

GURPS[®]

Fourth Edition

HIGH-TECH[™]



By S.A. FISHER, MICHAEL HURST, AND HANS-CHRISTIAN VORTISCH

STEVE JACKSON GAMES

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By S.A. Fisher, Michael Hurst, and Hans-Christian Vortisch

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About GURPS

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Bibliographies. Bibliographies are a great resource for finding more of what you love! We've added them to many **GURPS** book web pages, with links to help you find the next perfect element for your game.

Rules and statistics in this book are specifically for the **GURPS Basic Set, Fourth Edition**. Page references that begin with B refer to that book, not this one.

INTRODUCTION

GURPS High-Tech covers the technology available from the late 18th century (TL5) to the present day and relatively near future (TL8). It's crammed with guns, explosives, entry tools, climbing kit, scuba gear, radios, vehicles, and everything else that a group of adventurers might need – whether they're exploring trackless wastes, pulling off a heist, or running a spy ring. Most of the items it describes are based on specific, historical devices . . . but the treatment is intentionally *generic*, making the equipment useful even in non-historical campaigns.

High-Tech doesn't simply list technical specs and game stats for the items it describes, though. It gives you everything you need to *use* them in play. There are notes on how to purchase equipment (legally and illegally), guidelines for building and modifying gear, and new firearms rules, techniques, and perks to support both ultra-realistic and cinematic gunplay.

Most important, **High-Tech** is a book for *heroes*: dangerous men and women on secret missions . . . intrepid explorers slashing a path through a sweltering jungle . . . iron-tough adventurers braving the steely knives of an arctic blizzard. It provides the finishing details that distinguish one mercenary or super-spy from another. Attributes, advantages, and skills may define the hero, but his possessions can be just as important. A "Mare's Leg" Winchester or a LeMat revolver instead of the predictable Colt Peacemaker can make an Old West gunslinger stand out from his peers!

Distinctive clothing, gear, and weapons can also help make an adventurer an instantly recognizable *icon* in the campaign world. Fiction is packed with examples of personality going hand-in-hand with possessions: Indiana Jones' fedora and bullwhip; Thomas Magnum's Hawaiian shirt and Ferrari 308; James Bond's tuxedo and Walther PPK. In each case, unique belongings support and complete the persona of a quirky and memorable protagonist.

Thus, **High-Tech** takes the view that an adventurers' kit should be a reflection of his background and character traits – a symbol of his upbringing, attitude, and personality – and not just a collection of game stats and bonuses. Colombo wears a grimy overcoat in balmy California; Sherlock Holmes has his deerstalker cap and drop-stem pipe (details added not by Doyle but by illustrators and actors later on). Such touches make it easier to visualize characters who live only in the players' imagination, and provide "hooks" that the GM can use throughout the campaign.

PUBLICATION HISTORY

This is the fourth edition of **GURPS High-Tech**. It replaces **GURPS High-Tech, Third Edition** (1998) – itself revised by David Pulver from earlier editions written by Michael Hurst – and **GURPS Modern Firepower** (2002). Inspirational **GURPS Third Edition** supplements include **GURPS Special Ops, Third Edition** (2002) and **GURPS**

Covert Ops (2003). **GURPS Old West, Second Edition** (2000), **GURPS Cops** (2001), and the entire **GURPS WWII** line (2001-present) were also influential. *Pyramid* articles adapted for this work include "Autocannon," "In Her Majesty's Service," "The Long Arm of the Law," and "Secret Weapons" – all by Hans-Christian Vortisch. Finally, **GURPS Ultra-Tech, Fourth Edition** (2007) and **GURPS Vehicle Design** (2007) were developed concurrently with **GURPS High-Tech**, and the authors exchanged ideas liberally.

The current volume is a new work, not a revision of any of the above – they served primarily as sources of concepts, references, and terminology, not text.

ABOUT THE AUTHORS

Shawn Fisher has a master's degree in education and is currently a technical writer with a major IT company. A former teacher and infantryman, he has over a decade of experience in private security and is a certified law-enforcement firearms and defensive-tactics instructor. His previous works include **GURPS WWII: Dogfaces** and **GURPS WWII: Hand of Steel**, and contributions to **GURPS Best of Pyramid 1**, **GURPS Who's Who 1**, and Amarillo Design Bureau's **GURPS Module Prime Alpha**. Shawn has been an avid gamer since the early 1980s, and devotes his spare time to camping and recreational shooting. He lives in Searcy, Arkansas with his wife, Jennifer, and their two daughters, Elizabeth and Rachel.

Mike Hurst served as an artilleryman in Viet Nam. He has also been a security officer (both uniformed and undercover); a tank commander in the Texas National Guard; and Captain of the Guard of the Barony of Bryn Gwlad. He is an NRA-certified firearms instructor and holds a Texas Reserve Police Officer certification. He possesses two dogs, an undetermined number of cats, and several thousand books, mostly history and science fiction. He has been a wargamer and miniatures gamer for more than 20 years, and shows no sign of reforming. On the other hand, his beloved wife, Brenda, who shoots ambidextrously, insists he had better quit playing and commence writing.

Hans-Christian "Grey Tiger" Vortisch, M.A., studied languages in Berlin and London, and is currently pursuing a law degree. He began writing for **GURPS** as a freelancer in 2001. He was author or co-author of **GURPS Covert Ops**, **GURPS Modern Firepower**, **GURPS Special Ops, Third Edition**, **GURPS WWII: Motor Pool**, and several *e23* publications on military topics. He wrote additional material for numerous other **GURPS** books; translated, edited, or contributed to several German **Call of Cthulhu** products; contributed to **d20 Modern Weapons Locker** and **d20 Mecha Military Vehicles**; and published many articles in American, British, and German gaming magazines. Hans has been an avid gamer since 1983. His non-gaming interests include science fiction, history, cinema, and punk rock. He lives in Berlin.

CHAPTER ONE

THE

EQUIPMENT AGE

The clerk didn't look up from his paperwork as the trio approached, grunting under their heavy loads. As they placed armloads of gear on the table, he said, "Name. ID. Branch."

The big Inuit dressed in sealskin trousers and a heavy wool sweater stepped forward first. He cleared his throat and replied, "Nat Hunter. 098679-1898HL. Intervention. Special Operations."

