rolls. You may never kill an animal without a very good reason, and you should try to prevent others from doing so. Note that killing for food is perfectly acceptable, and in a hunting situation you will get a +3 bonus to find game.

Combat Reflexes — 15 points

You have extraordinary reactions and are very rarely surprised for more than a moment. You get a +1 to any Active Defense in combat (see p. 199). You never "freeze up" in a surprise situation, and you get a +6 on any IQ roll to wake up or to recover from surprise or a mental "stun" (see p. 203).

Common Sense — 10 points

Any time you start to do something that the GM feels is *stupid*, he rolls against your IQ. A successful roll means he must warn you, "Hadn't you better think about that?" This advantage allows an impulsive *player* to take the part of a thoughtful character.

Danger Sense — 15 points

You can't depend on it, but sometimes you get this prickly feeling right at the back of your neck, and you know something's wrong . . . If you have Danger Sense, the GM rolls once against your IQ, secretly, in any situation involving an ambush, impending disaster, or similar hazard. A successful roll means you get a warning that something's wrong. A roll of 3 or 4 means you get a little detail as to the nature of the danger.

Daredevil — 15 points

Fortune seems to smile on you when you take risks. Any time you take an unnecessary risk (GM's option) you get a +1 to all skill rolls. Furthermore, you may re-roll any critical failure that occurs while you are engaged in high-risk behavior. *Example:* If you're fired upon from a window across the street, you don't get this bonus if you crouch behind a wall and return fire from cover, but you *do* get it if you vault over the wall and charge, screaming!

Disease Resistant/ Immunity to Disease — 5/10 points

Your body naturally resists disease organisms. This protects you against bacterial, viral, and fungal infections, but not parasites (e.g., tapeworms).

Disease Resistant: You get +8 to HT to avoid catching any disease. *5 points.*

Immunity to Disease: You *never* catch any infection or disease, even if you are forcibly injected with it! You must start with a HT of 12 or better to take Immunity to Disease, but the advantage will remain if your HT is later reduced below 12. *10 points.*

Double-Jointed — 5 points

Your body is unusually flexible. You get a +3 on any Climbing or Escape roll, or on any Mechanic roll (to reach into an engine, of course)!

Empathy — 15 points

You have a "feeling" for people. When you first meet someone, or when you are reunited after an absence, you may request the GM to roll against your IQ. He will then tell you what you "feel" about that person. (A failed roll means the GM may lie to you.) This talent, when it works, is excellent for spotting impostors and determining the true loyalties of NPCs. You can also use it to determine whether someone is lying . . . not what the truth really is, but just whether they are being honest with you.

Fearlessness — 2 points/level

You are extremely brave. Your level of Fearlessness adds to your Will when you roll Fright Checks (see p. 197) or resist the Intimidation skill (p. 189). Costs 2 points per +1 bonus to your roll.

Fit/Very Fit — 5/15 points

You are in peak condition for someone of your HT.

Fit: You lose fatigue points (see p. 205) to exertion, heat, etc. at the normal rate, but recover them at twice the normal rate. You also get +1 on all HT rolls. *5 points.*

Very Fit: You lose fatigue *half* as quickly and regain it twice as quickly as normal. You also get +2 on all HT rolls. *15 points.*

Hard to Kill — 5 points/level

You are incredibly difficult to kill. Your level of Hard to Kill adds to HT rolls to avoid death when you are wounded to -HT or worse (see p. 203). Costs 5 points per +1 bonus to your roll.

High Pain Threshold — 10 points

You are as susceptible to injury as anyone else, but you don't *feel* it as much. If you are hurt in combat, you are not stunned and do not have a "shock" penalty (p. 203) on your next turn. (*Exception:* a head blow can still stun you.) If you are tortured physically, you are at a +3 to resist. The GM may let you roll at +3 to ignore pain in other situations.

Language Talent — 2 points/level

You pick up languages quickly. Whenever you learn any Language skill (see p. 191), add your level of Language Talent to IQ.

Less Sleep — 3 points/level

You can stay awake and alert for longer than most people. For you, a full night's sleep is 8 hours minus your level of this advantage, to a maximum of five levels (3 hours' sleep). A half-night's sleep is half this amount. This helps you avoid the fatigue penalty for missed sleep; see *Fatigue* (p. 205).

Literacy — 0 points

You can read and write any language you know (see *Languages,* p. 191), limited only by your skill in that language. This is the norm on 20th-century Earth, and has no point cost. *Illiteracy* is a disadvantage, however; see p. 186.

Luck — 15/30/60 points

This allows creation of the kind of hero who defies the odds.

Luck: Once per hour of play, you may re-roll a single bad die roll twice (this must be the last roll you made) and take the best of the three rolls! If the GM is rolling (e.g., to see if you notice something), you may tell him you are using your Luck, and he must roll three times and give you the best result. *15 points.*

Extraordinary Luck: Works the same way, but it is usable every 30 minutes instead of every hour. *30 points.*

Ridiculous Luck: Usable every *10* minutes! *60 points.*

Your Luck only applies on rolls for your character to try to do something, OR on outside events that affect you or your whole party, OR when you are being attacked (in which case you may make the attacker roll three times and take the *worst* roll!).

Luck cannot be shared. If Strong Sam is trying to kick open a door, Lucky Lou can't stand behind him and transfer his Luck. He'll have to kick that door himself.

Once you use your Luck, you must wait an hour of real time (30 minutes for Extraordinary Luck, 10 minutes for Ridiculous Luck) before using it again. You cannot use Luck at 11:58 and then again at 12:01. And Luck cannot be saved up. You cannot play for hours without using Luck and then use it several times in a row!

Musical Ability — 1 point/level

You have a natural talent with music and musical instruments. You get a permanent +1 to all Musical Instrument skills per level of Musical Ability. Costs 1 point for each +1 bonus.

Night Vision — 10 points

Your eyes adapt rapidly to the darkness. You cannot see in *total* darkness – but if you have any light at all, you can see fairly well. Whenever the GM exacts a penalty because of darkness, except for total darkness, this penalty does not apply to you.

Rapid/Very Rapid Healing — 5/15 points

You recover rapidly from all kinds of wounds. These advantages are only available if your basic HT is 10 or above.

Rapid Healing: Whenever you roll to recover lost HT (p. 204), *or* when you roll to see if you can get over a crippling injury (p. 203), you get +5 to your effective HT. This ability does not help you get over stunning or similar incapacities. *5 points.*

Very Rapid Healing: As above, but when recovering lost HT, a successful HT roll heals *two* hits, not one. *15 points.*

Resistant to Poison — 5 points

Poison affects you less. You get +3 to HT to resist its effects.

Single-Minded — 5 points

When you put your mind to something, you *concentrate!* You get a +3 bonus when working on lengthy tasks, but you may ignore other important tasks while obsessed (make a Will roll to avoid this). Roll at -5 to *notice* interruptions.

Strong Will — 4 points/level

You have much more "willpower" than the average person. Your level of Strong Will is added to your IQ when you make a Will roll (p. 197) for *any* reason, including any attempt to resist brainwashing, distraction, intimidation, seduction, or torture. However, Strong Will does not help against combat shock and the like. In questionable cases, the GM's ruling is law. Costs 4 points per +1 bonus.

Toughness — 10/25 points

Your skin and flesh are tougher than the average human's. Your body itself has a "Damage Resistance" (DR) score (see p. 200). This DR is treated just like the DR from armor: you subtract it from the damage done by any attack *before* you multiply the damage done by a cutting or impaling weapon.

Toughness does not let your skin "turn" weapons. They still break the skin, even draw blood, but you're not *hurt.* If a poisoned weapon breaks your skin, the poison will do normal damage. Costs 10 points for DR 1, or 25 points for DR 2. DR 3+ is not possible.

Disadvantages

These are problems acquired before the character first comes into play. As a rule, a character may only be given disadvantages when he is created.

Each disadvantage has a *negative* cost in character points – the worse the disadvantage, the higher this cost. Thus, disadvantages give you extra character points, which will let you improve your character in other ways. Besides, imperfections make your character more interesting and realistic, and add to the fun of roleplaying. Certain disadvantages may be "bought off" later on by spending points equal to the value of the disadvantage; see p. 194.

Some disadvantages referred to under *Character Templates* (p. 69) do not appear below. These are from ***GURPS Basic Set*** and ***Compendium I.*** When solely using ***GURPS Lite,*** choose from among the disadvantages described below.

"Good" Disadvantages: Within the framework of the game, several virtues, such as Honesty and Truthfulness, are treated as "disadvantages" because they limit your freedom of action. For instance, a Truthful person will have trouble lying, even for a good cause. This means that if you want a wholly heroic character, you don't have to take any "character flaws" at all. You can get points by choosing only those disadvantages that are actually virtuous!

Limiting Disadvantages: The GM should be careful how many disadvantages he allows players to take; too many disadvantages can turn your game into a circus.

A suggested limit: disadvantages should not total more than -40 points. Negative social traits (bad Reputation, below-average Appearance, Status, and wealth, etc.), Dependents, Enemies, and points gained by reducing an attribute to less than 8 count against this limit. However, if only a single severe disadvantage is taken, it may have *any* cost.

Mental Problems: Many mental disadvantages let the afflicted character make IQ or Will rolls to avoid their bad effects. In these cases, any roll of 14 or over *still fails.* Otherwise, very smart or strong-willed people would be almost immune to their own bad habits – which isn't the way life works!

Addiction (Tobacco) -5 points

If you go without tobacco for a full day, it has a negative effect on your mood. Every morning afterward, make a HT roll at -5, modified by Strong/Weak Will. If you succeed, you can function normally. If you fail, you are anxious, irritable, and restless for the day. You have -1 on tasks that require concentration (GM's decision), and suffer a -1 on reaction rolls made by those who have to tolerate your grumbling. If you manage to get a smoke, these penalties disappear and you no longer have to make a daily HT roll – until the *next* time you are deprived of tobacco for a day.

Bad Sight -10/-25 points

You may be either nearsighted or farsighted – your choice.

If you are nearsighted, you cannot read small print more than a foot away, or signs at more than about 10 yards. When using a weapon, you are at -2 to your skill rolls.

If you are farsighted, you cannot read a book except with great difficulty (triple the normal time), and you are at -3 DX on any close manual labor.

Glasses will compensate totally for Bad Sight *while they are worn;* however, they can be lost or damaged while adventuring! For characters who start play with glasses, Bad Sight is worth only -10 points. For characters who must do without (due to shortages, lack of skilled optometrists, etc.), Bad Sight is worth -25 points.

Bad Temper -10 points

In any stressful situation, you must make a Will roll. A failed roll means you lose your temper, and must insult, attack, or otherwise act against the cause of the stress.

Bloodlust -10 points

You want to see your foes *dead.* This only applies to "legitimate" enemies, such as enemy troops. You must make a Will roll to accept a surrender, avoid a sentry instead of attacking him, take a prisoner, etc. If you fail, you attempt to kill your foe – even if that means compromising stealth, using up scarce ammunition, or violating orders. You will never forget that a foe is a foe.

Bully -10 points

You like to push people around when you can get away with it. Depending on your personality and position, this may include physical attacks, intellectual harassment, or social "cutting." Make a Will roll to avoid gross bullying when you know you shouldn't – but to roleplay your character properly, you should bully anybody you can. Nobody likes a bully – others react to you at a -2.

Callous -6 points

You are not necessarily *cruel,* but you care little about the pain of others. You ignore lost, crying children and push aside beggars. You get -2 on all rolls made for social interaction. This includes Diplomacy, Fast-Talk, Leadership, and Sex Appeal skills, and any other roll the GM feels would be affected.

Chummy -5 points

You work well with others and seek out company. When you are alone, you are unhappy and distracted, and suffer a -1 penalty to your mental skills. NPCs with this disadvantage will always react to the PCs at +2.

Code of Honor -5/-10/-15 points

You take pride in a set of principles which you follow at all times. Codes of Honor differ, but all require (by their own standards) "brave" and "honorable" behavior. A Code of Honor may also be called "pride," "machismo," or "face." Under any name, it is the willingness to risk death rather than be thought dishonorable . . . whatever that means. Only one who truly follows the Code may get points for it as a disadvantage.

A Code of Honor is a disadvantage because it will often require dangerous (if not reckless) behavior. Furthermore, an honorable person can often be forced into unfair situations, because his foes know he is honorable.

The point value of a specific Code varies, depending on just how much trouble it gets its followers into, and how arbitrary and irrational its requirements are. As a general rule, an informal Code that applies only among one's peers is worth -5 points; a formal Code that applies only among peers, or an informal one that applies all the time, is worth -10 points; and a formal Code of conduct that applies all the time, or which requires suicide if broken, is worth -15 points. The GM has the final word! See p. 64 for generic military Codes of Honor.

Compulsive Behavior -5 to -15 points

You have a habit (usually a vice) that you feel compelled to indulge on a daily basis. You waste a good deal of your time indulging your habit. Examples of Compulsive Behavior include gambling, attraction to another person, arguing, or even fighting.

In general, a Will roll is required if the player wants his character to avoid the compulsion in a specific instance (or for a specific day). Note that it is very bad roleplaying to attempt to avoid the compulsion often! The point value of the disadvantage depends on what the behavior is, how much money it costs, and how much trouble it is likely to get the PC into. The GM is the final judge.

Cowardice -10 points

You are extremely careful about your physical well-being. Any time you are called on to risk physical danger, you must roll against Will. If there is a risk of death, the roll is at a -5. If you fail the roll, you must refuse to endanger yourself – unless you are threatened with *greater* danger! Soldiers, police, and the like will react to you at -2 once they know you are a coward.

Fanaticism -15 points

You believe so strongly in a country, organization, political philosophy, or religion that you put it ahead of *everything* else. You might even be willing to die for it! If the object of your fanaticism demands obedience to a certain code of behavior or loyalty to a leader, you will give this willingly and unquestioningly. You *must* roleplay your fanaticism.

Greed -15 points

You lust for wealth. Any time riches are offered – as payment for fair work, gains from adventure, spoils of crime, or just bait –

you must make a Will roll to avoid temptation. The GM may modify this roll if the money involved is small relative to your own wealth. Small amounts of money will not tempt a rich character (much), but a *poor* character will have to roll at -5 or even more if a rich prize is in the offing. *Honest* characters (see below) roll at +5 to resist a shady deal and +10 to resist outright crime, but almost any greedy character will eventually do something that is illegal.

Gullibility -10 points

You believe everything you hear. In order *not* to believe a lie – or an improbable truth – you must roll against IQ. The GM should modify this roll for the plausibility of the story; an outlandish story would give no penalty, but a believable lie would give -3 if you are familiar with the subject matter, -6 if you are not. You are also at -3 on Merchant rolls, or in any situation in which your credulity might be exploited.

Hard of Hearing -10 points

You are not deaf, but you have some hearing loss. You are at -4 to IQ on any Hearing roll (so your roll is IQ-4, rather than IQ). You are at -4 to your Language skill roll (p. 191) for any situation where you must understand someone (if you are the one talking, this disadvantage doesn't affect you).

Hidebound -5 points

You find it very hard to come up with an original thought. You get -2 on all rolls made for tasks that require invention or creativity (GM's decision).

Honesty -10 points

You *must* obey the law, and do your best to get others to do so as well. You are compulsive about it; this is essentially another type of *Code of Honor* (see p. 184). This is a disadvantage, because it will often limit your options! Faced with unreasonable laws, you must roll against IQ to see the "need" to break them, and against Will to avoid turning yourself in afterward! If you ever behave dishonestly, the GM may penalize you for bad roleplaying.

You are allowed to lie if it does not involve breaking the law. *Truthfulness* (p. 186) is a separate disadvantage.

Impulsiveness -10 points

You hate talk and debate. You prefer action! When you are alone, you will act first and think later. In a group, when your friends want to stop and discuss something, you should put in your two cents' worth quickly – if at all – and then do *something*. Roleplay it! If it is absolutely necessary to wait and ponder, you must make a Will roll to do so.

Intolerance -5/-10 points

You dislike people who are different from you, reacting to them at -3. On a "good" or better reaction, you will force yourself to tolerate them, coldly but civilly. On a "neutral" reaction, you will tolerate their presence, but you will be openly disdainful. On a worse reaction, you will walk out on them, drive them off, attack them, or something similar. Members of the disliked group will sense your intolerance and return the favor, reacting to you at -1 to -5.