"Inventory?" demanded the clerk.

Nat motioned at the pile of weapons. "Winchester Model 1876 carbine in .50-95, Super Redhawk Alaskan, two MK II fragmentation grenades, titanium combat folder."

The clerk looked up and slid a clipboard across the table, between two small mountains of expedition gear, electronics, and body armor. "Are any of you carrying personal weapons on this mission?"

Nat shook his head no and signed the form.

"Next."

The middle-aged man with the eye patch spoke up. "Morton Locke. 098679-1886HL. Penetration. Intelligence."

He wore traditional Inuit garb and a fur-trimmed parka, with a pistol belt slung low around his waist.

"And?" the clerk intoned, with more than a slight indication of impatience.

"Auto-Ordnance M1921 with drum, two Colt .38 Super Automatics."

"Next?"

The young blond man unslung his rifle from his shoulder and held it at port arms. "Airk Heimdall. 098679-1901HL. Penetration. Contact." Quickly, he added, "Model 70 in .458 with thermographic sight, cut-down Ithaca Model 37, Beretta 93R, tomahawk."

The clerk finished his paperwork and then motioned toward a set of double doors. "Through those doors; motor pool's on your right."

This chapter presents an overview of the technological timeline covered in *High-Tech*, along with some general rules regarding equipment use, availability, and pricing.



TIMELINE

The most pressing issue the GM must consider regarding equipment is simply “What’s available?” Below is a more detailed technological timeline than the one presented on pp. B511-512. For more on specific classes of technology, see the appropriate chapter(s).

TL5: THE INDUSTRIAL REVOLUTION

The Industrial Revolution (on historical Earth, roughly 1730 to 1880) coincides with the first successful steam engine. It becomes self-perpetuating by embracing curiosity-driven innovation and capitalist economics simultaneously, rewarding risk-taking and invention with wealth. Key developments include:

- *Agriculture*: Four-course crop rotation, seed drill.
- *Arms and Armor*: Barbed wire, breech-loading artillery, breech-loading rifle, ironclad warship, mechanical machine gun, nitroglycerine, revolver, rocket.
- *Information Technology*: Newspaper advertising, photography, public library, scientific journals, telegraph.
- *Machinery*: Cotton gin, interchangeable parts, powered loom, reaping machine.
- *Material Science*: Crucible steel, friction match, rubber.
- *Medicine and Health*: Anesthetic, antiseptic, canned foods, evaporated milk, hypodermic syringe, pasteurization, vaccination.
- *Power*: Battery, coal, steam engine.
- *Transportation*: Bicycle, hot-air balloon, macadam road, railroad, screw propeller, steamship, submarine.

TL6: THE MECHANIZED AGE

The Mechanized Age (historically, about 1880 to 1940) is the consequence of industrialization sinking its teeth into technologies that are more capital-intensive than labor-intensive and reaping great benefits from the resulting economies of scale. Goods of all types drop in price relative to wages as “modern” transportation and manufacturing techniques hit their stride. Important advances include:

- *Agriculture*: Herbicides, mechanized harvester, pesticides.
- *Arms and Armor*: Aircraft carrier, automatic weapons, battleship, high explosives, military aircraft, poison gas, tank.
- *Information Technology*: Color photography, fingerprint records, motion pictures, radio, sound recording, telephone.
- *Machinery*: Electric light, radar, sonar, vacuum tube.
- *Material Science*: Aluminum, Bakelite, Bessemer steel, synthetic fibers.

- *Medicine and Health*: Blood transfusion, electrocardiograph, inoculation, insulin, penicillin, refrigeration, sterilization, sulfa drugs.

- *Power*: Electric motor, hydroelectric power, internal combustion engine, secondary battery, steam turbine.

- *Transportation*: Airplane, automobile, high-speed road system, primitive helicopter, zeppelin.

TL7: THE NUCLEAR AGE

The Nuclear Age dawns with the successful harnessing of nuclear power (in the 1940s, on historical Earth). This occurs alongside such inventions as television, jet engines, and the transistor. The crowning achievement of TL7 technology is in many ways to make good on the promises of TL6. Significant innovations include:

- *Agriculture*: Chemical fertilizer, hybrid crops.
- *Arms and Armor*: Assault rifle, ballistic body armor, guided missile, military helicopter, military jet, nuclear weapons.
- *Information Technology*: Computer, high-speed press, television.
- *Machinery*: Integrated circuits, laser, transistor.
- *Material Science*: Composite materials, plastic, superconductors, titanium.
- *Medicine and Health*: Artificial heart, organ transplants.
- *Power*: Gas turbine, nuclear power, photovoltaic cell.
- *Transportation*: High-speed train, jet aircraft, spacecraft.

TL8: THE DIGITAL AGE

The Digital Age begins with the commercial success of personal computing – in around 1980, here on Earth. Definitive technologies include:

Dirty Tech

High technology isn’t always manufactured from carbon fiber, packed with microchips, or glistening with chrome and style. Sometimes, a hero is desperate enough to try almost anything. What would MacGyver or the Professor do in a pinch? Can you fashion a battery on a deserted tropical island, or cobble together functional armor from the contents of the high school cafeteria? Maybe you can! This is “dirty tech.”

Throughout this book are *Dirty Tech* boxes that contain hasty solutions for hard-up heroes: homemade explosives, field-expedient firearms, jury-rigged electronics, etc. Been aching to use that skill languishing on your character sheet? Wondering why you bothered with that point in Armoury, Chemistry, Electronics Repair, or Machinist? Check out the *Dirty Tech* entries!

PERSONAL ACCESSORIES

The right accessories are vital when dressing to impress. Some of these items are worn or carried; others are used to straighten up before stepping out. All are marks of the neat, the stylish, and the well-heeled, and are likely to take advantage of *Styling* (p. 10).

Belt (TL5). A belt can be *incredibly* useful. It can retain holsters and sheaths (pp. 153-154, 198), conceal money or a survival kit (pp. 58-59) in its lining (+4 to Holdout), or act as an improvised climbing harness (p. 55). The buckle can hide a dagger, a push knife (p. 197), or a small gun. \$10-\$50, neg. LC4.

Don't Forget Your Towel!

A towel is valuable to any adventurer – interstellar or not. Besides being useful when bathing, it can serve as a blanket, a fire tender, clothing, or a head covering. Attached to a stick, it's a legionnaire's pack – or a sail. It's a privacy screen, a signaling device, or a cushion for an uncomfortable seat. Lashed to a foot and stuffed with newspapers, it's a passable arctic boot. A soldier can use it to keep body armor from chafing or to cushion his helmet, or cut it into strips for bandages or a weapon sling.

At TL5-6, a 2'x4' towel is \$5, 1 lb. At TL7-8, a 2'x4' microfiber towel – quick-drying and highly absorbent – is \$30, 0.25 lb.

Cane (TL5). A walking stick – possibly with ornate carvings, exotic woods, a sculpted or silver handle, etc., all of which would count as styling. It's useful for pointing, poking, and, if necessary, fighting (for *rifle* canes, see p. 98; for *sword* canes, see p. 197). \$5, 2.5 lbs. LC4.

Cigar or Cigarette Case (TL5). Holds half a dozen cigars or 20 cigarettes, a box of matches, a cigar cutter, etc. Ulysses S. Grant was known to smoke 20 or more cigars a day. \$30, 0.1 lb. LC4.

Collapsible Cup (TL5). Usually pewter or steel. \$3, neg. LC4.

Grooming Kit (TL5). A leather Gladstone, vanity, or toilet bag holding comb, hairbrush, razor, toothbrush, soap, aftershave, shoe-polish kit, etc. \$25, 0.5 lb. LC4.

Handbag or Waist Pack (TL5). A woman's purse, a doctor's medical bag, or a day-hiker's fanny pack. Holds up to 10 lbs. \$10, 1 lb. LC4.

Hip Flask (TL5). Holds 1 pint. Holdout -1. \$10, 1 lb. (full). LC4.

Mirror (TL5). Handy when applying makeup – and for peering around corners and signaling. At TL5-6, it *will* break if dropped! At TL7-8, it's made of nearly indestructible plastic. \$5, neg. LC4.

Pocket Watch (TL5). The pocket watch is a TL4 invention, but it isn't

until TL5 that it's accurate to within a minute a day. The second hand becomes common at TL6, by which time watches sometimes include other features, such as calendars and moon-phase indicators. Other innovations at TL6 are the so-called “perpetual,” which is self-winding, and the ultra-reliable “railroad” watch, which is certified as being accurate enough for train engineers. A good-quality pocket watch is \$100, neg. LC4.

Pocketknife (TL5). A small knife with one or more short, folding blades. The largest pocketknife blade *might* count as a small knife (p. B272) at -1 to damage; the shortest aren't useful weapons. See *Multi-Function Knife* (p. 26) for a more utilitarian alternative. \$5, neg. LC4.

Religious Symbol (TL5). A small crucifix, rosary, ankh, etc. \$1, neg. LC4.

Sewing Kit (TL5). Travelers and soldiers have long carried a “housewife” to mend torn fabric. This includes a needle, several colors of thread, a thimble, etc. It counts as basic equipment for sewing. \$1, neg. LC4.

Tobacco Box (TL5). Holds 1-2 oz. of tobacco. The removable lid on 18th-century Hudson's Bay Company models has a built-in burning glass for lighting a smoke in sunny weather! \$20, neg. LC4.

Umbrella (TL5). A folding umbrella keeps the rain off and is useful for prodding suspicious items. \$5, 1 lb. LC4.

Attaché Case (TL6). A briefcase with a simple lock. \$20, 2 lbs. LC4.

Wristwatch (TL6). Initially, the “wristlet” – a small watch worn at the wrist – is a lady's accessory. At mid-TL6, though, soldiers fit pocket watches to leather wrist straps in order to keep their hands free in combat. These “trench watches” feature leather or pierced-metal “shrapnel guards” to protect the crystal face under harsh conditions. A TL6 wristwatch might be self-winding or waterproof, have luminous hands or a date function, or show the time in several time zones, but a given watch seldom has multiple features – pick two, if it matters. The best mechanical watches lose 10 seconds a day through TL6; “synchronizing the watches” is an important part of military operations. At TL7, battery-powered quartz watches appear; digital displays follow. This is the first time a watch can be said to be accurate to within a second, day after day. A good basic watch is \$25; a luxury watch, such as a Rolex, can go as high as \$40,000! Weight is negligible. LC4.

Propane (TL6)

Propane gas cylinders commonly fuel barbecue grills (p. 32) and camp stoves (p. 57). They're also potent field-expedient explosives. To set one off, it's necessary to rupture the cylinder near a flame (like the ever-popular hand flare, p. 58). If *any* non-crushing damage penetrates the cylinder's DR 6, the cylinder will rupture and ignite into a huge fireball. The explosion does burning damage, calculated according to *Demolition* (p. B415) using the cylinder's full weight and assuming a REF of 0.5. Fragmentation from the cylinder alone is 1d cutting.

Small Cylinder (TL6). A disposable tank for camp stoves, lanterns, etc. (4d×2 burn ex). \$5, 1 lb. LC4.

Large Cylinder (TL6). A bulk tank, often found under a barbecue grill or on the exterior of a camper trailer (6d×5 burn ex). Swapping an empty tank for a full one at a retailer costs about \$8; a brand new tank is \$45, 14 lbs. LC4.

Backpack, Large (TL6). A heavy pack with frame. Dubbed a “mountaineering pack” by some, it’s typical of most modern military expedition packs. Holds 100 lbs. Double cost at TL8. \$100, 10 lbs. LC4.

CLIMBING AND MOUNTAINEERING GEAR

Perhaps the most famous climb in modern memory is George Mallory’s third attempt at Mt. Everest in 1924. Mallory and assistant Sandy Irvine were last seen less than 300 yards from the summit – “moving expeditiously” toward the top, as one observer famously said – before they vanished. New Zealander Sir Edmund Hillary and his Sherpa, Tenzing Norgay, succeeded in 1953. Mallory’s remains were discovered in 1999, but the mystery of whether he and Irvine beat Hillary to the top remains.