Point value depends on the group affected. Intolerance of *anyone* not of your ethnic background is worth -10 points, as is intolerance of anyone who does not share your religion. Intolerance of one particular ethnic or religious group you routinely encounter is worth -5 points. Intolerance of a group you will rarely encounter is treated as a -1-point quirk (see p. 187).

Jealousy -10 points

You have an automatic bad reaction toward anyone who seems smarter, more attractive, or better-off than you! You will resist any plan proposed by a "rival," and will *hate* it if someone else is in the limelight. If an NPC is Jealous, the GM will apply from -2 to -4 to his reaction rolls toward the victim(s) of his jealousy.

Lame -15/-25/-35 points

You have some degree of impaired mobility. The point bonus depends on the damage, as follows:

Crippled Leg: You have one bad leg; your Move and Dodge (see p. 194) are reduced by 3. You suffer a -3 penalty to use any physical skill that requires walking or running. This definitely includes all hand weapon and unarmed combat skills (missile weapon ability is unimpaired). *-15 points.*

One Leg: You have lost a leg. You have a -6 penalty on any physical skill that requires the use of your legs. You cannot run; using crutches or a peg leg, you have a maximum Move of 2. (Otherwise, you cannot walk at all.) If you have access to prosthetics, you can reduce the effect to that of a crippled leg, but you must buy off the point difference in some way. *-25 points.*

Legless or Paraplegic: You are confined to a wheelchair or wheeled platform. If you power it with your own hands, its Speed is 1/4 your ST, rounded down. The GM should assess all reasonable penalties for this handicap; e.g., you cannot pass through narrow doors, navigate staircases or steep curbs, fight effectively (except with guns), and so on. If you have to fight with a hand weapon, you will be at -6 to skill. *-35 points.*

Laziness -10 points

You are violently averse to physical labor. Your chances of getting a raise or promotion in *any* job are halved. If you are self-employed, your weekly income is halved. You must avoid work – especially hard work – at all costs. Roleplay it!

Miserliness -10 points

Like *Greed* (pp. 184-185), except that you are more concerned with holding on to what you already have. You may be both greedy *and* miserly! You must make a Will roll any time you are called on to spend money, and you must always hunt for the best deal possible. If the expenditure is large, the Will roll may be at a -5 (or even greater) penalty. A failed roll means you will refuse to spend the money – or, if the money absolutely *must* be spent, you should haggle and complain interminably.

One Arm -20 points

You have lost an arm (or were born without it). It is assumed that you lost the left arm if you are right-handed, or vice versa. You cannot use any two-handed weapon (such as a rifle) or do anything requiring two arms. Anything requiring only one hand can be done without penalty. In borderline cases, it is best to allow the character to attempt the action at a -4 DX penalty, or try a quick reality check if possible!

One Eye -15 points

You have only one good eye; you may wear a glass eye, or cover the missing eye with a patch. You suffer a -1 DX penalty on combat and anything involving hand-eye coordination, and a -3 to use ranged weapons or to drive any vehicle faster than a horse and buggy. You will also suffer a -1 on any reaction roll. *Exception:* If you have Charisma, or are Handsome or Very Handsome, the patch just looks romantic, and does not affect reaction rolls.

Overconfidence -10 points

You think you are far more powerful, intelligent, and competent than you really are, and you should act that way. Any time (in the GM's opinion) you show too much caution, you must roll against IQ. A failed roll means you can't be cautious . . . you must go ahead as though able to handle the situation. An overconfident character will get +2 on all reaction rolls from the young or naive (they believe he's as good as he says he is), but -2 from experienced NPCs. This requires roleplaying. An overconfident person may be proud and boastful, or just quietly determined – but play it up!

Pacifism -15 points

You are opposed to violence. There are two different forms:

Self-Defense Only: You will only fight to defend yourself or those in your care, using only as much force as may be necessary (no pre-emptive strikes allowed!). You must do your best to discourage others from starting fights. *-15 points.*

Cannot Kill: You may fight freely, and even *start* a fight, but you may never do anything that seems likely to kill. This includes abandoning a wounded foe to die. You must do your best to keep your companions from killing, too. If you kill someone (or feel responsible for a death), you suffer a nervous breakdown. Roll 3 dice and be totally morose and useless (roleplay it!) for that many days. During this time, you must make a Will roll to offer any sort of violence toward *anyone,* for *any* reason. *-15 points.*

Phobias Variable

A "phobia" is a fear of a specific item or circumstance. Many fears are reasonable, but a phobia is an unreasonable, unreasoning, morbid fear. The more common an object or situation, the greater the point value of a fear of it.

If you have a phobia, you may temporarily master it by making a successful Fright Check (see p. 197), but the fear persists. Even if you master a phobia, you will be at -2 IQ and -2 DX while the cause is present, and you must roll again every 10 minutes to see if the fear overcomes you. If you fail the Fright Check to overcome a phobia, you will react badly, rolling on the table on p. 197.

If you are threatened with the feared object, you must immediately roll a Fright Check at +4; if enemies actually inflict the feared object on you, you must roll an unmodified Fright Check. If the roll is failed, you break down, but you do not necessarily talk.

Some common phobias: blood (hemophobia; *-10 points*); darkness (scotophobia; *-15 points*); dead bodies (necrophobia; *-10 points*); enclosed spaces (claustrophobia; *-15 points*); fire (pyrophobia; *-5 points*); heights (acrophobia; *-10 points*); loud noises (brontophobia; *-10 points*); open spaces (agoraphobia; *-10 points*); strange and unknown things (xenophobia; *-15 points*); weapons (hoplophobia; *-20 points*).

Post-Combat Shakes -5 points

You are shaken and sickened by combat, but only *after* it's over. As soon as all your enemies are dead or incapacitated, you must make a Fright Check (see p. 197), and you must roleplay the results. The GM may put penalties on your Fright Check roll if the combat was particularly dangerous or gruesome.

Primitive -5 points per Tech Level

You are from a culture with a lower Tech Level (see p. 205) than that of the campaign. You have no knowledge (or default skill) relating to equipment above your own TL. You can start only with skills or equipment from your own culture.

You may not acquire Mental skills relating to high-tech equipment until you buy off this disadvantage. Physical skills (driving, weaponry, etc.) may be acquired at no penalty if you find a teacher. The value of this disadvantage is -5 points for each TL by which your native TL is less than that of the campaign.

Secret -5/-10/-20/-30 points

A Secret is an aspect of your life that you must keep hidden. The GM rolls three dice before every adventure. On a 6 or less, your Secret appears. It is not automatically made public; you will have the chance to keep the Secret from being revealed, although this might mean caving in to blackmail, stealing the incriminating evidence, silencing someone who knows the Secret, etc.

If you succeed, you get to keep your Secret. The solution, however, is only temporary; the Secret will appear again and again until you finally buy it off.

If you fail, your Secret is made public. Immediately replace the Secret disadvantage with new disadvantages worth *twice* as many points as the Secret itself! The disadvantages acquired must be appropriate to the Secret, and should be determined with the GM's assistance. Secrets usually turn into Enemies, bad Reputations, or Social Stigmas, or reduce your Status or Wealth (going from Filthy Rich to Very Wealthy is effectively a -20-point disadvantage).

The point value of a Secret depends on the consequences should it be revealed: serious embarrassment (-5 points), utter rejection by society (-10 points), imprisonment or exile (-20 points), or possible death (-30 points).

Semi-Literacy/Illiteracy -5/-10 points

Semi-Literacy: You can understand simple, everyday words, and may read and write slowly, but complex words, written poetry, and so on are beyond you. *-5 points.*

Illiteracy: You cannot read or write *at all. -10 points.*

Sense of Duty -5/-10/-15/-20 points

You suffer from a self-imposed feeling of duty. If you feel a sense of duty toward someone, you will never betray him, abandon him when he's in trouble, or even let him suffer or go hungry if you can help. If you are known to have a sense of duty, others tend to trust you in a dangerous situation (+2 on reaction rolls in such circumstances). If you have a sense of duty, and go against it by acting against the interests of those you are supposed to feel duty toward, the GM will penalize you for bad roleplaying.

The player defines the sense of duty's group and the GM sets its point value. *Examples:* only toward close friends and companions (-5 points), toward a nation or other large group (-10 points), toward everyone you know personally (-10 points), toward all humanity (-15 points), toward every living being (-20 points).

Stubbornness -5 points

You always want your own way. Make yourself generally hard to get along with – roleplay it! Your friends may have to make a lot of Fast-Talk rolls to get you to go along with perfectly reasonable plans. Others react to you at -1.

Truthfulness -5 points

You hate to tell a lie – or you're just bad at it. To keep silent about an uncomfortable truth (lying by omission), you must make a Will roll. To actually *tell* a falsehood, you must make a Will roll at a -5 penalty! A failed roll means you blurt out the truth, or stumble so much that your lie is obvious.

Vow -1/-5/-10/-15 points

You have sworn an oath to do (or not do) something. You take this oath seriously. If you didn't, it would not be a disadvantage. The precise value of a Vow is up to the GM, but should be directly related to the inconvenience it causes the character. A *Trivial Vow*, such as "Never drink alcohol," is a -1-point *quirk* (see below). A *Minor Vow*, such as vegetarianism, is worth -5 points. A *Major Vow*, such as, "Use no firearms," is worth -10 points. A *Great Vow*, such as "Never refuse any request for aid," is worth -15 points.

Weak Will -8 points/level

You are easily persuaded, frightened, bullied, coerced, tempted, etc. For every level taken, you have -1 to IQ whenever you make a Will roll (p. 197). This includes attempts to resist distraction, seduction, torture, etc. Weak Will also affects Fright Checks, and all attempts to avoid giving in to mental problems.

A character cannot have both Strong Will and Weak Will.

Workaholic -5 points

You tend to drive yourself past your limits. You will always work at least half again as long as a normal working day. This often results in missed sleep (see *Fatigue*, p. 205). Most people regard you with respect at first (+1 to reaction rolls), but you will eventually meet with a -1 or -2 reaction, especially from friends and loved ones who rarely get to spend time with you.

Youth -2 to -6 points

You are 1 to 3 years "legally underage," at -2 points per year. You suffer a -2 reaction roll whenever you try to deal with others as an adult; they may like you, but they do not fully respect you. You may also be barred from buying alcohol, joining the army, voting, etc. You *must* keep track of time, and "buy off" this disadvantage when you reach "legal age" (usually 18).

Quirks

A "quirk" is a minor personality trait, not necessarily a disadvantage, just something unique about your character. For instance, a major trait like Greed is a disadvantage. But if you insist on being paid in U.S. dollars, even in Britain, that's a quirk.

You may take up to five "quirks" at -1 point each. These do *not* count against the maximum disadvantage points in your campaign.

A quirk *must* be something that can be roleplayed, or that will cause others to react to you in a significant way. If you take the quirk "dislikes heights," but blithely climb trees and cliffs whenever you need to, the GM will penalize you for bad roleplaying. Beliefs, goals, strong likes and dislikes . . . these *might* be quirks: "Likes jazz" is not a quirk but "Talks constantly about jazz" can be. Don't choose a quirk you aren't willing to play!

Skills

A "skill" is a particular kind of knowledge. Karate, auto mechanics, and the English language are all skills.

Each of your skills is represented by a number called a *skill level;* the higher the number, the greater the skill. When you try to do something, you or the GM will roll 3 dice against the appropriate skill, modified as the GM sees fit for the situation. If the number you roll is *less than or equal to* your (modified) score for that skill, you succeed, but a roll of 17 or 18 is an automatic failure.

Certain skills differ at different *Tech Levels* ("TL" for short). Such skills are designated by /TL. See p. 205 for more on TLs.

Learning Skills

To learn or improve a skill, you must spend character points. Skills are divided into *mental* and *physical*. The tables below show the point cost to learn each skill.

The first column shows the skill level you are trying to attain, *relative to the controlling attribute.* This is usually DX for physical skills and IQ for mental ones; exceptions are noted in individual skill descriptions. If your DX is 12, then a level of "DX-1" would be 11, "DX" would be 12, "DX+1" would be 13, and so on.

The remaining columns show the point costs to learn skills of different *difficulties – Easy, Average, Hard,* and *Very Hard* – at that level. Harder skills cost more character points to learn!

Physical Skills

Your Final	---------- *Difficulty of Skill* ----------		
Skill Level	*Easy*	*Average*	*Hard*
DX-3	–	–	1/2 point
DX-2	–	1/2 point	1 point
DX-1	1/2 point	1 point	2 points
DX	1 point	2 points	4 points
DX+1	2 points	4 points	8 points
DX+2	4 points	8 points	16 points
DX+3	8 points	16 points	24 points
DX+4	16 points	24 points	32 points

Mental Skills

Your Final	---------- *Difficulty of Skill* ----------			
Skill Level	*Easy*	*Average*	*Hard*	*Very Hard*
IQ-4	–	–	–	1/2 point
IQ-3	–	–	1/2 point	1 point
IQ-2	–	1/2 point	1 point	2 points
IQ-1	1/2 point	1 point	2 points	4 points
IQ	1 point	2 points	4 points	8 points
IQ+1	2 points	4 points	6 points	12 points
IQ+2	4 points	6 points	8 points	16 points

Further increases follow the same progressions: 8 additional points per level for physical skills, 4 per level for Very Hard mental skills, 2 per level for other mental skills.

Limit on Beginning Skills

The *maximum* number of character points a starting character can spend on skills is equal to twice his age. For instance, an 18-year-old could apply no more than 36 points to skills. This limit does not apply to skills added after a character is created.

Skill Defaults

Most skills have a "default level." This is the level at which you perform the skill *without training.* Nobody can know every skill; a default roll can save your life. A skill has a default level if it is something that everybody can do . . . a little bit.

For instance, the "default" for Camouflage is IQ-4. If your IQ is 11, and you have to conceal yourself, you can do it on a roll of 7 or less. Why? Because 11 minus 4 is 7, so 7 is your "default" skill at Camouflage. You smear dirt on your face like the hero in a dime novel you once read . . . and sometimes it works!

Some skills (especially Very Hard ones) have *no* default.

List of Skills

The listing for each skill gives the following information:

Name. The name of the skill. If the skill varies at different Tech Levels, this will also be shown – e.g., "Armoury/TL."

Type. The variety of skill (mental or physical) and its difficulty (Easy, Average, Hard, or Very Hard). Sometimes abbreviated; e.g., "M/A" for "Mental/Average."

Defaults. The attribute(s) to which the skill defaults if the skill itself is not known – e.g., "DX-6". If there is more than one possible default, use the one that gives the highest default level.

Description. A *brief* description of what the skill is used for and when (or how often) to roll. The GM should permit routine tasks to be performed on a straight skill roll; more or less difficult tasks, or adverse or favorable conditions, will result in modifiers to skill – set at the GM's discretion.

You will not find all the skills mentioned under *Character Templates* (pp. 72-85) on this list. The missing skills appear in ***GURPS Basic Set*** and ***Compendium I.*** Those with only ***GURPS Lite*** should choose a suitable alternative from the list below.

See pp. 65-66 for the core military-operations skills.

Acrobatics (Physical/Hard) DX-6

The ability to perform acrobatic and gymnastic stunts, roll, take falls, etc. A separate skill roll is required for each trick you attempt.

Acting (Mental/Average) IQ-5

The ability to counterfeit moods, emotions, and voices, and to lie convincingly over a period of time. Roll a Quick Contest versus the IQ of each person you wish to fool.

Administration (Mental/Average) IQ-6

The skill of running a large organization, be it a business or a military unit. A skill roll will let you deal with a bureaucracy quickly and efficiently.

Animal Handling (Mental/Hard) IQ-6

The ability to train and work with all types of animals. Daily rolls are required when training an animal.

Area Knowledge (Mental/Easy) IQ-4 for area residents only

The skill of familiarity with the people, politics, and geography of a given area. Roll for each piece of knowledge required.

Armoury/TL (Mental/Average) IQ-5

The ability to build and repair weapons. Each class of weapons – e.g., artillery, small arms, and vehicular weapons – requires its own Armoury skill.