Climbing Equipment (TL5)

Climbing is a complicated and potentially dangerous undertaking. Ropes fray, bolts pull loose, and high winds can toss a climber off a precipice without warning. Sometimes, though, tackling a crag (or an office tower!) is the only way to get the job done.

The well-equipped climber wears a harness connected to a safety line that is tied off to fasteners. This will stop his fall, should one occur. The results of a fall depend largely on the terrain and the precautions taken. In general, the maximum distance the climber can fall is *twice* the distance between the last fastener and his current position. Safety-conscious climbers tie off every few feet, guaranteeing a short fall with little chance of injury. Braver souls – and those in a hurry – tie off less often.

The easiest way to come down is to rappel. This requires rope, a harness, and a carabiner or descender. Normally, the climber faces the wall (mountain, building, etc.), looks over his shoulder as he slides down the rope, and pushes off

the wall with his feet. A more daring method is to stand directly out from the wall, facing downward, and *run* toward the bottom. SWAT men and soldiers sometimes rappel this way so that they can *shoot* on the way down! This counts as bad footing and a minor distraction, for a net -4 to hit (see p. B548) – but the Sure-Footed perk (p. 250) can partially mitigate the penalty.

Climbing is possible without special gear, but speed is reduced and there’s no limit to how far you can fall. For climbing and rappelling speeds, see *Climbing* (p. B349). For the consequences of a failed climb, see *Falling* (p. B431).

Fasteners (TL5). Also called “protection,” these devices hold a rope fast in case the climber slips. Models differ by function: some are hammered into rock, others are placed in cracks or crevices, and still others are screwed into solid ice. Be they soft iron spikes (\$1, 0.5 lb. apiece), steel pitons (\$5, 2.5 lbs. for 10), or ice screws (\$5, 0.25 lb. apiece), all penetrate the climbing surface. LC4.

Harness (TL5). A climbing and rappelling harness with several snap-links or carabiners. \$75, 3 lbs. LC4.

Ascender (TL6). Uses a cam or a ratchet to ascend a free-hanging rope. Cancels the -2 for climbing *up* a rope (p. B349). \$50, 1 lb. LC4.

Descender (TL6). A D-shaped device for rappelling down a rope. Cancels the -1 for climbing *down* a rope (p. B349), and allows the climber to stop and hang in midair with both hands free. \$50, 0.75 lb. LC4.

Hand Drill (TL7). A one-man rock drill (p. 26). It requires one hand to hold the drill bit and another to hammer. It takes 30 minutes to drill a 3” bolt hole in normal rock. Bolts (\$5, 0.1 lb. apiece) are hammered into the hole, and expand to grip the sides firmly. \$50, 0.5 lb. LC4.

Climbing Kit (TL8). Harness, ascender, descender, an assortment of fasteners, and 100 yards of 3/8” rope. A high-quality *kit* provides a bonus to Climbing skill. \$400, 26 lbs. LC4.

Mini-Rappel Kit (TL8). A complete rappelling system: harness, carabiner, descender, and 33 yards of 1/4” rope. The whole kit fits in a small belt pouch. \$150, 3 lbs. LC4.

Grappling Hook (TL5)

Getting a grapnel to the target requires a DX-3 or Throwing roll. Maximum throwing distance is ST×2 yards. Load limit is 300 lbs. at TL5, doubled at TL7. When a grapnel lands on stone, concrete, or similar materials, it can ring loudly – make an unmodified Hearing roll at 1 yard. A padded grapnel (+1 lb.) gives -2 to Hearing. At TL8, double cost buys a non-sparking, nonmagnetic version. \$20, 2 lbs. LC4.

Ice and Snow Gear (TL5)

If climbing is challenging and dangerous, then tackling a mountain or crossing a glacier can be downright *deadly*. There are over 120 corpses on Mt. Everest, with new ones added each year. Dangers include hypothermia, frostbite, avalanche, collapsing crevasses, and altitude sickness. Well-equipped modern climbers use the equipment below, plus air masks (pp. 72-73) and air tanks (p. 74).

Humping, Tramping, and Yomping

Whatever you call it, marching cross-country under full kit is exhausting. The hiking rules in the *Basic Set* are intentionally simplistic – they assume fine weather, ideal terrain, and a grueling 16-hour day spent doing nothing but putting one foot in front of the other. Hikers often march for less than a full day, which can make it useful to know *hourly* movement rates.

Assume that speed in miles per hour equals Move/2. Adjust the pace as usual for terrain, weather, and roads; see p. B351. Note the FP costs for an hour of hiking given on p. B426 – good FP scores and the Fit advantage (p. B55) give a significant edge here! Extra effort works as usual (see p. B357). Each foraging attempt (p. B427) takes an hour, during which no progress is made.

The Sawed-Off Shotgun

Contrary to popular myth, shortening the barrel(s) of a shotgun *doesn't* improve hit probability or damage at all. The practice serves primarily to render the weapon more compact. Hunting guns have long barrels, making them unwieldy in combat – and if you want to conceal one under a coat or wear it in a holster, removing the stock makes sense, too. Sawed-off double-barrel scatterguns *are* more handy on the seat of a stagecoach (the origin of the term “riding shotgun”) or in a belt holster!

On a double-barreled shotgun, cutting the barrels down from a normal hunting length of 26-32” to a “riot gun” or “trench gun” length of 18-20” removes -1 from the Bulk penalty. Weight drops by 1 lb., too. The barrels can be cut even shorter, to a “whippet” configuration of 8-12”; this removes -2 from Bulk and lowers weight by 2 lbs., but increases muzzle blast (+1 to Hearing and Vision rolls to locate it firing in the dark).

On a single-barreled repeating shotgun with a tube magazine under the barrel, the barrel can only be sawn off to the end of the magazine. Weight drops by 0.75 lb. Bulk is unchanged.

On *any* type of shotgun, sawing off the shoulder stock removes -1 from Bulk and lowers weight by 1 lb. It also reduces Acc by 1. Multiply ST by 1.2 (round to the nearest whole number) and increase Rcl by 1 (but not if Rcl is 1). A folding stock (p. 160) may be more useful.

These effects are cumulative. In some times and places – notably the U.S. from 1934 – such modifications will also lower the gun’s LC from 3 to 2.

Example: At the O.K. Corral in 1881, “Doc” Holliday carried a Belgian Meteor 10G 2.875” double-barrel – similar to the LeFever (pp. 104-105) – in “whippet” configuration. The original gun, with 32” barrels, had Acc 3, Wt. 10.3/0.3, ST 12†, Bulk -6, and Rcl 1/7. With cut-down barrels and stock, it has Acc 2, Wt. 7.3/0.3, ST 14†, Bulk -3, and Rcl 1/8.

From 1985, it comes with a 3” chamber as standard, allowing it to fire 3” shells (Dmg 1d+2 pi, RoF 2×12, Shots 4+1) as well as 2.75” ammo. It’s also made in 20G 2.75” (Wt. 7/0.45, RoF 2×7). As sold off the rack at a sporting goods store, the magazine is plugged to take only two rounds (plus one in the chamber) due to U.S. hunting laws. The plug is easily removed; this requires five minutes and an Armoury (Small Arms) or IQ-based Guns (Shotgun) roll.

The *Model 870P* (1969-), designed for police service, has a shorter barrel and an extended seven-round magazine: Wt. 8.3/0.8, Shots 7+1, Bulk -5, Cost \$400. An optional folding stock, available from 1972, gives Bulk -5*. This weapon is also offered in “cruiser” configuration, with a 14” barrel, *no* stock, and a pistol grip: Acc 2, Wt. 6.7/0.4, Shots 4+1, ST 12†, Bulk -3, Rcl 1/6.

The KAC *Masterkey* (1992-) is a cut-down variant, mounted on a rail (p. 161) under the barrel of an assault rifle or carbine: Acc 2, Wt. 6/0.3, Shots 3+1, Cost \$1,900, LC2. It adds -2 to the host weapon’s Bulk.

Franchi SPAS-12, 12G 2.75” (Italy, 1979-1994)

Designed from the outset for police and military use, but confusingly called the “Sporting Purpose Automatic Shotgun, 12-gauge” the SPAS-12 could function as either a gas-operated semiautomatic or, at the touch of a button, a pump-action shotgun. This allowed it to use any 12-gauge shell that fit its chamber – even if the load wasn’t powerful enough to cycle the action (such as 12G 2.5” ammo and many of the less-than-lethal rounds under *Exotic Shotgun*

Ammo, p. 103). A folding stock came standard, but it was also available with a fixed stock (Bulk -5).

The SPAS-12 is still in service with several European and South American military and police forces.

Armsel Striker, 12G 2.75” (South Africa, 1983-1989)

Intended as a riot and home-defense gun, the Striker fired semi-automatically, feeding from a revolving cylinder with a loading gate. A clockwork spring turned the cylinder. Reloading was slow (three Ready maneuvers to put each round in its chamber, plus two more Ready maneuvers to wind the spring). The weapon had a 12” barrel and a folding stock.

Several U.S. producers manufactured this shotgun under license as the *Street Sweeper* (1986-1994). This version had an 18” barrel to comply with American laws: Wt. 11/1.3, Bulk -5*, Cost \$2,000.

In South Africa, the externally similar Reutech *Protecta* (1989-2004) replaced the Striker in production. This weapon automatically ejected spent cases and did away with the clock spring (skip the two seconds to wind it when reloading),

instead using a pump-action mechanism to turn the cylinder. The *Protecta* was available with a 12” barrel (treat as Striker but with RoF 2×9) and an 18” barrel (treat as Street Sweeper but with RoF 2×9), and as the *Protecta Bulldog*, with a 7.5” barrel and no stock: Acc 2, Wt. 6/1.2, RoF 2×9, Shots 11, ST 10†, Bulk -3, Rcl 1/6, Cost \$1,500, LC2. Due to the Bulldog’s muzzle blast, Hearing and Vision rolls to locate it firing in the dark are at +1. It can be seen in the movie *Desperado*.

Benelli M1 Super 90, 12G 3” (Italy, 1984-2005)

The Super 90 is a recoil-operated semiautomatic shotgun, famous for reliability and fast handling. It features a full stock with a pistol grip. The weapon can fire both normal 2.75” shells (in the table) and longer 3” Magnum loads (Dmg 1d+2 pi, RoF 3×12, Shots 6+1). It’s widely used by police units and antiterrorist teams.

The *M1 Super 90 Entry* (1992-2004) had a short (14”) barrel: Wt. 7.2/0.6, Shots 5+1, Bulk -4, Cost \$1,100.

The *M3 Super 90* (1989-) can be switched to pump-action mode (RoF 2×9) when using low-powered ammunition (see *Exotic Shotgun Ammo*, p. 103): Wt. 8.3, Cost \$1,170. The *M3T Super 90* (1990-) is similar, but has a folding stock: Wt. 8.6, Bulk -5*, Cost \$1,170.

The *M4 Super 90* (1999-) is gas-operated but operationally identical to the externally similar M1: Wt. 8.3/0.7, Shots 6+1, Cost \$1,470. In 2002, it entered service with the U.S. military as the *M1014*. The M1014 has a telescoping stock and integral rails (p. 161) for a sight.

The Kalashnikov

Taking into account all of its many models, the Kalashnikov rifle has probably been made in greater numbers than any other gun. Estimates of worldwide production exceed 90 million weapons. It was principally responsible for the elimination of the African elephant herds; it appears on the national flag of at least one country (Mozambique) and in the insignia of numerous political factions and terrorist groups; and even people with only minimal familiarity with firearms can usually recognize its silhouette at a glance. In modern African trouble spots, a loaded, second-source, fourth-hand AK can be had for as little as \$5. A brand-new gun costs \$90 from the factory . . . if you take a few thousand. In the U.S., semiautomatic versions sell for around \$300.

All of the variants below are similar in operation; there's no familiarity penalty to go from one to another.

Izhmash AK-47, 7.62×39mm (Russia, 1951-1960)

The *Avtomat Kalashnikova obrazets 1947g* ("Kalashnikov's automatic rifle model 1947") was the original rifle version, with a heavy, milled receiver and the distinctive curved magazine. By the mid-1950s, it had been exported in large numbers to Communist forces everywhere, and licensed to numerous states, including Bulgaria, China, East Germany, Finland, Hungary, Poland, and Romania. Nine million were made in Russia alone. Pakistani gunsmiths still sell hand-made copies today.