Aviation/TL (Mental/Average) IQ-5

The skill of familiarity with aircraft procedures (but *not* flying the plane; use Piloting for that). A skill roll will let you file a flight plan, refuel a plane, understand the lingo used by airmen, etc.

Bard (Mental/Average) IQ-5

The ability to speak extemporaneously and to tell stories. Also called *Public Speaking.* Roll once per speech or story.

Boxing (Physical/Average) No default

Formal training in fisticuffs. When you punch, roll against Boxing skill to hit, and add 1/5 your skill (round down) to damage. You may use your bare hands to parry attacks at 2/3 your Boxing skill; you parry kicks at -2, non-thrusting weapons at -3.

Brawling (Physical/Easy) No default

The skill of unscientific unarmed combat. Roll against Brawling to hit with a punch, or Brawling-2 to hit with a kick, and add 1/10 your skill (round down) to damage. You may parry *barehanded* attacks at 2/3 skill.

Camouflage (Mental/Easy) IQ-4

The ability to use natural material or paints to disguise yourself, your equipment, your position, etc. Roll once per person, vehicle, or position hidden.

Carousing (Physical/Average) HT-4

The skill of drinking, partying, etc. A successful skill roll gives you +2 reaction rolls in such circumstances; a failed roll gives you -2 instead. This skill is based on HT, not DX.

Carpentry (Mental/Easy) IQ-4 or DX-4

The ability to build things out of wood, given the right tools. Roll once per hour of work.

Climbing (Physical/Average) DX-5 or ST-5

The ability to climb mountains, ropes, the sides of buildings, trees, etc. Roll once to start a climb; long climbs may require more rolls. See p. 195.

Cooking (Mental/Easy) IQ-4

The ability to prepare a pleasing meal from basic ingredients. Roll once per meal.

Criminology/TL (Mental/Average) IQ-4

The study of crime and the criminal mind. Roll to find and interpret clues, guess how criminals might behave, etc.

Demolition/TL (Mental/Average) IQ-5

The ability to blow things up with explosives. A Demolition roll is necessary whenever you use explosives.

Diagnosis/TL (Mental/Hard) IQ-6

The ability to tell what is wrong with a sick or injured person, or what killed a dead person. Roll once per diagnosis.

Disguise (Mental/Average) IQ-5

The ability to make yourself look like someone else. Roll a Quick Contest of Skills (Disguise vs. IQ) for each person (or group) that your disguise must fool.

Electronics/TL (Mental/Hard) No default

The ability to design and build electronic apparatus. A successful roll will let you identify the purpose of a strange device, diagnose a glitch, perform a repair, or design a new system. A separate Electronics skill is needed for each class of equipment (communications, sensors, etc.).

Electronics Operation/TL (Mental/Average) IQ-5

The ability to use electronic gear. No skill roll is required for normal, everyday use of equipment – only for emergency situations. Each type of equipment (communications, sensors, etc.) requires its own Electronics Operation skill.

Engineer/TL (Mental/Hard) No default

The ability to design and build complex machinery. A successful roll lets you identify the purpose of strange machinery, diagnose a problem, perform a repair, or design new machinery. A separate Engineer skill is needed for each field of engineering (civil, combat, vehicles, etc.).

Escape (Physical/Hard) DX-6

The ability to get free from ropes, handcuffs, and similar bonds. The first attempt to escape takes one minute; each subsequent attempt takes 10 minutes.

Explosive Ordnance Disposal/TL (Mental/Hard) No default

The ability to defuse and dispose of unexploded grenades, mines, bombs, etc. The GM should assign significant penalties for distractions. Critical failure does not automatically mean an explosion; the GM should be creative.

First Aid/TL (Mental/Easy) IQ-5

The ability to patch up an injury in the field (see p. 204). Roll once per injury.

Forensics/TL (Mental/Hard) No default

The general science of "laboratory" criminology. Roll to analyze each piece of physical evidence.

Forgery/TL (Mental/Hard) IQ-6 or DX-8

The ability to produce fake passports, identity papers, or similar documents. Roll once per forgery.

Forward Observer/TL (Mental/Average) IQ-5

The skill of directing artillery fire onto a target and matching ordnance to target for best effect. See *Indirect-Fire Weapons* (p. 202) for game effects.

Freight Handling (Mental/Average) IQ-5

The ability to load and unload cargo efficiently. A successful skill roll will reduce the time required for such tasks by 25%.

Gambling (Mental/Average) IQ-5

The skill of playing games of chance. A successful Gambling roll can tell you if a game is rigged, identify a fellow gambler in a group of strangers, or "estimate the odds" in a tricky situation.

Gunner/TL (Physical/Average) DX-5

The ability to fire emplaced, vehicular, or tripod-mounted heavy weapons. Each type of weapon requires its own Gunner skill. Options are bombs (aircraft bombs), cannon (artillery, naval guns, and tank guns used for *direct fire*), machine gun (heavy automatic weapons), mortar (artillery or naval guns used for *indirect fire*), rocket launcher (ground and aerial rocket tubes), and torpedo (ship- or submarine-launched torpedoes). Add 1 to Gunner skill for an IQ of 10-11, and 2 for an IQ of 12+.

Guns/TL (Physical/Easy) DX-4

The ability to fire 20th-century small arms. Each type of weapon requires its own Guns skill. Options are pistol (revolvers and semi-automatic handguns), rifle (semi-automatic rifles), light automatic weapon (automatic rifles and submachine guns), shotgun (unrifled long arms), flamethrower (flaming-liquid projectors), and grenade launcher (rifle grenades and actual grenade launchers). Add 1 to Guns skill for an IQ of 10-11, or 2 for an IQ of 12+.

Hand Weapon (Physical/Varies) Defaults vary

Each class of hand weapons requires a separate physical skill; roll against this skill when attacking. Most hand weapons may also *parry* (p. 200), done at 1/2 skill unless noted. Assume P/E weapon skills default to DX-4 and P/A ones default to DX-5. Skills include:

Axe/Mace (P/A): Any short or middle-sized, unbalanced, one-handed weapon, such as an entrenching tool or a hatchet.

Blackjack (P/E): A blackjack or sap. May not parry.

Broadsword (P/A): Any 2- to 4-foot, balanced, one-handed weapon, such as the cavalry saber carried by some American and European officers.

Fencing (P/A): Smallswords and "hangers." Parry is 2/3 Fencing skill, not 1/2. Your encumbrance must be light or less to use Fencing.

Katana (P/A): The longsword carried by Japanese officers. Increase damage by 1 when swinging it two-handed. Parry is 2/3 Katana skill when using it in two hands and at no more than light encumbrance, 1/2 skill otherwise.

Knife (P/E): Any fighting knife or short, unfixed bayonet.

Shortsword (P/A): Any 1' to 2' balanced, one-handed weapon, such as a billy club, a machete, or an unfixed Japanese bayonet.

Spear (P/A): Any sort of fixed bayonet.

Two-Handed Axe/Mace (P/A): Any long, unbalanced, two-handed weapon, such as a shovel, or a heavy rifle or machine gun gripped by the barrel.

Hiking (Physical/Average) No Default

This skill is training for endurance walking, hiking, marching, etc., and includes knowledge of how best to carry a pack. See *Hiking* (p. 195) for game effects. This skill is based on HT, not DX.

Holdout (Mental/Average) IQ-5

The skill of concealing items on your person or the persons of others, or finding such hidden items. Roll once per item.

Humanities (Mental/Hard) IQ-6

Each academic "humanities" or "arts" subject (such as History, Literature, Philosophy, or Theology) is a separate Mental/Hard skill that defaults to IQ-6. Roll versus skill to recall references, perform critical analysis, etc.

Influence Skills (Mental/Varies) Defaults vary

There are several ways to influence others; each is a separate *influence skill.* A successful roll will result in a "good" reaction from an NPC. Failure results in a "bad" reaction (except for Diplomacy, which is always safe). To actually coerce or manipulate an NPC, you must win a Quick Contest of your skill versus his Will. Methods of influencing others include:

Diplomacy (M/H): Negotiation and compromise. Defaults to IQ-6.

Fast-Talk (M/A): Lies and deception. Defaults to IQ-5.

Intimidation (M/A): Threats and violence. Defaults to ST-5.

Savoir-Faire (M/E): Manners and etiquette. Mainly useful in "high society" situations. Defaults to IQ-4.

Savoir-Faire (Military) (M/E): Finer points of military protocol and how to work the "old boys" network. Defaults to IQ-4.

Sex Appeal (M/A; based on HT, not IQ): Vamping and seduction, usually of the opposite sex. Defaults to HT-3.

Streetwise (M/A): Contacts and (usually) subtle intimidation. Only useful in "street" and criminal situations. Defaults to IQ-5.

Intelligence Analysis/TL (Mental/Hard) IQ-6

The skill of interpreting intelligence reports and analyzing raw reconnaissance data. On successful roll, the GM might grant you additional information about enemy actions, provided the original data was reliable.

Interrogation (Mental/Average) IQ-5

The ability to question a prisoner. To do so, you must win a Contest of Skills: your Interrogation skill vs. the prisoner's Will.

Judo (Physical/Hard) No default

Formal training in locks and throws. If you have empty hands and no more than light encumbrance, you may parry attacks (even weapons) at 2/3 skill. On the turn after a successful parry, you may attempt to throw your opponent. This counts as an attack, and is rolled against Judo skill. If your foe does not dodge or parry, he is thrown to the ground.

Jumping (Physical/Easy) No default

The trained ability to use your strength to its best advantage when you jump (see p. 195). Roll once per jump.

Karate (Physical/Hard) No default

The skill of *trained* punching and kicking. When you punch or kick, use Karate skill rather than DX to determine the odds of hitting, and add 1/5 of your skill level (round down) to damage. You may also parry attacks (even weapons) at 2/3 skill. Your encumbrance must be light or less to use Karate.

Law (Mental/Hard) IQ-6

A successful Law roll lets you remember, deduce, or figure out the answer to a question about the law. An actual trial is handled as a Quick Contest of Law skills.

Leadership (Mental/Average) ST-5

The ability to coordinate a group in a dangerous or stressful situation. Roll to lead NPCs into a dangerous situation (e.g., combat).

Lockpicking/TL (Mental/Average) IQ-5

The ability to open locks without the key or combination. Each attempt to open a lock requires one minute and a skill roll; cracking a safe may take considerably longer!

Masonry (Physical/Easy) IQ-3

The ability to build things out of brick or stone, given the right tools. Roll once per hour of work.

Mathematics (Mental/Hard) IQ-6

Formal training in higher mathematics. A successful skill roll will let you answer just about any mathematical question.

Mechanic/TL (Mental/Average) IQ-5

The ability to diagnose and fix ordinary mechanical problems. Roll once per diagnosis or repair. Each type of machine (gasoline engine, ocean-going vessel, etc.) requires its own Mechanic skill.

Merchant (Mental/Average) IQ-5

The ability to act as a "trader," buying and selling merchandise. A successful skill roll lets you judge the value of common goods, locate markets, and so on.

Meteorology/TL (Mental/Average) IQ-5

The study of the weather and the ability to predict it, given the appropriate instruments. Roll once per prediction.

Musical Instrument (Mental/Hard) No default

The ability to play a musical instrument. Each instrument is a separate version of this skill. Roll once per performance.

Natural Sciences (Mental/Hard) IQ-6

Each specialty (such as Botany, Chemistry, Geology, Physics, or Zoology) is a separate Mental/Hard skill that defaults to IQ-6. Roll versus skill to recall general knowledge within the field, analyze data, perform lab work, and so on.

Naturalist (Mental/Hard) IQ-6

A general knowledge of animals and plants, and of nature in its various forms. Roll to identify plants, animals, etc.

Navigation/TL (Mental/Hard) No default

The ability to find position by the stars, ocean currents, etc. Whether you are on land, at sea, or in the air, a successful roll will tell you where you are.

NBC Warfare/TL (Mental/Average) IQ-5

Expertise with the protective gear used in nuclear, biological, or chemical (NBC) warfare environments. At TL6, a skill roll is required to check, repair, or quickly don the gas masks and ponchos used to protect against poison gas.

Orienteering/TL (Mental/Average) IQ-5

The ability to find position on the ground using landmarks, a compass, and a map. Orienteering rolls are -1 to -10 (GM's discretion) in an unfamiliar area.

Parachuting (Physical/Easy) DX-4 or IQ-6

The ability to survive a parachute jump. Failure means a slight drift off course or some dropped gear. A critical failure is potentially fatal! A second roll is required to dodge trees, avoid injury, etc. in a rough landing zone.

Photography/TL (Mental/Average) IQ-5

The ability to use a camera competently, use a darkroom, and so on. Roll once per roll of film shot or developed.

Physician/TL (Mental/Hard) IQ-7

The general professional ability to aid the sick, prescribe drugs and care, etc. This is the skill to use if the GM requires a single roll to test general medical competence or knowledge.

Pickpocket (Physical/Hard) DX-6

The ability to steal a small object (purse, knife, etc.) from someone's person. Roll once per theft; if the target is alert, treat this as a Quick Contest vs. the target's IQ.

Research (Mental/Average) IQ-5

A successful roll in an appropriate place of research will let you find a useful piece of data, if that information is to be found.

Riding (Physical/Average) DX-5

The skill of riding a beast. A different version of this skill must be learned for each animal type. Roll once when the beast is first mounted and again any time a difficult situation is encountered.

Running (Physical/Hard) No default

This skill is based on HT, not DX. It represents training in sprints and long-distance running. If you have studied this skill, divide your skill level by 8 (don't round down) and add the result to your Speed for the purpose of calculating your Move score (this affects land movement only). See p. 194 for details.

Sailor/TL (Mental/Average) IQ-5

The skill of familiarity with shipboard procedures (but *not* steering the ship; use Shiphandling for that). A skill roll will let you avoid the danger zones aboard a ship, identify different types of buoys and beacons, understand nautical terminology, etc.

Scrounging (Mental/Easy) IQ-4

The ability to find or salvage useful items. A successful skill roll will locate the item desired, if the GM rules one exists to be found.

Seamanship/TL (Mental/Easy) IQ-4

The ability to crew a large seagoing vessel. It covers putting out fires, swabbing decks, operating pumps and cranes, and other menial tasks aboard ship.

Shadowing (Mental/Average) IQ-6

The ability to follow another person through a crowd without being noticed. Roll a Quick Contest of Skill every 10 minutes: your Shadowing vs. the subject's Vision roll. If you lose, you lose the target – or he spots you!

Shiphandling/TL (Mental/Hard) IQ-6

The ability to manage the operation of a large ship, directing the crew in the tasks necessary to control its speed and direction. On naval vessels, at least one person with Shiphandling skill (the "watch officer") is duty at all times.

Skiing (Physical/Hard) DX-6

The ability to ski. This skill replaces Hiking skill (p. 189) when traveling cross-country on skis.

Social Sciences (Mental/Hard) IQ-6

Each "social science" (e.g., Anthropology, Archaeology, Psychology, or Sociology) is a separate Mental/Hard skill that defaults to IQ-6. Roll versus skill to recall general knowledge within the field, identify traits that characterize an individual, culture, or society (as applicable), and so on.

Stealth (Physical/Average) IQ-5 or DX-5

The ability to hide and to move silently. Roll a Quick Contest of Skills between your Stealth and the Hearing roll of anyone you're trying to hide from.

Survival (Mental/Average) IQ-5

The ability to "live off the land," find food and water, avoid hazards, build shelter, etc. A different Survival skill is required for each type of terrain. Roll once per day in a wilderness situation.

Swimming (Physical/Easy) ST-5 or DX-4

This skill is used both for swimming and for saving a drowning victim. Roll once per swim, dive, or lifesaving attempt. See p. 196.

Teaching (Mental/Average) IQ-5

The ability to instruct others. The GM may require one or more skill rolls to teach another character a skill.

Teamster (Mental/Average) No default

The skill of driving teams of animals, such gun teams. The GM may require regular Teamster rolls to move quickly or over broken terrain without injury to man or beast.

Telegraphy (Mental/Easy) No default

The ability to send and receive Morse code at (3 × Telegraphy) words per minute, to a maximum of 75 wpm.

Throwing (Physical/Hard) No default

The ability to throw whatever you can pick up. It helps both accuracy (roll against Throwing skill to throw anything you can lift) and distance (add 1/6 of Throwing skill to ST when determining distance). Roll once per throw. See pp. 200-201.