The AK-47 takes a 0.6-lb. multi-purpose bayonet (Reach 1). It's often loaded with API ammo (Dmg 4d-1(2) pi- inc).

The *AKS-47* (1951-1960) had a folding stock: Wt. 10.6, Bulk -5*.

The *RPK* (1955-1988) had a longer barrel and a bipod: Dmg 6d pi, Acc 5, Range 600/3,900, Wt. 13/2.5, Shots 40+1(3), ST 9B†, Cost \$900/\$32. There was also a 75-round drum (-1 Bulk, \$264, 4.6 lbs.). Both magazines work in the AK-47.

The modernized *AKM* (1960-1985) had a cheaper and lighter stamped receiver: Wt. 8.7. The AKM became even more widespread than the AK-47, and is the variant most often encountered. Many continue to call it the "AK-47." It has been made in Bulgaria, East Germany, Egypt,

India, Iraq, North Korea, Poland, Romania, and Yugoslavia.

The *AKMS* (1960-1985) had a folding stock: Wt. 9.4, Bulk -5*.

The *AK-103* (1993-) is the latest model, with a plastic folding stock and plastic magazine: Wt. 9.1/1.6, Bulk -5*.

Izhmash AK-74, 5.45×39mm (Russia, 1974-1990)

This was basically an improved AKM chambered for a smaller-caliber cartridge. The most readily apparent differences were a prominent muzzle brake and a new synthetic-covered magazine (originally orange, later brown or black). The muzzle brake was effective but increased muzzle blast (+2 to any Hearing or Vision roll to locate an AK-74 firing in the dark). Some 6.5 million were made, and it was licensed to Bulgaria, East Germany, North Korea, Poland, and Romania.

The AK-74 takes a 0.6-lb. multi-purpose bayonet (Reach 1). A 60-round high-density magazine (\$40, 2.7 lbs.) became available in the 1990s.

The *AKS-74* (1975-1990) had a folding stock: Wt. 8.8, Bulk -5*.

The *AKS-74U* (1979-1992) was a carbine for service with vehicle crews and special-ops forces (terrorist Osama bin Laden seems to favor it, too). It had a folding stock and a much shorter barrel: Dmg 4d-1 pi, Acc 3, Range 360/2,500, Wt. 6.7, RoF 13, ST 8†, Bulk -4*. It could be fitted with a 1.4-lb. wiper suppressor (-1 to Hearing, -1 Bulk, lasts 90 shots), which required the use of subsonic ammunition (p. 165): Dmg 2d-1 pi, Range 250/1,600, and the total Hearing penalty is -2.

The modernized *AK-74M* (1989-) is currently in service with Russian front-line units. It has a plastic folding stock: Wt. 8.3, Bulk -5*. It can mount a 2-lb. 4× night sight (+2 Acc and Night Vision 5, XS/10 hrs).

The *RPK-74* (1976-1990) was a squad automatic version with a longer barrel and a bipod: Dmg 5d+1 pi, Acc 5, Range 650/4,200, Wt. 12.2/1.8, Shots 45+1(3), ST 9B†, Cost \$900/\$36. There was also a 90-round drum (-1 Bulk, \$262, 4.6 lbs.). Both magazines work in the AK-74.

The *AK-101* (1993-) is chambered for the 5.56×45mm NATO round: Dmg 4d+2 pi, Wt. 8.3/1.3, Bulk -5*.



The H&K MP5

In 1966, West German police and border guards adopted the *Maschinenpistole 5* – the fifth submachine gun to enter official service with German forces after WWII. It was the main weapon of the famous GSG9 antiterrorist unit from its inception. The MP5 first caught the public eye as the gun used by the British SAS during the Iranian embassy siege of 1980. It soon became the firearm of choice among special operators everywhere. Today, virtually all Western (and quite a few Eastern) special-ops, counterterrorist, and SWAT teams employ the MP5.



Several factors explain the MP5's popularity despite its high price tag. It's reliable and extremely versatile. Its closed-bolt action makes it probably the most accurate weapon of its type. Dozens of sub-variants exist, and there are few firearms with so many accessories offered. Finally, a certain air of professionalism surrounds it – if GSG9 and the SAS use it, it *must* be good. The MP5 has been license-made in Greece, Iran, Mexico, Norway, Pakistan, Saudi Arabia, Turkey, and the U.K.

H&K MP5A3, 9×19mm Parabellum (Germany, 1971-)

The original *MP5* (1966-1971) had a fixed plastic stock and a straight magazine (Wt. 6, Bulk -4). The *MP5A1* (1966-1971) had *no* stock (Acc 3, Wt. 5.3, Bulk -3).

The *MP5A2* (1971-) is slightly improved over the *MP5* (but still Wt. 6, Bulk -4). It and the *MP5A3* (in table), which has a retractable stock, are the main production models today.

The *MP5A4* (1982-) has a fixed stock like the *MP5A2*, but offers a three-round limited burst option in addition to semi- and full-automatic (RoF 9/13). The *MP5A5* (1982-) is like the *MP5A4*, but with a retractable stock.

The *MP5N* (1985-) was originally ordered by the U.S. Navy SEALs. It resembles the *MP5A3* but features a new ambidextrous grip configuration, and muzzle lugs for the quick attachment of a 1.2-lb. baffle suppressor (-2 to Hearing, -1 Bulk). A 100-round twin drum (-1 Bulk, \$313, 4.8 lbs.) became available in 2001.

The *MP5* is also available in other calibers. In 1994, the FBI adopted the *MP5/10A3* (1992-1999), in 10×25mm Auto: Dmg 3d+2 pi+, Range 280/3,100, Wt. 7.8/1.5, RoF 6/13, ST 9†, Rcl 3. The *MP5/40A3* (1992-1999), in .40 S&W, was somewhat more popular: Dmg 3d-1 pi+, Range 190/2,000, Wt. 7.6/1.3, RoF 6/13. Both normally fired single shots, two-round limited bursts, and full-automatic.

H&K MP5SD3, 9×19mm Parabellum (Germany, 1974-)

The *MP5 Schalldämpfer* has an integral sound suppressor (-3 to Hearing) that lasts for some 10,000 shots. The *MP5SD1* lacks a stock (Acc 3, Wt. 7.3, Bulk -3), the *MP5SD2* has a fixed stock (Wt. 8, Bulk -4), and the *MP5SD3* (in table) has a retractable stock. The *MP5SD4*, *MP5SD5*, and *MP5SD6* (all available from 1982) add a three-round limited-burst option (RoF 9/13) but are otherwise identical to the *MP5SD1*, *MP5SD2* and *MP5SD3*, respectively.

H&K MP5K, 9×19mm Parabellum (Germany, 1976-)

The *MP5 Kurz* is a shortened machine-pistol variant designed for concealed carry under a coat. It lacks a stock but features a foregrip for better two-handed control. If fired *one-handed*: ST 11, Rcl 3. A 15-round magazine was designed to accompany it (\$27, 0.7 lb.), but the standard 30-rounder is more common.

The *MP5KA1* (1976-) has only rudimentary sights (Acc 1, Bulk -2, +1 to Fast-Draw). The *MP5KA4* and *MP5KA5* (1982-) offer three-round limited bursts (RoF 9/13). The *MP5K-PDW* (1991-) is similar to the *MP5K*, but has the *MP5N* grip and a folding stock (Acc 3, Wt. 6.2, Bulk -4*), and accepts the *MP5N*'s suppressor.

A special attaché case (p. 31) is available that can mount any *MP5K* model *inside* (\$3,000, 14.9 lbs. with gun and spare magazine). A trigger in the carrying handle lets the carrier fire the weapon while it's still in the case. This gives -4 to Guns skill – and unless the shooter employs the proper technique, with the case braced against his midsection, Rcl rises to 3.

Using Artillery

There are three ways to use artillery:

Direct Fire: Shooting at targets visible to the gunner at ranges up to around 3,000 yards. This is mainly done with TL5 artillery, and with TL6-8 tank, antitank, and anti-aircraft guns. The gunner uses his Gunner skill (p. B198) for the attack roll, and the attack obeys *Ranged Attacks* (pp. B372-374) in all respects.

Observed Indirect Fire: Firing at targets that aren't visible to the gunner, who uses the Artillery skill (p. B178), as directed by an observer, who has the Forward Observer skill (p. B196). This is typical of TL6-8 artillery on the offense. The *Forward Observer* rules below *replace* the standard ranged-combat rules.

Predicted Indirect Fire: Attacking an area of ground, water, or air that the gunner can't see but that's identified on a map. This uses the Artillery skill and the rules under *Attacking an Area* (p. B414). This is often done by TL6-8 artillery on the defense or in preplanned surprise attacks (where the fire has been corrected *before* the battle begins), and by anti-aircraft artillery. The gunner already knows what area he'll hit and suffers no -10 for firing blind, but he can't react to the target moving out of the "beaten zone."

Weapons other than cannon – notably mortars (pp. 145-147) and machine guns (pp. 129-137) – *can* use indirect fire. Use these rules for all weapon types.

Forward Observer

Indirect fire is essentially "blind" – the gunner can't see his target or the effects of his fire. He fires at -10 to skill and doesn't benefit from his gun's Acc. A forward observer (FO) acts as the gunner's eyes, directing the fire from far away. To do so, though, he *must* be able to talk to the gunner! He can shout over short distances, but he'll generally require a field telephone or a radio. The FO also has to know his location and that of the gun, which requires a Navigation roll.

Modifiers: +1 for a compass or +3 for a GPS system; -10 without a map.

Locating the *target* then requires a Forward Observer roll.

Modifiers: All Vision modifiers (p. B358) except ordinary range modifiers; a special range penalty of -3 per 500 yards or fraction thereof between FO and target, dividing range by the magnification of any vision aid *and* by two for a rangefinder (up to *its* maximum range) before assessing the penalty; the targeting program bonus for any fire-control computer (including a TL8 handheld model).

Locating the target and reporting its coordinates takes 2d+5 seconds. The gunner may then fire his first shot at -10, modified by the margin of success or failure

on the Forward Observer roll. If the FO can observe the fall of the shot with respect to the target, he can provide the gunner with corrections on later shots; each correction requires another Forward Observer roll and 2d+5 seconds. Add the margin of the second roll to that of the first; failure *can* erase earlier bonuses. The FO may attempt as many rolls as necessary to whittle the -10 attack penalty down to 0, but can't give the gunner a bonus.

Critical success on any Forward Observer roll reduces the penalty to 0 immediately. Critical failure indicates a "friendly fire" incident of the GM's choosing. The FO might even bring rounds down on his *own* position!

Example: Corporal Calvin Knox is a FO with the Arkansas National Guard. He's looking at "The Thing" in Martha Johnson's kitchen garden. He has a grid map of the area and calls in corrections to his battery over a field telephone. His position is 1,500 yards from the target and he has 6x binoculars. Since $1,500/6 = 250$, effective distance is under 500 yards, for -3. His Forward Observer skill is 14, so he rolls against 11. He gets a 10, succeeding by 1. The first shot is at -9 instead of -10.

A DX-based Forward Observer roll can replace any Artillery or Gunner roll to use a laser designator to guide a "smart" shell or bomb.

Time of Flight

Long-range artillery fire often takes a while to arrive at the target. Flight time is subject to many variables: projectile shape and weight, propellant charge, propellant temperature and pressure, barrel length and wear, air temperature and pressure, etc. Cannon fire high- and low-angle "missions"; this also impacts time of flight.

High-angle missions use a high trajectory in order to clear intervening obstacles. They're typical of mortars and heavy artillery firing at ranges over 3,000 yards. Low-angle missions follow a shallower trajectory, and arrive sooner and with fewer variables. Low-angle fire is typical of direct-firing tank guns, autocannon, and artillery at ranges up to 3,000 yards.

In reality, time-of-flight calculations are complicated and apply even to long-range small-arms fire. For game purposes, *ignore* the issue for small arms. For heavy weapons, it's reasonable – if imprecise – to use a flight time of one second per 500 yards for low-angle missions or one second per 250 yards for high-angle missions. Thus, it can take a *long* time for a round to reach its target – which might not even be there any more!