Thrown Weapon (Physical/Easy) DX-4

The ability to throw any one type of *throwable* weapon. This skill is different for each type of weapon: Axe Throwing, Knife Throwing, etc.

Tracking (Mental/Average) IQ-5

The ability to follow a man or animal by its tracks. Make one Tracking roll to pick up the trail, and one further roll for every 5 minutes of travel.

Traps/TL (Mental/Average) IQ-5 or DX-5

The skill of building and avoiding traps and detection devices. Roll to build, detect, disarm, or reset a trap.

Vehicle Skills (Physical/Varies)Defaults vary

Each class of vehicle requires its own operation skill. Roll once to get under way and again each time a hazard is encountered; failure indicates lost time, or an accident. Vehicle skills default to DX at -4 (Easy), -5 (Average), or -6 (Hard); *motor* vehicles also default to IQ, at similar penalties. Available types include *Bicycling (P/E), Boating (P/A)* (for rowboats and sailboats), *Driving (P/A)* (separate versions for cars, tanks, trucks, etc.), *Motorcycle (P/E), Piloting (P/A)* (separate versions for light and heavy propeller craft, jets, and gliders), and *Powerboat (P/A)* (for motorboats).

Languages

Languages are treated as skills. The *Language Talent* advantage (p. 183), makes it easier to learn languages.

Language Skills (Mental/Varies) No default

Each language is a separate skill. Your native language skill starts out equal to IQ, and costs only 1 point per level to improve. Other languages improve like any other skill. Difficulty varies:

Easy: Pidgins and the like.

Average: Most languages – French, German, Japanese, etc.

Hard: A rare few languages, such as Basque or Navajo.

Any conversation depending on a language not native to all parties requires a roll against skill to understand or be understood.

Gesture (Mental/Easy) IQ-4

The ability to communicate through simple, improvised hand signals. Roll once to communicate each *general* concept.

Equipment

Now you need to decide what equipment you have. Usually, the GM sets a reasonable cost and weight for each item of equipment requested by a player. Weapons and armor are a special case, however, since their use involves more intricate game mechanics. This section will give you enough information to let you choose your combat gear intelligently.

A Note on Buying Things: You start with money equal to standard starting wealth, modified by your wealth level (see p. 180). The GM will supply equipment lists that give cost, weight, and other information about important items (pp. 87-90), and give you a ruling about anything else you request. Subtract the price of each item you buy from your starting wealth to determine how much money you have left. In a military campaign, equipment will often be *issued.* This means you do not have to pay for it; however, it does not really belong to you, and can always be taken away.

Armor

Armor protects you in two ways. Its *passive defense* (PD) adds to your defense roll. Its *damage resistance* (DR) absorbs damage when you get hit. In both cases, higher numbers are better.

Armor Stats

For each type of armor on p. 87, the following is listed:

General Description: The item's name and how it is used. ***GURPS Lite*** does not include a system for assessing damage to specific body parts, but use common sense – for instance, a helmet would help against a falling brick, while a vest would not.

Passive Defense (PD): Adds to your defense roll, and represents the fact that some attacks will bounce off the armor. Armor PD normally ranges from 1 to 6.

Damage Resistance (DR): The amount of protection the item gives, in terms of hits subtracted from an attack that strikes you; e.g., if you are hit while wearing DR 3 armor, and the attacker rolls 9 points of damage, only 6 will affect you.

Weight: In pounds. This adds to your total *encumbrance* (see *Speed, Encumbrance, and Move,* p. 194).

Cost: The price of the armor in $.

Weapons

The weapons you carry should be determined first by your skills, and then by your strength and budget. If you can't use it, don't buy it. Guns will work for anyone who knows how to use them. Hand weapons, such as clubs and swords, do more damage when wielded by a strong person.

Basic Weapon Damage

Basic damage is the impact damage a weapon does, before its point or cutting edge is considered. Your basic damage with hand weapons depends on your ST. Damage is shown as "dice+adds" (see p. 175). For example, "2d+1" means that you roll two dice and add 1 to the result. Thus, a roll of 7 would mean 8 hits of damage.

Types of Attack

There are two types of hand-weapon attack: *thrusting* and *swinging.* A swinging attack does more damage, because the weapon acts as a lever to multiply your ST. The table to the right shows how much basic damage each type of weapon does, according to the user's ST. The columns show the number of dice rolled to determine damage.

Damage Based on ST

ST	Thrusting	Swinging	ST	Thrusting	Swinging
4-	0	0	12	1d-1	1d+2
5	1d-5	1d-5	13	1d	2d-1
6	1d-4	1d-4	14	1d	2d
7	1d-3	1d-3	15	1d+1	2d+1
8	1d-3	1d-2	16	1d+1	2d+2
9	1d-2	1d-1	17	1d+2	3d-1
10	1d-2	1d	18	1d+2	3d
11	1d-1	1d+1	19	2d-1	3d+1

Damage Types and Damage Bonus

Weapons do three basic types of damage: *impaling, cutting,* and *crushing.*

- *Impaling* weapons are those that strike with a sharp point. When you hit with an impaling weapon, the damage that gets through DR is *doubled.*
- *Cutting* weapons strike with an edge. When you hit with a cutting weapon, all damage that gets through DR is *increased by 50%,* rounded down.
- *Crushing* weapons strike with a blunt surface. They score no bonus damage.

Bullets: In ***GURPS,*** bullets are treated as crushing attacks as opposed to impaling attacks. A bullet's ability to pierce armor and inflict massive damage is reflected by assigning firearms large numbers of damage dice.

Minimum Damage: If you hit with a cutting or impaling attack, or a bullet, you always get at least one hit of basic damage before DR is subtracted. Thus, if you strike with a knife for "1d-4" damage, and roll a 2, you still do 1 hit of damage. However, if you hit the foe with a crushing attack, you *can* do zero damage.

Maximum Damage: Some weapons, especially impaling weapons, can only do so much damage on any one blow, no matter how strong the user is.

Recording Weapon Stats

Damage is copied from the weapon tables. Certain hand weapons can be used in different ways. For instance, some swords can be swung for a cutting attack or thrust for an impaling attack. Before you strike with such a weapon, specify how you are attacking. To calculate hand-weapon damage, take your basic damage for that type of attack, and add the damage shown on the table for your weapon. If your ST is 10, your basic swinging damage is 1d; therefore, if a weapon does "sw+1," your damage with that weapon is 1d+1. Guns have a fixed damage number that does not depend on the user's ST.

Cost and *Weight* are copied directly from the *Weapon Tables* onto your character sheet.

Minimum Strength is the minimum ST required to use the weapon properly. You may still fight with a weapon if you are too weak for it, but for every point of ST by which you are too weak, you will be at -1 to your weapon skill.

Ranged Weapons Statistics: If you have a ranged weapon, copy the stats from the appropriate weapon table (thrown weapons are given here; guns appear on pp. 92-93). A number of specialized statistics are used for ranged combat; these are explained on pp. 200-201.

Hand Weapon Table

Weapons are listed in groups, according to the skill required to use them. Weapons that can be used in two ways (for instance, a saber can either cut or impale) have two lines – one for each type of attack.

Type is the type of damage (p. 192) the weapon does.

Damage is the die roll (p. 192) for the damage done to the target.

Reach indicates the distance in yards at which the weapon can be used; *C* indicates a close-combat weapon. Reach is not used in ***GURPS Lite,*** but GMs may find it useful when judging what can and cannot be hit with a hand weapon.

Cost and *Weight* include the weight of a scabbard, sling, or other means of carrying the weapon, where applicable.

Min ST is "minimum strength." If you are weaker than this, your skill is at -1 for every point of difference.

Weapon	*Type*	*Damage*	*Reach*	*Cost*	*Weight*	*Min ST*	*Special Notes*
Axe/Mace (DX-5)†							
Entrenching Tool	cut	sw+1	1	$50	4 lbs.	12	1 turn to ready.
Hatchet	cut	sw	1	$40	2 lbs.	7	Throwable. 1 turn to ready.
Blackjack (DX-4)							
Blackjack or Sap	cr	thr	C	$20	1 lb.	7	May not parry.
Broadsword (DX-5)							
Cavalry Saber	cut	sw+1	1	$500	3 lbs.	9	
	imp	thr+1	1				
Fencing (DX-5) *See p. 189 for fencing parry rules.*							
Smallsword	imp	thr+1	1	$400	1.5 lbs.	–	Maximum damage 1d+1.
Katana (DX-5) *See p. 189 for katana parry rules.*							
Katana	cut	sw+1	1,2	$650	5 lbs.	11	One-handed cut.
	cut	sw+2	1,2				Two-handed cut.
	imp	thr+1	1				Thrust.
Knife (DX-4)							
Bayonet or Knife	cut	sw-2	C,1	$40	1 lb.	–	Maximum damage 1d+2.
	imp	thr	C				Maximum damage 1d+2.
Shortsword (DX-5)							
Billy Club	cr	sw	1	$20	1 lb.	7	
	cr	thr	1				
Long Bayonet	cut	sw-1	1	$50	1.5 lbs.	7	
	imp	thr	C,1				
Machete	cut	sw+1	1	$75	3 lbs.	10	A tool; -1 to hit as a weapon.
Spear (DX-5) *Requires two hands.*							
Fixed Bayonet	imp	thr+2	1	–	–	9	Bayonet, on a rifle.
Fixed Long Bayonet	imp	thr+3	1,2*	–	–	9	Long bayonet, on a rifle.
Two-Handed Axe/Mace (DX-5)† *Requires two hands.*							
Shovel	cr	sw+2	1,2*	$30	6 lbs.	13	1 turn to ready. A tool; -1 to hit as a weapon.
	cut	sw+2	2*				1 turn to ready. -3 to hit with sharp edge.
Swung Rifle	cr	sw+2	1	–	–	12	1 turn to ready. A rifle used as a club.

* Must be *readied* for one turn to change from long to short grip or vice versa.† Becomes unready if used to parry.

Thrown Weapon Table

Weapons are listed in groups, according to the skill required to use them. See pp. 200-201 for an explanation of SS, Acc, 1/2D, and Max; for now, simply note them on your character sheet.

Weapon	*Type*	*Damage*	*SS*	*Acc*	*1/2D*	*Max*	*Cost*	*Weight*	*Min ST*	*Special Notes*
Axe Throwing (DX-4)										
Hatchet	cut	sw	11	1	ST×1.5	ST×2.5	$40	2 lbs.	7	
Knife Throwing (DX-4)										
Combat Knife	imp	thr	12	0	ST-2	ST+5	$40	1 lb.	–	Max. dam. 1d+2.
DX-3 or Throwing Skill										
Hand Grenade	varies	varies	12	0	–	ST×3	varies	varies	–	See p. 201.

Speed, Encumbrance, and Move

Speed

Your *Speed* score (or *Basic Speed*) determines your reaction time and running speed. It is figured from your HT and DX, and shows how fast you can run without encumbrance (see below). An average person has a Speed of 5 – that is, with no encumbrance, he runs about 5 yards per second.

Add your HT and DX together. Divide the total by 4. The result is your Basic Speed score; don't round it off! For instance, if your Basic Speed is 5.25, your unencumbered movement is 5 yards per second. But there will be times when a 5.25 is better than a 5!

Encumbrance

Your *encumbrance* is the total weight you are carrying. Encumbrance reduces your combat movement rate. It also slows long-distance travel, and makes swimming and climbing more difficult; see *Physical Feat* (p. 195).

Your *encumbrance level* is a measure of that weight relative to your strength. A strong person can carry more than a weak one; therefore, the ratio of weight to strength determines encumbrance level, as follows:

Weight up to 2×ST: no encumbrance. You have no penalty.
Weight up to 4×ST: light encumbrance. Movement penalty of 1.
Weight up to 6×ST: medium encumbrance. Movement penalty of 2.
Weight up to 12×ST: heavy encumbrance. Movement penalty of 3.
Weight up to 20×ST: extra-heavy encumbrance. Movement penalty of 4. You cannot carry a weight more than 20 times your ST for more than a few feet at a time; 30 times ST is the absolute most you can carry.

Move

Your *Move* is the distance (in yards) you can actually run in one second. To find your Move, add up the total weight of all your possessions and find your encumbrance level. Now subtract your encumbrance penalty from your Speed score, and round *down*. The result is your Move score – always a whole number, never a fraction. Your Move controls:

1. How fast you can move. (If you have the Running skill, add 1/8 of your skill level to Basic Speed for this purpose only. Don't round off until the very end! Running doesn't affect your Speed score, but it will help your Move.)
2. When you move in combat.
3. Your Dodge defense (p. 199). This *active defense* is equal to your Move. The less weighted-down you are, the quicker you can dodge!

Your Move can never be reduced to 0 unless you are unconscious, unable to use your legs, or lifting over 30 times your ST.

Character Improvement

At the end of each session, the GM may award *bonus character points* for good play; these are the same kind of points you used to create your character. "Good play" is anything that advances your mission or shows good roleplaying (including adherence to your disadvantages and quirks) – preferably both.

Bonus points are awarded separately to each character. A typical award is 1-3 points, with 5 points being the absolute upper limit for *amazing* play. Note that you get no points for a session in which your Dependent (p. 181) is killed, seriously wounded, or kidnapped and not recovered.

Bonus points are used to improve your character. Record them as "unspent" on your character sheet. You can spend them the same way as during character creation, with a few differences:

Attributes: To improve one of your attributes (ST, DX, IQ, or HT), you must spend character points equal to *twice* the beginning point-cost difference between the old score and the new one. E.g., to go from ST 10 (beginning cost 0) to ST 11 (beginning cost 10) would cost 20 points.

If you improve an attribute, all skills based on that attribute also go up by the same amount.

Advantages: Most advantages are inborn, and cannot be "bought" later on. Exceptions include Combat Reflexes and Literacy, which can be learned, and social advantages such as Military Rank, which can be earned. To add an advantage, you must pay the appropriate character points.

Buying Off Disadvantages: No character may get extra points by adding disadvantages after he is created, but you may *get rid* of most beginning disadvantages by "buying them off" with points equal to the bonus earned when the disadvantage was taken, as long as the player and GM agree on a *logical* explanation for this.

Adding and Improving Skills: Earned character points can be used to increase your skills or add new ones. Normally, these must be skills that, in the GM's opinion, were significantly used in the adventure in which those character points were earned. When you improve a skill, the cost is the difference between your current skill level and the cost of the new skill level.

Beasts

Animals will often appear in games. The point value of such beings is irrelevant – the GM simply assigns abilities. A few notes:

Attributes: These have the same meaning for beasts as for humans, with one exception: for beasts, hit points need not be equal to HT. HT determines how hardy the beast is, but hit points are largely dependent on size, and very large or small creatures may have more or fewer hit points than HT.

Abilities and Skills: Most creatures have keen senses. The "generic" roll for an animal to sense something (sight, hearing, smell, taste) is 14, regardless of its IQ, although this may vary. Some animals also have the equivalent of skills; e.g., a bloodhound might have the Tracking skill at level 18!

PD and DR: Many creatures have a hide, shell, scales, or thick fat that protects like armor.

Attack Roll: To hit, an animal rolls against its DX; use the same modifiers as if a human were attacking.

Damage: Use the chart below; an animal's bite (or claw) damage depends on its ST. When a carnivore bites, this is treated as a *cutting* attack, figured at full ST. The bite of an herbivorous creature is a *crushing* attack, figured at *half* its actual ST. An animal bite – even from a carnivore – can do zero damage.

Animal Damage

ST	Damage	ST	Damage	ST	Damage
1-2	1d-5	16-20	1d	36-40	2d
3-5	1d-4	21-25	1d+1	41-45	2d+1
6-8	1d-3	26-30	1d+2	46-50	2d+2
9-11	1d-2	31-35	2d-1	51-53	3d-1
12-15	1d-1			and so on . . .	

Basic Speed: Except in the case of loaded riding and draft animals, this will also be the creature's Move.

Dodge: This is the only active defense of most beasts. It is equal to half DX or half Move, whichever is better, up to a maximum of 10.

Encumbrance and Movement: Encumbrance for beasts works as it does for men: the level of encumbrance reduces the beast's Move score. The encumbrance table for four-footed creatures is different:

No encumbrance (up to 2×ST): Move is unaffected.

Light encumbrance (up to 6×ST): Move is reduced by 2.

Medium encumbrance (up to 10×ST): Move is reduced by 4. Few animals will carry greater than 10×ST on their backs!

Heavy encumbrance (up to 15×ST): Move is reduced by 6.

Extra-heavy encumbrance (up to 20×ST): Move is reduced by 8, but never to less than 2.

Maximum encumbrance (up to 30×ST): Move is reduced to 1. Only a very willing beast will attempt to move a load this heavy.

Riding and Draft Animals

Type	*ST*	*DX*	*IQ*	*HT*	*Move*	*Cost*	*Wt. (lbs.)*	*Notes*
Donkey	25	10	4	13	8	$100	500	Too small to ride.
Small Mule	30	10	4	14	8	$100	800	Too small to ride.
Saddle Horse	35	9	4	14	12	$120	1,200	
Camel	40	9	4	15	10	$150	1,400	Vicious.
Cavalry Horse	40	9	4	15	16	$400	1,400	
Large Mule	40	10	4	14	9	$200	1,400	
Draft Horse	60	9	4	16	12	$200	2,000	
Ox	80	8	4	17	8	$150	2,500+	

PLAYING THE GAME

We've seen the rules for creating and equipping characters. Now here's how to *do* things. Essentially, the GM describes a situation and asks each of the players what his character is doing. The players answer, and the GM tells them what happens next. At some point, the GM won't be certain that the characters can automatically do what the players say they are doing . . . "You're carrying *what* and jumping the trench?" . . . and the dice come out.

Physical Feats

Climbing

To climb anything more difficult than a ladder, a Climbing roll is required. One roll is required to start the climb, with a further roll every five minutes; a failed roll means you fall. Modifiers to the roll depend on the difficulty of the climb; see the table below. Your encumbrance level is also subtracted from your Climbing skill.

Type of Climb	*Modifier*	*Short Climb*	*Long Climb*
Ladder going up	no roll	3 rungs/sec.	1 rung/sec.
Ladder going down	no roll	2 rungs/sec.	1 rung/sec.
Ordinary tree	+5	1 ft./sec.	1 ft./3 secs.
Ordinary mountain	0	1 ft./2 secs.	10 ft./min.
Vertical stone wall	-3	1 ft./5 secs.	4 ft./min.
Modern building	-3	1 ft./10 secs.	2 ft./min.
Rope, going up	-2	1 ft./sec.	20 ft./min.
Rope, going down			
(w/o equipment)	-1	2 ft./sec.	30 ft./min.
(w/equipment)	-1	12 ft./sec.	12 ft./sec.

Hiking

Distance traveled on foot in one day is a direct function of encumbrance. Under ideal travel conditions, a party in good shape may plan on traveling the following distances in one day's march:

No encumbrance: 50 miles.

Light encumbrance: 40 miles.

Medium encumbrance: 30 miles.

Heavy encumbrance: 20 miles.

Extra heavy encumbrance: 10 miles.

A successful Hiking roll before each *half-day's* march will increase these distances by 20%. When these rules result in different speeds for people traveling as a group, the entire party's speed is reduced to that of its slowest member.

Hiking skill works differently for large groups (20+ people) who train together regularly, such as military units. If the group includes at least one person with Leadership 12+ per 20 men, a single roll against the group's *average* Hiking skill is made. Success lets the entire group march 20% farther than the daily mileage of its most heavily encumbered member. On a failure, multiply the margin of failure by 10%; this percentage of the group is left behind (they may catch up at day's end, but this costs an extra 2 fatigue). Critical failure means the whole group was stalled.

Once ideal daily mileage is determined, modify it for terrain as follows:

Very Bad Terrain (deep snow, dense forest, jungle, mountains, soft sand, swamp): ×0.20.

Bad Terrain (broken ground, forest, steep hills, streams): ×0.50.

Average Terrain (light forest, rolling hills, solid ice): ×1.00.

Good Terrain (hard-packed desert, level plains): ×1.25.

Under most circumstances, roads count as "average" terrain, regardless of surrounding terrain. However, exceptionally poor roads will turn to mud in bad weather, becoming "very bad" terrain, while exceptionally good roads might count as "good" terrain in fine weather.

Whatever your daily mileage, you will spend about the same amount of time traveling. But the heavier your load and the worse the traveling conditions, the more slowly you will walk and the more frequently you will stop to rest.

Jumping

Usually, when you want to jump over something, the GM should say "OK, you jumped over it," and get on with play. In combat, jumping over an "ordinary" obstacle costs 1 extra yard of movement but is automatically successful. Only when the obstacle seems really significant should you resort to math to see if the character can actually make the jump!

The maximum distance you can jump is determined by your ST score, as follows:

High Jump: (3×ST)-10 inches. Add 2 feet to this if you have 4 yards for a running start.

Standing Broad Jump: (ST-3) feet.

Running Broad Jump: As above, but add 1' for every yard of "takeoff" distance, up to double standing broad jump distance.

Jumping Skill: If you have this skill, you may *substitute* your skill level for ST in the height and distance formulas above.

Lifting and Moving Things

In general, the GM may let characters lift whatever they need to, without die rolls; but when very heavy weights are involved, a check against ST may be needed. ST also governs the maximum weight you can lift:

One-Handed Lift: 6×ST pounds.

Two-Handed Lift: 25×ST pounds.

Carry on Back: 30×ST pounds. Thus, you can carry more than you can lift by yourself. (Note that every *second* you carry more than 20×ST pounds, you lose one *fatigue* point; see p. 205.)

Shove and Knock Over: 25×ST pounds, or 50×ST pounds with a running start.

Shift Slightly: 100×ST pounds.

Drag: On a rough surface, you can drag only about as much as you can carry. If you are dragging something on a smooth, level surface, halve its effective weight.

Pull on Wheels: As for dragging, but divide effective weight by 10 for a two-wheeled cart or gun carriage, or by 20 for a four-wheeled conveyance. Halve effective weight again if it is being pulled on a good road.

Picking Things Up in Combat: In combat, a light item is picked up with the Ready maneuver, which takes 1 second. It takes 2 seconds to pick up a heavy item (weight in pounds greater than ST).

Running

In combat, running is just a series of Move maneuvers. Your running speed is equal to your Basic Speed score, plus Running skill bonus (p. 191), plus a one yard per second "sprint bonus" if you are running in a straight line for more than one turn. This is modified downward by encumbrance (p. 194).

When figuring *long-distance* speed (i.e., for runs of a few hundred yards, as opposed to combat movement), do *not* round down your Speed. A Basic Speed of 5.5 would let you run 65 yards in 10 seconds, if you were unencumbered.

Swimming

Swimming short distances, your Move is equal to 1/10 your Swimming skill (round down), minimum 1 yard per second. Over long distances, the number of yards you swim in 10 seconds equals your Swimming skill minus *twice* your encumbrance. Swimming long distances can cause fatigue – see p. 205.

Make a Swimming roll when you enter the water, and again every 5 minutes. Subtract *twice* your encumbrance level, and add 3 if you entered the water intentionally. Fat characters (pp. 177-178) get a bonus. If you fail this roll, lose 1 point of fatigue (p. 205) and roll again in 5 seconds, and so on until you reach ST 0 and drown, get rescued, or make the roll. If you recover, roll again in 1 minute. If you make that roll, go back to rolling every 5 minutes.

Swimming skill can be used to rescue a drowning person. Make a Swimming roll at -5, plus or minus the difference in ST between you and the person you are rescuing.

Throwing Things

Anything you can lift – i.e., anything with a weight of 25 × your ST or less – can be thrown. To hit a target, roll against DX-3 or Throwing skill. To lob something into a general area, roll against DX or Throwing. The distance you can throw an object depends on its weight and your ST. Find the weight nearest to that of the object on the table, then multiply the distance listed there by your ST to get the distance, in yards, that you can throw it.

Throwing Distance Table

Weight	*Distance*	*Weight*	*Distance*	*Weight*	*Distance*
1 lb. or less	3.5	7½ lbs.	1.0	40 lbs.	0.3
1½ lbs.	3.0	10 lbs.	0.8	50 lbs.	0.25
2 lbs.	2.5	15 lbs.	0.7	60 lbs.	0.2
3 lbs.	1.9	20 lbs.	0.6	80 lbs.	0.15
4 lbs.	1.5	25 lbs.	0.5	100 lbs.	0.1
5 lbs.	1.2	30 lbs.	0.4	200 lbs.	0.05

Throwing Skill: If you have the Throwing skill, divide it by 6 (round down) and add the result to your ST to determine how far you can throw something.

Throwing Things in Combat: Throwing an object during combat (whether as an attack or not) requires the Attack maneuver (p. 198). You must pick it up first, as described above. To see if you hit, roll against the Throwing skill or an appropriate Thrown Weapon skill. If something weighs more than 25 times your ST, forget the formula – you can't throw it!

If you are hit by a (blunt) thrown object, the damage it does depends on its weight and the ST with which it was thrown.

Throwing Damage Table

ST	*½ to 10 lbs.*	*10+ to 50 lbs.*	*50+ to 100 lbs.*	*over 100 lbs.*
5-6	1d-5	1d-4	1d-5	–
7-8	1d-4	1d-3	1d-3	–
9-10	1d-3	1d-2	1d-2	1d-3
11-12	1d-2	1d-1	1d-1	1d-2
13-14	1d-1	1d	1d	1d
15-16	1d	1d+1	1d+2	1d+2
17-18	1d+1	1d+2	2d-2	2d-1
19-20	1d+2	2d-2	2d-1	2d

A fragile object (or a thrown character) will take the same amount of damage it inflicts. Roll damage separately for the thrown object and the target.

Mental Feats

Several traits are based upon your character's IQ attribute.

Sense Rolls

Sense rolls include Vision rolls, Hearing rolls, and Taste/Smell rolls. All Sense rolls are made against the character's IQ. The Alertness advantage is a bonus to *all* Sense rolls.

Vision

To see something small or hidden, make a Vision roll with a bonus equal to your level of Acute Vision (if any). The GM may make this roll easier or harder for things that are more or less well hidden. Partial darkness can give from -1 to -9. A nearsighted person has -6 to Vision rolls for items farther away than 3 feet; a farsighted person has -6 on Vision rolls for things within 3 feet. Blind characters, or those in total darkness, can see nothing!

Hearing

To hear a faint sound, roll against IQ with a bonus equal to your level of Acute Hearing, if any; Hard of Hearing gives -4. The GM may make this roll easier or harder, depending on the loudness of the sound, surrounding noises, and so on. Once a sound is heard, a regular IQ roll may be required to *understand* its significance. Deaf characters can hear nothing!

Smelling and Tasting

These are two manifestations of the same sense. To notice an odor or a taste, roll vs. IQ with a bonus equal to your level of Acute Smell/Taste, if any. In some cases, the GM may require a separate IQ roll to *understand* the significance of a smell or taste.

Will Rolls

When someone is faced with a frightening situation, or needs to overcome a mental disadvantage, the GM should require a *Will roll.* Normally, Will is equal to IQ, so this is just an IQ roll. However, if the character has the Strong Will advantage or the Weak Will disadvantage, this is added to or subtracted from IQ.

On a successful Will roll, the character overcomes his fear, bad impulse, or whatever. On a failed roll, he is frightened or gives in to the "lower impulse," whatever that is. Any Will roll of 14 or over is an automatic failure (this does *not* apply to Will rolls made to resist Influence Skills!).

Furthermore, if someone has an IQ of more than 14, treat his IQ as only 14 *before* subtracting Weak Will. If you have an IQ of 14 or higher and 3 levels of Weak Will, your Will is only 11.

Fright Checks

A Fright Check is special type of Will roll made when something terrifying occurs (e.g., being shot at for the first time) or when someone stumbles onto a horrifying sight (e.g., evidence of genocide). The Fearlessness advantage adds to Will for this purpose, and Combat Reflexes gives +2 to Fright Checks.

Fright Checks are at -1 to -6 for especially violent or gruesome events (GM's decision). However, they are at +5 in the heat of battle; when fighting, you are usually too excited to be scared. (The +5 does *not* apply if combat is the *reason* for the Fright Check!)

When a character fails a Fright Check, roll 3 dice, *add the amount by which the Fright Check was missed,* and consult the table. Many results will give the victim a new quirk or mental disadvantage: the GM chooses a disadvantage related to the frightening event and applies it to the character, reducing his point value.

Fright Check Table

4, 5 – Stunned for one turn, then recover automatically.

6, 7 – Stunned for one turn. Every turn after that, roll vs. unmodified IQ to snap out of it.

8, 9 – Stunned for one turn. Every turn after that, roll vs. Will, plus whatever bonuses or penalties you had on your original roll, to snap out of it.

10 – As #8, 9, but stunned for 1d turns.

11 – As #8, 9, but stunned for 2d turns.

12 – Lose your lunch. Treat this as being stunned for 15 turns, then roll vs. HT each turn to recover.

13 – Acquire a new quirk (p. 187).

14, 15 – Take 1d of fatigue (p. 205), and 1d turns of stunning, as per #10 above.

16 – Stunned for 1d turns, as per #10, and acquire a new quirk, as per #13.

17 – Faint for 1d minutes, then roll vs. HT each minute to recover.

18 – Faint as above, and roll vs. HT immediately. On a failed roll, take 1 hit of damage as you collapse.

19 – Severe faint, lasting for 2d minutes; then roll vs. HT each minute to recover. Take 1 hit of injury.

20 – Faint bordering on shock, lasting for 4d minutes. Also, take 1d fatigue.

21 – Panic. Run around screaming, sit down and cry, or something else equally pointless for 1d minutes. Then, roll vs. unmodified IQ once per minute to snap out of it.

22, 23 – Acquire a Phobia (p. 186) or other mental disadvantage worth -10 points.

24, 25 – Major physical effect: hair turns white, you age five years overnight, you go partially deaf. In game terms, acquire -15 points worth of physical disadvantages (for this purpose, each year of age counts as -3 points).

26, 27 – Faint for 1d minutes, as per #18, and acquire a new mental disadvantage, as per #22, 23.

28 – Light coma. You fall unconscious, rolling vs. HT every 30 minutes to recover. For 6 hours after you come to, all skill rolls and attribute checks are at -2.

29 – Coma. As above, but unconscious for 1d hours. Then roll vs. HT; if the roll fails, remain in a coma for another 1d hours, and so on.

30 – Catatonia. Stare into space for 1d days; then roll vs. HT. On a failed roll, remain catatonic for 1d more days, and so on. If you don't have medical care, lose 1 HT the first day, 2 the second, and so on. If you survive and awaken, all skill rolls and attribute checks are at -2 for as many days as the catatonia lasted.

31 – Seizure. You lose control of your body, and fall to the ground in a fit lasting 1d minutes and costing 2d Fatigue. Also, roll vs. HT. On a failed roll, take 1d damage. On a critical failure, you lose 1 HT *permanently.*

32 – Stricken. You fall to the ground, taking 2d damage in the form of a mild heart attack or stroke.

33 – Total panic. You are out of control; you may do *anything* (the GM rolls 3d; the higher the roll, the more useless your reaction). For instance, you might jump off a cliff to avoid the monster. If you survive your first reaction, roll vs. IQ to come out of the panic. If you fail, the GM rolls for another panic reaction, and so on!

34, 35 – Acquire a Phobia or other mental disadvantage worth -15 points.

36 – Severe physical effect, as per #24, 25, but equivalent to -20 points of physical disadvantages.

37 – Severe physical effect, as per #24, 25, but equivalent to -30 points of physical disadvantages.

38, 39 – Coma, as per #29, and a mental disadvantage, as per #34, 35.

40+ – As #39, above, but you also lose 1 point of IQ *permanently.* This automatically reduces all IQ-based skills by 1.

Combat

As violent and dangerous as it may be, combat is inevitable in a campaign set during a war. Here is a simple system for resolving small-unit conflicts:

Combat Turn Sequence

Characters act one at a time, until they have all taken a *turn;* then they start over. The *sequence* in which they act is as follows:

Before combat begins, compare the Move scores of all characters. The highest Move goes first, the second-highest Move score goes next, and so on. In case of ties, the highest *Basic Speed* goes first; here is where a 5.5 is better than a 5.25, for instance. If anyone is *still* tied, roll dice to see who goes first.

Your turn *starts* when you choose a maneuver, and *ends* when you choose your next maneuver – that is, after *all* other characters have acted once.

Each turn represents *one second* of real time.

Maneuvers

Start each turn by choosing any one of the following maneuvers. The maneuver you choose will also affect your defenses (see p. 199) if you are attacked before your next turn. You do not select a defense until you are actually attacked – but the maneuver you choose will govern the defenses you can use.

Move

Move, and do *nothing* else (except for a "free" action – see below). You may use any legal active defense.

Movement and special actions are wholly abstract; no gameboard is required. If a detail about movement is important ("How long will it take me to run across the clearing and reach cover?"), the GM decides. The number of yards you can run per second is equal to your Move score.

Change Position

Go from standing to prone, kneeling to standing, or any other position change. (It takes two turns to go from prone to standing: first you kneel, then you stand.) *Exception:* You can go from kneeling to standing, or vice versa, and attack on the same turn.

You can use any defense on the turn you change position. The following table summarizes the effects of various positions:

Table of Positions

Position	*Attack*	*Defense*
Standing	Normal	Normal
Crouching	-2	Ranged weapons -2 to hit; normal vs. others
Kneeling	-2	Ranged weapons -2 to hit; -2 to any active defense
Crawling	Cannot attack	Ranged weapons -4 to hit; -3 to any active defense
Sitting	-2	As for kneeling
Lying down	-4, except with gun	As for crawling

Ready

Ready any weapon or other item. A weapon is "unready" if it is holstered, sheathed, or slung; it takes one turn to take it out. It also takes one turn to toggle the safety switch on a gun, or to cock a fully automatic weapon. A hand grenade takes *two* turns to ready: one to grab it and one to pull the pin. An unbalanced hand weapon, such as a swung shovel, becomes "unready" when you swing it; it must be readied again before each use!

Reloading a gun by changing magazines or inserting individual rounds also requires a Ready maneuver. This takes several turns. Reload times for specific firearms appear on p. 91.

You can parry with a hand weapon as soon as you have readied it – that is, on the same turn! You can also use any other legal active defense on the turn when you ready an item. *Exception:* If you are reloading a gun, your only defense is to dodge – and if you dodge, you lose the benefit of that turn of reloading.

Note that, even if you are ambidextrous, you cannot ready one weapon on the same turn you attack with another.

Aim

Aim a ready *ranged* weapon. You must name a specific target. Your attack is at -4 if you use a ranged weapon without aiming *unless* your effective skill is at least equal to the weapon's *Snap Shot* number. If you aim for 1 turn, your attack is at your normal skill level plus the weapon's *Accuracy* modifier. You may aim for up to 3 more turns, getting a further +1 bonus for each additional turn you aim. Guns get *another* +1 if they are braced (on a bipod, window sill, or the like) while aiming.

You can use any defense while aiming . . . but it spoils your aim and you lose all the accumulated benefits. If you are injured while aiming, you must make your Will roll or lose your aim.

Attack

Attack any foe with your ready weapon. The GM always has the option of ruling (for any reason having to do with the situation) that some combatants may not attack certain foes. If the battle is in extremely close quarters, long arms should only be allowed one shot each – then the fight will go to pistols, bayonets, knives, boots . . .

You may parry (with a ready hand weapon) or dodge on the same turn you attack.

All-Out Attack

Attack any foe with hands, feet, or a ready hand weapon. You have three choices:

1. Make two attacks against the same foe, if you have two ready weapons, or one weapon that does not have to be readied after use.
2. Make a single attack, at a +4 bonus to your skill!
3. Make one attack, at normal skill, doing +2 damage if you hit.

However, if you choose any form of All-Out Attack, you may make *no active defenses at all* until your next turn!

All-Out Defense

Defend yourself, doing nothing else this turn. If you fail your defense roll against any attack, you may try *another* (different) defense – in other words, you get two defense rolls, using two *different* active defenses vs. the same attack. You are limited to *two* parries per turn when you choose All-Out Defense, but you can't parry twice with a weapon that becomes unready after a parry.

Long Action

This is a "generic" choice that allows for one second's worth of *any* multi-second action (for instance, starting a vehicle or defusing a bomb). The GM decides how many turns each "long action" will take. As a rule, no defense except dodging is possible during a long action, but the GM can vary this as he sees fit. Any sort of defense may also interfere with whatever you are trying to do.

Free Actions

Things you can do during any maneuver, including talking, dropping a weapon or other object, and crouching down behind cover (not kneeling).

Making an Attack

If you choose the *Attack* or *All-Out Attack* maneuvers, you may try to hit a foe. You may attack any foe, unless the GM rules that attack is impossible for some reason.

You can only attack if your weapon is *ready.* A balanced hand weapon (e.g., a knife) is ready every turn. An unbalanced hand weapon (e.g., a hatchet) becomes unready when you swing it, so it can only be used every other turn. A gun is ready when it is loaded and in hand with the safety off.

Each attack is resolved by three die rolls. First is your *attack roll.* If this roll is successful, your attack was a good one. Now your *foe* must make a *defense roll* to see if he can defend against your attack. If he makes this roll, he is not hit. If he misses his defense roll, your attack struck home and you *roll for damage.*

Rolling to Attack

Your "attack roll" is a regular success roll. Figure your *effective* skill (your *basic skill* plus or minus any appropriate *modifiers*) with the weapon you are using. Applicable modifiers include:

Attacker is Crawling or Lying Down: -4, except with a gun.

Attacker is Crouching, Sitting, or Kneeling: -2.

Attacker is in a strange position (e.g., hanging upside down): -2 or more (GM's decision).

Bad footing: -2 or more (GM's option).

Bad light: -1 to -9 (GM's decision); -10 for total darkness.

Blind: -6; blinded *suddenly:* -10.

Off-hand attack: -4 (no penalty if Ambidextrous).

One eye: -1 for hand-weapon attacks, -3 for ranged attacks.

ST under minimum ST for that weapon: -1 for each point of difference.

Wounds: Penalty equal to hits you took on the preceding turn. High Pain Threshold advantage eliminates this penalty.

See pp. 155 and 00 for additional modifiers for ranged attacks.

Now roll 3 dice. If your roll is *less than or equal to* your "effective" skill, you have rolled well enough to hit the foe, and he must roll to defend. Otherwise, you missed!

Critical Hits: No matter what your skill, a roll of 3 or 4 always hits, and is a *critical hit.* If your effective skill is 15, then any roll of 5 or less is a critical hit. If your effective skill is 16 or more, then any roll of 6 or less is a critical hit.

On a critical hit, the attack automatically hits home – your foe does *not* get a defense roll. As well, on an attack roll of 3, you do not roll for damage – your attack automatically does the *most* damage it could do. For instance, maximum damage for a 1d+2 attack would be 6+2, or 8 hits. Other critical hits bypass the defense roll, but roll normally for damage.

Automatic Misses: Regardless of skill, a roll of 17 or 18 always misses with any attack. A roll equal to or greater than the *Malf* number of a gun is likewise an automatic miss, and may also indicate a misfire; see p. 201.

Defense

If you make your attack roll, you have not (yet) actually struck your foe, unless you rolled a critical hit. You have made an attack that is *good enough* to hit him – *unless* he defends.

Settling Rules Questions

In any question of rules, the GM's word is *law.* The GM decides which optional rules will be used, and settles any specific questions that come up. A good GM will always discuss important questions with the players before deciding – but a good player accepts the GM's decision once it is made.

When a situation is not covered by the rules, there are several techniques that can be used:

Success rolls. Roll 3 dice to test a character's strength, dexterity, skill, or whatever. Use a success roll when a question arises about someone's ability to do some particular thing.

Random rolls. For a question like "Are the keys in the car?" a random roll is often best. The GM decides what the chances are, and rolls the dice, leaving the rest to fate.

Arbitrary fiat. You don't have to use the dice at all. If there is only one "right" answer to fit the plot of the adventure – then that's the answer.

Your foe's defense is equal to the sum of his armor's *passive* defense (PD), if any, and his *active* defense (Dodge or Parry). Passive defense always protects, but active defenses must be specifically chosen from those that are "legal" at the moment. This depends on the maneuver he chose on his last turn – see p. 198.

The defender rolls 3 dice. If his roll is *less than or equal to* his total defense, he dodged or parried your attack. Otherwise, his defense was ineffective and your attack struck home. If your attack hits your foe, you can roll for damage.

A defense roll of 3 or 4 is *always* successful – even if your total defense is only 1 or 2! A roll of 17 or 18 always fails.

Your foe does not get to attempt a defense roll if you rolled a critical hit against him.

Active Defense

There are two *active defenses* that can protect you against an attack. Each of these defenses is calculated in advance. When you are attacked, you may choose *one* active defense as part of your total defense roll. (If you took *All-Out Defense,* you may make *two* separate defense rolls, using different defenses.)

Your active defense depends on your situation, *especially* the maneuver you chose last turn. Some maneuvers limit the active defenses you can make. A stunned character's active defense is at -4.

Sometimes you will have *no* active defense. A knife from behind, a sniper's shot, random shrapnel, or an unexpected booby trap would be attacks against which no active defense is possible.

The Combat Reflexes advantage gives a +1 to each of your active defenses.

Dodging

Your Dodge defense is the same as your Move score (but *not* modified for Running skill). An *animal's* Dodge score is half its Move or half its DX, whichever is better – up to a maximum of 10.

You may dodge *any* attack, except one that you did not know about! You may even make a Dodge roll against firearms attacks made by a foe you can see (this represents the effects of evasive action – you do not actually dodge bullets!). There is no limit to the number of times you may dodge in one turn.

Parrying

Hand weapons can be used for defense as well as offense. When you parry with a weapon, *half* your skill with that weapon (round down) counts as active defense. Thus, if you have a Broadsword skill of 20, you would have a Parry defense of 10 using a saber.

You cannot parry unless your weapon is *ready.* Parrying with an unbalanced weapon will make it "unready." For instance, you can't parry with a hatchet on the same turn you attacked with it; you have to re-ready it first. A parry won't stop anything except a hand-weapon attack. If a weapon is used to parry anything of three or more times its own weight, it *breaks* on a roll of 1 or 2 on 1d! (The parry still counts if the weapon breaks, however.)

You may only parry one attack per turn, unless you have two weapons (in which case you may parry once with each) or you chose the *All-Out Defense* maneuver (in which case you may parry twice – or twice with each weapon, if you have more than one).

If you successfully parry a barehanded attack with a weapon, you may injure your attacker. Immediately roll against your own weapon skill (at -4 if your attacker used Judo or Karate). If you hit, your parry struck the attacker's limb squarely; roll normal damage.

Some special parrying rules:

Fencing weapons, such as the smallsword, parry at 2/3 Fencing skill (round down), provided you are at no more than light encumbrance. Also, you may parry *twice* per turn, rather than just once. (An All-Out Defense will let you parry *any number* of times!)

Katanas parry at 2/3 Katana skill (round down) if wielded two-handed, provided you are at no more than light encumbrance.

Knives and equally small weapons are at -1 to parry *with.*

Rifles used in hand-to-hand combat parry at 1/2 Spear skill (when used to bayonet) or 1/2 Two-Handed Axe/Mace skill (when used to club). Roll 1d after every parry; on a 1, the gun is damaged. It will require repairs before it can fire again.

Thrown weapons may be parried, but at -1. Thrown knives and similar small, hurled weapons are parried at -2.

Passive Defense (PD)

If you are wearing armor, then you will also have a "passive" defense factor operating in your favor. Armor PD ranges from 1 to 6; see p. 87 for examples. Passive defense *always* protects you, even if you are unconscious or unaware of the attack. If you have any PD at all, a defense roll of 3 or 4 will succeed for you!

Weapon Damage

If an enemy fails his defense roll, you have hit him and may make a "damage roll." This roll tells how much damage you did to your target. Your weapon (and, for hand weapons, your strength) determines the number of dice you roll for damage.

If the enemy is wearing armor, the armor's Damage Resistance (DR) is subtracted from the damage you roll. The Toughness advantage may also provide DR, which works just like armor and which adds to that of any armor worn. If you roll enough damage to exceed your foe's DR, you will injure him.

Injury

If the total damage you roll *exceeds* the Damage Resistance of your foe the excess hits are taken as damage. *Example:* Your submachine gun's "Damage" statistic is 3d-1. You roll 3 dice, subtract 1, and get a 10. The target's flak jacket gives 4 points of DR, so 6 points of damage get through, and the target takes 6 hits of damage. Remember that cutting and impaling attacks get bonus damage (see *Damage Types and Damage Bonus,* p. 192).

Effects of Injury

All injuries are assumed to be to the torso; specific hit locations are beyond the scope of ***GURPS Lite.*** Subtract the hits you take from your HT score. See pp. 203-204 for more details.

Shock: If you take a wound, your attack roll will be reduced (on your next turn only) by the number of hits you took. Wounds taken during the same turn are cumulative for this purpose. See p. 203.

Knockdown and Stunning: If you take a single wound that does damage of *more than half* of your *basic* HT score, you must roll against your *basic* HT. If you fail the roll, you are *knocked down!*

Whether or not you fall down, you are *stunned.* All active-defense rolls are at -4 until your next turn. At that time, you roll against your basic HT. A successful roll means you recover, and can act normally that turn and thereafter. A failed roll means you remain stunned, and continue to stand (or lie) there without making any maneuvers, and still take -4 on each active-defense roll!

Severe Wounds: If you are reduced to *3 hit points or less,* your Move and Dodge scores are both cut in half (round down). Your wounds are slowing you!

Unconsciousness: If you take enough wounds to reduce your HT to *zero or less,* you are hanging on to consciousness by sheer willpower. At the beginning of each turn that your HT is zero or less, make a roll against *basic* HT, modified by Strong Will or Weak Will (if you have either). A successful roll means you can take your turn normally; a failed roll means you fall unconscious! Roll each turn, until you fail a roll and fall unconscious.

Death: If your HT goes fully negative (for example, -10 if your basic HT is 10), you risk death – see p. 203.

Ranged Weapons

Ranged weapons work like other weapons: make your attack roll, let your foe make his defense roll, and then roll for damage if you hit. Some additional rules and modifiers apply, however.

Direct-Fire Weapons

Direct-fire weapons (small arms, thrown knives, etc.) are fired in a straight line at a target you can see. Figure your attack roll by:

1. Starting with your base skill with the weapon. For guns, this is the Guns or Gunner skill for the firearm. For thrown weapons, this is either the general Throwing skill or the specific Thrown Weapon skill for the weapon (*not* the Hand Weapon skill for it).

2. Modifying for the target's *speed and range* (handled as a single modifier) and *size.*

3. Modifying for the weapon's *Accuracy,* if you have taken at least one turn to aim.

4. Applying situational modifiers (for cover, darkness, etc.).

5. Applying an extra -4 if you have not aimed and your modified skill is less than the Snap Shot number of the weapon.

The result is *effective skill.* A roll of this number, or less, is a hit.

Weapon Statistics

Any weapon that can be used for direct fire will have several specialized statistics. These numbers and their game effects are:

Snap Shot (SS): If you have aimed, ignore this statistic. If you have *not* aimed, your effective skill after all modifiers must *equal or exceed* SS, or you suffer an additional -4 "snap-shot" penalty.

Accuracy (Acc): If you have aimed for at least one turn, you may add this number to your effective skill. However, the bonus for Acc can never exceed your basic skill with the weapon.

Half-Damage Range (1/2D): The range, in yards, past which the weapon does only half normal damage. Roll normally and then

divide by 2 (round down). When firing at a target past 1/2D, you do not receive your weapon's Acc bonus, even if you have aimed!

Maximum Range (Max): The range, in yards, past which no direct-fire attack is possible with the weapon.

Situational Modifiers

In addition to the modifiers under *Rolling to Attack* (p. 199), the following situational modifiers apply to direct-fire attacks.

The target is . . .

Behind light cover (e.g., bushes): -2.

Behind moderate cover (e.g., a tree, a doorway): -3.

Behind someone else: -4.

Firing a weapon from a trench: -4.

Crouching, sitting, or kneeling: -2, -4 if behind cover.

Prone or crawling: -4, -7 if behind cover.

Moving forward evasively (at half Move): -1.

Moving evasively at the cost of forward progress (Move 1): -2.

The attacker is . . .

Walking (Move 1-2): -1.

Running (Move 3+): -2.

Speed/Range and Size Modifiers

All direct-fire attacks take modifiers for the target's speed and range (treated as one modifier), and for its size. These are determined from the chart below, as follows:

Speed/Range: Look up the *sum* of range to the target (in yards) and the target's speed (in yards per second) in the third column, and then read the modifier in the first column. Ignore speed (but not range) when attacking a human target.

Size: Look up the target's size in the third column, rounding up to the next larger size, and then read the modifier in the second column. Ignore size when attacking a human target.

Speed/Range and Size Table

Speed/ Range Modifier	*Size Modifier*	*Linear Measurement (size or range/speed)*	*Range/speed in mph*
+2	-2	1 yd	2 mph
+1	-1	1½ yd	3 mph
0	0	2 yd	4.5 mph
-1	+1	3 yd	7 mph
-2	+2	4½ yd	10 mph
-3	+3	7 yd	15 mph
-4	+4	10 yd	20 mph
-5	+5	15 yd	30 mph
-6	+6	20 yd	45 mph
-7	+7	30 yd	70 mph
-8	+8	45 yd	100 mph
-9	+9	70 yd	150 mph
-10	+10	100 yd	200 mph
-11	+11	150 yd	300 mph
-12	+12	200 yd	450 mph
-13	+13	300 yd	700 mph
-14	+14	450 yd	1,000 mph
-15	+15	700 yd	1,500 mph
-16	+16	1,000 yd	2,000 mph
-17	+17	1,500 yd	3,000 mph
-18	+18	2,000 yd	4,500 mph
-19	+19	3,000 yd	7,000 mph
-20	+20	4,500 yd	10,000 mph

Grenades

Roll against Throwing skill or DX to lob a grenade, using the usual rules and modifiers. If you miss your attack roll, you missed your target by a number of yards equal to the amount by which you failed or half the distance to the target (round up), whichever is *less.* Roll 1d for direction: on a 1, it goes long; on a 2-5, it lands to one side; and on a 6, it falls short of the target.

Guns

Additional statistics are required for guns. These statistics, and their effects on game play, are as follows:

Malfunction (Malf): If the attack roll is equal to or greater than Malf, the gun malfunctions. (If Malf is "Crit" instead of a number, the gun will malfunction only on a critical failure; see p. 175.) This is an automatic miss. As well, the weapon jams or misfires: no shot is fired, and the gun will not fire again until cleared. To clear a weapon takes 2d turns and a successful roll against Armoury or the Guns or Gunner skill used to fire the weapon.

Rate of Fire (RoF): How often the weapon can fire each turn. RoF 1/2 means it can fire every other turn; a turn is required to operate the bolt. RoF 1 means it can fire once per turn. RoF 2~ or 3~ indicates a semi-automatic weapon that can fire two or three times per turn, requiring a separate attack roll each time. RoF 4 or more indicates an automatic weapon (see below).

Shots: The number of shots per magazine, ammunition belt, etc. When you have fired this many shots, you must stop to reload.

Recoil (Rcl): If a gun is fired more than once, in the same turn or on consecutive turns, without pausing for one turn between shots, this penalty is subtracted from the *second* and subsequent shots. Double Rcl if your ST is below the "ST" listed for the weapon. Automatic weapons use Rcl differently; see below.

Shotguns

The wide spread of shot gives +1 to hit, but roll each die of damage individually and apply it to DR separately.

Automatic Weapons

Automatic weapons, such as machine guns, use the *Guns* rules except as follows. They will fire for as long as the trigger is held. The shots fired by one trigger pull are a *burst.* The Rate of Fire (RoF) for an automatic weapon is the number of rounds it fires *each turn.* It is rare for all rounds in a burst to hit the target. To simulate this, the burst is divided into *groups* of 4 shots (if RoF does not divide evenly by four, any remaining shots form a group of 1, 2, or 3 shots). A separate roll to hit is made for each group.

The table below shows the number of shots that hit, depending on the success of the roll. Even failure by 1 can result in a hit!

A critical hit with a group is a hit with all the rounds. Treat one round in the group as a critical hit, the remainder as normal hits.

Rounds in Group	**Roll Made by**						
	-1	**0**	**1**	**2**	**3**	**4**	**5+**
1	0	1	1	1	1	1	1
2	0	1	1	1	1	1	2
3	1	1	1	1	2	2	3
4	1	2	2	3	3	3	4

Recoil: In automatic fire, apply Rcl as a penalty to effective skill on the attack roll for the *first* group, and again on the roll for each four-round group or partial group after the first. E.g., for a weapon with RoF 9 and Rcl -3, the first 4 rounds are at -3, the second 4 at -6, and the final round at -9. This penalty continues to increase, even in subsequent turns, until the firer stops shooting for one full turn.

Defense Against Direct-Fire Weapons

Thrown Weapons: The target of a thrown weapon (hurled knife, lobbed grenade, etc.) may dodge or parry.

Guns: The target of a gun may only dodge; he may not parry.

Automatic Weapons: As for other guns, but the target rolls against Dodge for each *group,* regardless of how many rounds it contains. Success means the entire group misses him; failure means the entire group hits him. Roll damage separately for each round that hits and apply DR separately against each round.

Indirect-Fire Weapons

Indirect-fire weapons are fired in a ballistic arc over obstacles such as hills. The target is an *area;* i.e., a patch of ground or water.

Figure your attack roll by:

1. Starting with your Gunner skill with the weapon.

2. Modifying for the *range* to the target area. Use the *Speed/Range and Size Table,* but *don't* apply speed or size modifiers.

3. Applying situational modifiers (for observed fire, etc.).

The result is your *effective skill.* This can be (and often will be) a negative number. Once you have calculated effective skill, make an attack roll. On a failure, note the margin of failure. Look this up in the "Speed/Range" column of the *Speed/Range and Size Table,* then read across to the "Linear Measurement" column. This is the distance by which the attack missed, to a maximum of 1/10 the range to the target. Roll 1d for direction: on a 1, it goes long; on a 2-5, it lands to one side; and on a 6, it falls short of the target.

On a success, the round came in over the target area. If there is a building, vehicle, or person there, the round will strike it from above. Explosive damage from indirect fire is normal, but kinetic-type damage (e.g., crushing damage of bullets) is halved.

Weapon Statistics

Indirect fire is always aimed, if only at map coordinates, making SS irrelevant. It is always treated as being beyond 1/2D range, regardless of actual range, so there is never an Accuracy bonus. The only statistics that really matter for indirect fire are minimum and indirect-fire range. Indirect-fire range is listed for weapons normally used in this role; otherwise it can be calculated on p. 142. If applicable, minimum range will be listed, too.

Situational Modifiers

Modifiers for cover, darkness, etc. *do not apply* to indirect-fire attacks. Instead, use these modifiers:

Firing "blind" at a set of coordinates: -15.

Observed fire: -5, plus a bonus equal to observer's margin of success or a penalty equal to observer's margin of failure on his Forward Observer skill roll.

In communication with a fire direction center: +3.

Weapon fixed and sited: +2.*

* The gunner has established his *own* location precisely in relation to the target. This takes 2 minutes and a Navigation roll. Both firer and target must be stationary.

Observed Fire

Usually, a "forward observer" (FO) provides firing coordinates to the gunner. He can shout over short distances, but a telephone or a radio is normally required. If the FO can observe the fall of shot with respect to the target, he can also provide the gunner with *corrections* on the second and subsequent shots.

The FO locates the target and reports its coordinates to the gunner. This takes 2d+5 seconds. The gunner then fires a shot at those coordinates, at the usual -15. The FO observes the results and reports a correction to the gunner. This takes another 2d+5 seconds and a second Forward Observer roll. The gunner fires a second shot, this time at only -5, modified by the FO's margin of success or failure on his Forward Observer roll. The process of shooting and correcting continues until the gunner is on target. Apply the following modifiers to Forward Observer skill:

After first shot: No modifier.

After second shot: +4.

After third or later shot: +8.

FO lacks binoculars: -1.

FO lacks map: -3.

*FO lacks binoculars **and** map:* -5.

Distance between FO and target: -1 per 500 yards (tripled if FO does not have binoculars).

The gunner's modifier to hit is based on the FO's most recent Forward Observer roll. As this ultimately receives a +8 bonus, the gunner will usually end up with a bonus to hit after a few shots.

Forward Observer skill can also be used to select the fuse needed for an air burst at a specific altitude. Use the rules above, but in this case, the "target area" includes a vertical dimension.

Battery Fire

Once an indirect-fire weapon has been fired and corrected for accuracy, any identical weapons located nearby (GM's decision) can be fired with the same to-hit modifier, provided their crews are in direct communication with the crew of the spotting gun.

Pre-Planned Fire

An indirect-fire weapon can be fired and corrected for accuracy – "registered" – on a pre-planned target before battle begins. Apply the rules above. When the action starts, the gunner gains the benefits of observed fire as soon as he starts firing upon the pre-planned target, without the need for a FO.

Machine-Gun Fire

When MGs are fired indirectly, the bullets disperse over a "beaten zone" 1 yard × the range modifier long by 1 yard wide. Anyone in this zone has a 9 or less chance of being struck by a bullet. A successful Gunner roll will center the beaten zone on the target area. Observed fire works as above, but the observer is at -1 per *100* yards from the target, and can send one correction *per second.*

Explosions

Explosives do *concussion damage* and *fragmentation damage.* Both types of damage are *doubled* for anyone in contact with the explosive when it goes off. PD has no effect on either type of damage, and no active defense is possible against an explosion.

Concussion: Damage due to the shock wave. This is applied to *everything* nearby. Most WWII grenades do about 2d concussion damage; TNT does 6d×2 *per pound.* For blasts up to 6d×20, apply full damage to anyone within 2 yards. More distant targets divide damage by 4 per 2 yards range (1/4 at 2 yards, 1/16 at 4 yards, and so on). Each tenfold increase in the amount of concussion damage doubles the increment at which damage is quartered. A vehicle or structure's DR, but *not* that of WWII personal armor, is *squared* vs. explosions that aren't a direct hit. Toughness protects normally.

Fragmentation: Most explosive munitions are designed to produce lots of metal fragments. Fragmentation damage is given in square brackets after concussion damage; e.g., 2d [2d] means "2d concussion, 2d fragmentation." An explosion projects fragments to a distance of 5 yards times the dice of concussion damage.

A hit is automatic at "ground zero." At 1 yard from the blast, a hit occurs on a roll of 17 or less. At 2 yards, the roll is 16 or less, and so on. When this roll reaches 3, it stays at 3 to the limit of fragment range. Apply the target *Situational Modifers* from p. 201 to this roll – but against explosives bursting in the air any cover must be overhead and lying prone doesn't help!

DR (including any from cover) protects normally against fragmentation. Fragmentation damage is considered cutting damage.

Shaped Charges: These special explosives have an "armor divisor" in parentheses after their damage. On a direct hit, divide DR by this number; e.g., 6d×2 (10) means "apply 6d×2 to 1/10 DR."

Unarmed Combat

Anyone can engage in unarmed combat, but Boxing, Brawling, Judo, or Karate will make you more effective at it.

Punching

A punch is an attack. Your "skill" for a punch is the best of DX, Boxing, Brawling, or Karate. Damage is thrust-2 crushing damage, determined from your ST using the table on p. 192. *Example:* With ST 12, your thrust damage is 1d-1, so your punch does 1d-3.

Punching damage is +1 for a rock in the fist, +2 for brass knuckles. Also add a bonus equal to the *best* of 1/5 Boxing, 1/5 Karate, or 1/10 Brawling, rounded down, to your damage with a punch.

Kicking

A kick is an attack at DX-2, Brawling-2, or Karate-2. It does thrust crushing damage, +1 if wearing heavy boots, plus a bonus equal to the *higher* of 1/5 Karate or 1/10 Brawling, rounded down. On a *miss,* you must make a DX or skill roll to avoid falling down!

Parrying Barehanded

When fighting barehanded, you may parry a *kick* or *punch* with your hands. Your Parry is the best of 1/2 your DX or 2/3 your Boxing, Brawling, Judo, or Karate skill, rounded down. A Boxing parry is at -2 vs. kicks.

If you parry a *weapon* barehanded, you are -3 unless the weapon is a thrusting weapon or you are using Judo or Karate. A failed parry means the weapon hits; the attacker may choose to hit where he was aiming, or to hit your arm! If your arm takes more than HT/2 points of damage, it is *crippled* (see below).

Injury, Illness, Fatigue

Wounds and other injuries cause bodily damage, or "hits." Your HT score tells how many hits you can take. A character who goes down to 0 hit points will soon fall unconscious. It *is* possible to survive with a negative hit-point total.

Lost Hit Points

Someone who is wounded repeatedly will eventually weaken and collapse, even if no single injury is very great. Record hits on your character sheet. The effects of lost hit points are:

3 or less hit points left: Your Move and Dodge are cut in half; you are reeling from your wounds.

0 or less hit points left: You are in immediate danger of collapse. At the beginning of each turn, roll against your basic HT, plus or minus Strong or Weak Will. A success means you may take your turn normally. A failed roll means you fall unconscious.

-HT hit points: You must make your HT roll (use basic HT) or die. Another roll is required after each further loss of 5 hit points.

-5×HT: Automatic death. You have lost a total of 6 times your original hit points; no one can survive that much injury.

Shock

When you are injured, your DX and IQ, and any skills based on DX and IQ, are reduced by that amount, *on your next turn only. Example:* If you take 3 hits of injury, your IQ, DX, and skills will be at -3 on your next turn. Active defenses are *not* reduced.

This subtraction will most often affect weapon attacks – but *any* use of IQ, DX, or skills is affected. Therefore, on the turn after you are badly hurt, it may be a good idea to try flight, All-Out Defense, or the like, rather than counterattacking instantly.

This is only a temporary effect due to shock. On your following turn, your skills are back to normal.

Knockdown

Anyone who takes damage *greater than* than half his HT in one blow must immediately roll against his basic HT. If he fails the roll, he *falls* and is *stunned* (see below). If he makes his HT roll, he keeps his footing, but he is still stunned.

Stunning

Someone will be "stunned" if he takes damage *greater than* half his HT in one blow. If you are stunned, all your active defenses are at -4 until your next turn. At that time, roll against basic HT to see whether you recover. A successful roll means you can act normally *on that turn.* A failed roll means you are still stunned and stand there mindlessly . . . The "stunned" state continues until you can make your HT roll and snap out of it. You may act again on the turn you roll successfully and shake off the daze.

Mental Stun: Someone who is surprised or shocked may also be *mentally* "stunned." The effects of this sort of stunning are just the same, but you must make your IQ roll, rather than your HT roll, to snap out of it. You're not *hurt* – you're *confused.*

Crippling Injuries

In some cases, such as booby traps or botched hand parries, the GM will rule that damage is taken to a particular limb. A hand or foot is crippled if it takes damage *greater than* 1/3 your HT. An arm or leg is crippled if it takes damage *greater than* 1/2 your HT.

A crippled arm or hand cannot be used. For the effects of a crippled leg or foot, see the *Lame* disadvantage (p. 185). Make a HT roll for each crippled limb. On a success, the limb will work again once the victim has regained *all* his lost hit points. On a failure, the limb will remain crippled for 1d months. A critical failure indicates that the limb is *severed* or otherwise rendered permanently useless.

Bleeding

Cutting, impaling, and bullet wounds *bleed,* causing continuing HT loss. At the end of every minute after being wounded, the victim rolls against HT, at a -1 per full 5 points of damage he has taken. If he fails, he bleeds for 1 point of damage. On a critical failure, he bleeds for *3* points of damage. On a critical success, the bleeding stops. On an ordinary success, he does not bleed this minute, but must continue to roll every minute. If he does not bleed for three consecutive minutes, the bleeding stops for good. A First Aid roll to stop bleeding takes 1 minute, and comes *before* the bleeding roll. Once first aid has been successfully administered, no more bleeding rolls are made.

First Aid

Most of the HT loss from an injury is due to shock rather than actual physical damage. Therefore, prompt treatment after a fight can restore some of the lost hit points.

Simple Bandaging: Basic, unskilled bandaging will restore 1 lost hit point per fight – but no more, no matter how bad the injury. This takes 30 minutes per victim.

First Aid: A successful First Aid skill roll will restore 1d-1 lost hit points. On a critical success, the victim regains the maximum: 5 hit points. On a critical failure, the victim *loses* 2 hits, and bandaging will not help. Barring critical failure, a minimum of 1 point is always restored. First aid is *not* cumulative with simple bandaging. This takes 20 minutes per victim.

Natural Recovery

Natural recovery will cure any number of hits. At the end of each day of rest and decent food, the victim may roll against his *basic HT.* A successful roll results in the recovery of 1 hit point. The GM may modify the roll downward if conditions are bad, or upward if conditions are very good. A victim under the care of a competent Physician (skill level 12+) gets +1 on all healing rolls.

Recovering From Unconsciousness

If your HT is still positive, roll vs. HT every hour to awaken (or, if you have lost no more than 2 HT, roll every 15 minutes).

If your HT is negative, but not *fully* negative, you will become conscious in as many hours as your HT is negative, or a maximum of 12 hours. *Example:* Your HT is -8 after the battle. You will wake up (still with -8 HT) in 8 hours. When you awaken, you can call for help or even try to drag yourself to shelter.

If your HT has gone *fully* negative – e.g., HT of -10 or worse for someone with a basic HT of 10 – you are in bad shape. If you can make a roll on basic HT, you will awaken (as above) after 12 hours, and can try to help yourself. If you fail the roll, you stay in a coma and die unless you are helped within HT hours.

Other Hazards

Adventurers often face other dangers, including . . .

Falling

When you fall, roll for damage as follows:

1 or 2 yards: (1d-4) damage per yard

3 or 4 yards: (1d-3) per yard

5 or more yards: (1d-2) per yard

If you land on something soft, subtract 1 point per yard fallen. A successful Acrobatics roll will reduce the effective distance of your fall by 5 yards. Terminal velocity – the maximum speed a falling object can achieve – varies for humans, but is normally reached after 3 or 4 seconds of falling. Therefore, treat any fall of more than 50 yards as only 50 yards.

Armor protects against falling damage at *half* its usual DR.

Falling Objects

A *hard* falling object does damage as follows: round its weight to the nearest 10 pounds, and the distance it fell to the nearest 10 yards. Multiply the number of 10-pound and 10-yard increments, and take that many dice of damage. Treat any fall of more than 200 yards as 200 yards. *Example:* A 20-lb. rock falling 30 yards does (2×3)=6 dice of damage. Any weight or distance of 2 or less should be treated as 10 – but halve the final damage. *Soft* objects (living things, for instance) do half damage for their weight.

Flame

Walking through fire does 1d-3 damage per second; actually *standing* in fire does 1d-1 damage per second. Armor protects completely against ordinary heat or flame for a number of turns equal to 3 times its DR. After that, it still protects against flame, but the wearer must roll vs. HT every turn to resist the heat of the fire. A failed roll costs 1 point of fatigue (p. 205).

The above rules assume "ordinary" flame. White phosphorus grenades (p. 98) and flamethrowers (p. 99) are far deadlier.

Illness

Anyone encountering a disease carrier is in danger of contracting the disease, unless he has the Immunity to Disease advantage. Most diseases allow a HT roll to resist, made in secret by the GM. Roll against HT once per day; a failed roll means you catch the disease. From the table below, choose the least advantageous roll:

Avoided all contact with possible victims: HT+4

Entered dwelling or shop of victim: HT+3

Spoke with victim at close quarters: HT+2

Touched victim briefly: HT+1

Used victim's clothes, blankets, and so on: HT

Ate victim's cooked flesh (animal, we hope!): HT

Ate victim's raw flesh (ditto!!): HT-1

Prolonged contact with living victim(s): HT-2

Kissing or other intimate contact with victim: HT-3

The GM may require a harder roll for a virulent plague, or an easier one for a less contagious one.

Symptoms

Disease symptoms usually appear at least 24 hours after the disease is caught. Most diseases aren't contagious until after symptoms appear. Typical symptoms include daily HT loss (which may endanger the victim) for several days; loss of ST, DX, or IQ; fatigue; sneezing, coughing, spots, sores, or rash. Severe symptoms could include delirium, unconsciousness, blindness, etc.

Diagnosis

When symptoms of a disease are apparent, the GM should roll against the character's Diagnosis skill, or IQ-6, in secret. Success means he identifies the disease.

Recovery

Typically, a disease sufferer must make a daily HT roll (possibly at a penalty). This roll, and the effects of failure, vary with each illness. For a "generic" disease, a failed roll might mean you lose 1 HT; a success would let you regain 1 HT.

When you have recovered all HT lost to an illness, you are cured. If your illness allows HT rolls to attempt to recover, a roll of 3 or 4 means the disease has vanished (lost HT must be recovered in the normal fashion). For some diseases, recovery will be aided by use of appropriate drugs. For most diseases, a physician's care (as for injuries) will aid attempts to recover.

Infection

An "infection" is caused by a microorganism that attacks open wounds. It is handled just like any other disease, but the roll to avoid it is made under different circumstances:

Dirt in the wound: HT+3

As above, in area with special infection: HT

Dung-coated spike (e.g. "punji stakes"): HT+1

As above, in area with special infection: HT-2

Fatigue

Fatigue represents lost ST, just as injury represents lost HT. If your ST is 10, you can lose 10 "fatigue points" before falling unconscious from exhaustion. Fatigue does not affect HT at all.

You will suffer fatigue at the end of each battle that lasts more than 10 seconds; the amount is equal to your encumbrance, plus 1. Other causes for lost fatigue are listed below.

While your ST is reduced due to fatigue, *any* use of ST will be made at the reduced ST score. Likewise, your score in any ST-based skill will be reduced by the amount of your fatigue. *The basic damage you do with hand weapons is unchanged. This is for playability, to avoid constant re-figuring of weapon effects!*

Likewise, your Move score is not affected by fatigue *until your ST reaches 3.* At that point, cut your Move in half, rounding down.

If fatigue reduces your ST to 0, you fall unconscious and automatically rest until your ST reaches 1 and you awaken. You cannot have "negative" fatigue or a "negative" ST.

Sample Fatigue Costs

Marching: Each hour of road travel costs fatigue equal to your encumbrance level +1. Add 1 more in hot climates.

Running or Swimming: After each 100 yards traveled, roll vs. HT. A failed roll costs 1 point of fatigue.

Overexertion: Carrying more than 20 times ST, or pushing or pulling a very heavy load, costs 1 fatigue per second.

Losing Sleep: A night without sleep costs 5 fatigue. Losing a half-night of sleep costs 2 fatigue.

Weather: In temperatures above 80° Fahrenheit, roll vs. the better of HT or Survival (Desert) skill, at -1 per 5° over 90°. A failed roll costs 1 fatigue; when ST reaches 3, begin losing hit points, instead. In temperatures below 32°, roll vs. the better of HT or Survival (Arctic) skill, at -1 per 5° below 0°; light clothing imposes up to a -5 penalty while winter clothing (see p. 87) provides a bonus.

Starvation: Active people need three meals per day. A missed meal costs 1 fatigue point until ST reaches 3, then lose hit points, instead. Only rest with plenty to eat will restore this; each rest day with three full meals restores 3 fatigue points lost to starvation.

Dehydration: A person need 2 quarts of water daily, 3 if it's hot, 5 in a desert! Each day without adequate water costs 1 fatigue point *and* 1 hit point. *Double* the losses if on less than half rations. If ST or HT reaches 0, you become delirious and die within a day if no help arrives. A day of rest with ample water will restore the fatigue.

Recovering from Fatigue

"Normal" fatigue can be regained at 1 point per 10 minutes of rest, involving *nothing* more strenuous than talking and thinking.

Fatigue due to *lost sleep* is regained only by getting a *full* night of sleep! This restores *all* fatigue from lost sleep.

Recovering fatigue from lack of food or water is described above. Any lost hit points are recovered normally; see p. 204.

CAMPAIGNS

Jobs

Jobs, such as those on p. 67, are defined by five things:

Description: The job's title, and exactly what the job entails.

Prerequisite Skills: The skills (and possibly advantages) needed to do the job, and the minimum required level in each skill.

Job Success Roll: Specifies a prerequisite skill (and often a penalty to it) for the working character to roll against at the end of each month. Anything but a critical success or critical failure simply collects the *monthly pay* (below). On a critical success, you get a 10% permanent raise. Results of a critical failure vary; lost income or even loss of the job is typical, but an on-the-job injury is possible at a dangerous job. The GM should be creative!

Monthly Pay: The money earned on a successful roll.

Wealth Level: Each job has a *wealth level,* which can be *poor, struggling, average, comfortable,* or *wealthy.* This is the minimum level of wealth the *character* must have if he holds that job. Very Wealthy and Filthy Rich characters get "wealthy" jobs, but Very Wealthy people take home twice the listed pay for any job, and the Filthy Rich get 10 times the listed pay!

Game Time

Game time is the time that passes in the game world. The GM is the judge of how much time has passed.

Small-unit combat is played out in "slow" time. One combat turn equals one second. It may take a minute or more of real time for each combat turn.

Conversations, attempts to pick locks, escape attempts, and similar situations are played in "real" time. If the players spend 10 minutes discussing how to best approach an NPC quartermaster . . . their *characters* spent 10 minutes talking outside the supply depot.

Routine travel, and so on, is handled in "fast" time. Tell the players when they encounter an interesting NPC, or when they arrive at their destination. Just compress the rest of the time.

In a continuing campaign, you also need to keep track of time between adventures. This can always be the same amount of time, or the GM and the players can simply agree on a "logical" time to pass between the end of one adventure and the beginning of the next. It is often a good idea to let a month or two go by, to allow time for healing, earning money at "ordinary" jobs, etc.

Of course, no game time at all has to pass between *sessions,* if you can't finish an adventure in one session.

Tech Levels

A *Tech Level* (TL) is a general description of a culture's highest achievement in technology. It is possible for a locale to have widely varying TLs in different subjects. Standard Tech Levels are:

TL0 – Stone Age: fire, lever, language.
TL1 – Bronze Age (Athens): wheel, writing, agriculture.
TL2 – Iron Age (Rome): keystone arch.
TL3 – Medieval (pre-1450): steel weapons, math with zero.
TL4 – Renaissance/Colonial (1450-1700): gunpowder, printing.
TL5 – Industrial Revolution (1701-1900): mass production, steam power, telegraph.
TL6 – World War I & II (1901-1950): cars, airplanes, radio.

Many skills are different at each Tech Level. These skills are indicated by a /TL after the skill name. When you take this skill, supplement the TL with the Tech Level at which you learned the skill; e.g., Guns/TL6.

Being from a lower TL than most other characters is a disadvantage; see *Primitive* (p. 186).

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Saving Private Ryan (Steven Spielberg, 1998). The battle scenes rock back the viewer like a sledgehammer.

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Internet

The Internet provides an astounding variety of information on the Second World War. As with all things Web-based, its accuracy may not be of the highest order. Depending on the individual GM's desire for veracity, this may not be important.

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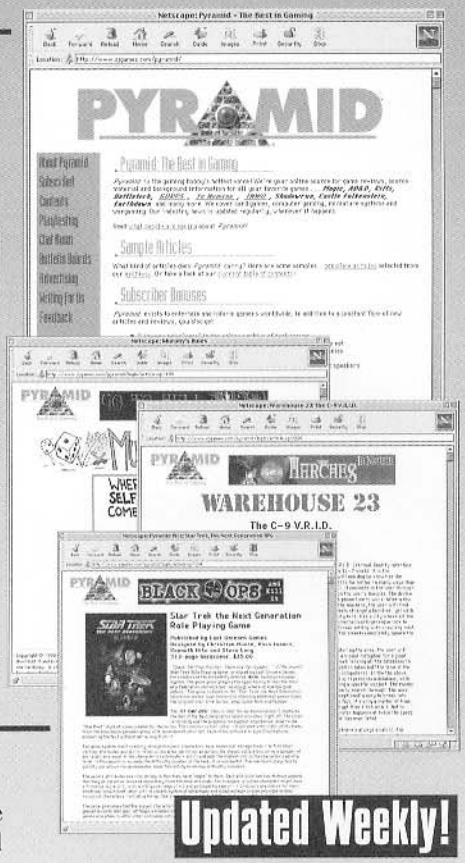

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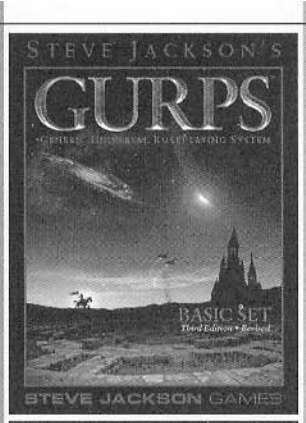

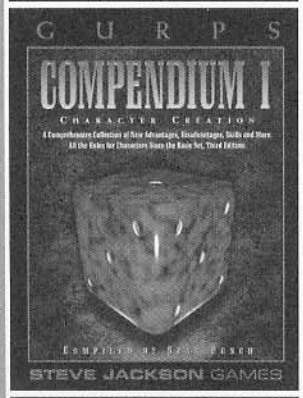

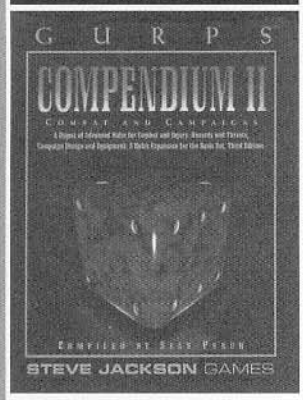

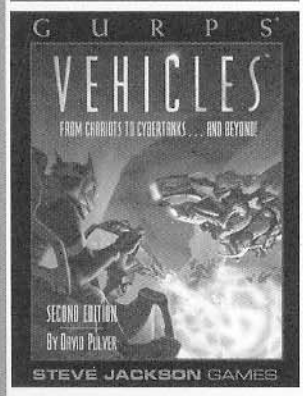

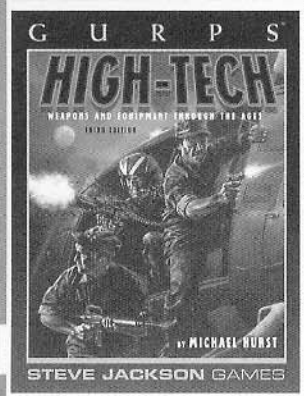

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GURPS Compendium I collects in one volume all the new rules that have been added to the ***GURPS*** character-creation system since the ***GURPS Basic Set, 3rd Edition*** was released in 1988. ***Compendium I*** contains hundreds of advantages, disadvantages, skills, and other rules for character creation, all in one place!

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GURPS Compendium II is full of material from scores of ***GURPS*** worldbooks published in the last eight years – many of them out of print – about how to run a better ***GURPS*** game, how to handle roleplaying problems that come up (some universal, some particular to ***GURPS***), expanded rules for character combat, injury, illness, mass combat, spaceship combat, and much more!

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The second edition streamlines the design process, using the design order found in ***GURPS Robots***, also by David Pulver.

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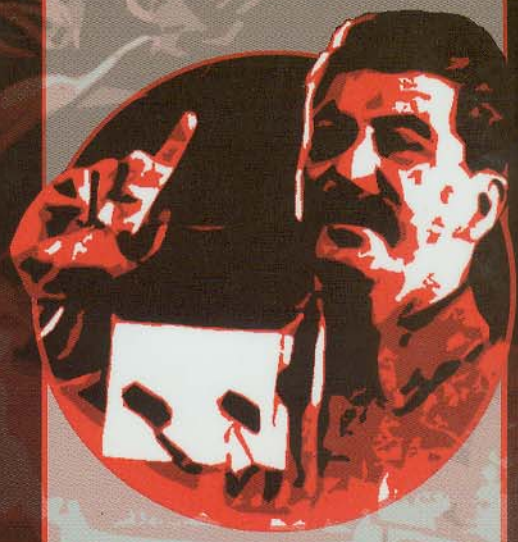

This is a complete game system. *GURPS Basic Set, Third Edition Revised, Compendium I, Compendium II, Vehicles,* and *High-Tech* can provide further detail and additional campaign options. The content can be used with *any* rules system.

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