Example: The Arkansas National Guard executes a low-angle observed-fire mission using a battery of M1897 guns (pp. 138, 140). "The Thing" is 6,900 yards away, and $6,900/500 = 13.8$, so it takes 14 long seconds for the shells to arrive. That's too late to save Corporal Knox from The Thing's tentacles . . .

Baton (TL7)

Baton rounds use reduced loads to launch large-caliber projectiles made of solid wood, plastic, or rubber at low speeds (in technical terms, with muzzle velocities around 300 fps). They're designed to stun rioters, but a close-range hit can still kill. Baton ammo was introduced for grenade launchers in 1967, and is also available for shotguns.

Minimum caliber is 10mm. For a shotgun, start with the damage and range of a rifled slug (p. 166). Add an armor divisor of (0.5). Divide damage by five. Damage is crushing, and does double knockback (pp. B104, B378) if caliber is over 35mm. Apply -1 to Acc. Divide Range by five. Double CPS. LC3.

Example: A 12-gauge 2.75" shotgun slug does 5d pi++. Firing baton, it would do 1d(0.5) cr.

Beanbag (TL7)

Beanbag rounds launch a fabric sack filled with metal or plastic pellets (the "beans"). This is folded up in the cartridge but expands after leaving the barrel, spreading the impact over a larger area to prevent serious damage. Such ammo became available in 1970 but wasn't popular until the 1990s. While typically fired from shotguns or grenade launchers, it's also available in some revolver chamberings.

Minimum caliber is 9mm. For a shotgun, start with the damage and range of a rifled slug (p. 166). Add an armor divisor of (0.2). Divide damage by five. Damage is crushing, and does double knockback (pp. B104, B378) if caliber is 15mm or larger. Reduce Acc to 0. Divide Range by eight. Triple CPS. LC3.

Example: A .38 Special revolver does 2d pi. Firing beanbag, it would do 1d-4(0.2) cr. A 12-gauge 2.75" shotgun with slug damage 5d pi++ would do 1d(0.2) cr dkb.

Semi-Armor-Piercing Fin-Stabilized Discarding-Sabot (SAPFSDS) (TL7)

With its long, finned projectile, SAPFSDS is similar to APFSDS (p. 167) but intended for small arms only. The arrow-shaped dart – often called a *flechette* (from the French *flechette*, "little arrow") – is of small diameter (2mm or less) and made of steel or titanium. It has good penetration and range, but is expensive to make and of dubious stopping power. Such ammo has been used in experiments with assault rifles since the 1960s (see *Flechette Rifle*, p. 116), but has yet to enter service.

Maximum caliber is 10mm. Add an armor divisor of (2). Reduce damage type to pi-. Multiply Range by 1.5. Double CPS. LC2.

Exotic Bullets

The proverbial silver bullet is legend, but it's possible to make bullets out of almost any metal or other reasonably hard substance (stone, hardwood, etc.). *Possible* doesn't guarantee *optimal*, though! Many materials are expensive, difficult to work, and/or poorly suited for use in some firearms. In general, the more complex the weapon, the more complicated the exotic ammunition needs to be in order to withstand firing stresses and ensure the gun's reliable operation. Thus, it's prudent to reserve such projectiles for targets that are either immune to normal bullets or especially vulnerable to specific materials (see *Vulnerability*, p. B161).

For an example of the potential difficulties, consider silver. It has a high melting point (1,763°F); you need a blowtorch or a *really* hot flame to melt down ingots or jewelry, and a specially made mold that can withstand the molten metal (for more on making bullets for muskets and shotguns, see *Home-Made Powder and Shot*, p. 163). Silver is also soft, and will foul the barrel – and possibly the action – of rifled firearms, giving -1 or worse to Acc and Malf. (GM's discretion). Jacketed hollow-points (see *Hollow-Point*, pp. 166-167) avoid this problem: the jacket protects the barrel and the projectile

mushrooms on impact, exposing the target to the silver. Manufacturing jacketed silver bullets gives -3 to Armoury (Small Arms) rolls, however (see *Handloading and Reloading*, p. 174).

Bullets made from medium- to high-density metals, such as silver or gold, do normal damage. For lighter materials, such as stone or jacketed wood, halve damage and range. For very light projectiles, such as pure hardwood or plastic, multiply damage and range by 0.1.

Example: After his first encounter with the supernatural, Special Agent Lafayette decides he needs something special for his Glock 23 (p. 101): silver hollow-points filled with garlic. Damage is the same as for a normal hollow-point – but depending on how vulnerable vampires actually are to silver and/or garlic, penetrating hits may get a special wounding modifier or do further follow-up damage. To handload such rounds, he must make an Armoury (Small Arms) roll at -3 for each batch. The *Ammunition Tables* (p. 176) list a CPS of \$0.3 for .40 S&W. Hollow-points cost the same; making them silver multiplies CPS by 50 (see *Silver Weapons*, p. B275), for \$15. The poison option increases CPS by the cost of a dose of poison, but the cost of garlic is negligible. Total CPS is \$15.



HAND GRENADES

Hand grenades first appear at TL4: hollow cannonballs – or containers made of pottery or heavy glass – filled with about a quarter-pound of gunpowder and fitted with a length of burning fuse (p. 187). They're a favorite naval weapon at TL4-5, as they have a devastating effect on the crowded decks of a warship . . . and a grenade in the powder magazine can sink a vessel that might withstand *hours* of pounding by cannon. Grenades of this type gradually disappear as firearms and artillery improve, although specialists such as combat engineers continue to use them until TL6, especially for sieges.

Modern hand grenades result from the perfection of time and impact fuses at mid-TL6. Historically, WWI played a decisive role in reestablishing grenades as important infantry weapons – almost all militaries (re-)introduced them during and after the Great War. This era saw the development of the most common subtypes:

- *Concussion* grenades have little or no fragmentation, relying on the blast of their explosive filler. Their small casualty radius allows use while advancing (that is, on the offensive, which is why these are also called *offensive* grenades). There may still be incidental fragmentation (p. B415) if a concussion grenade explodes on a hard surface (such as asphalt), in a pile of scrap metal, etc.

- *Fragmentation* grenades propel fragments farther than they can be thrown, so the thrower needs cover (such as a defensive position, which is why these are also called *defensive* grenades). These are the most common hand grenades.

- *Incendiary* grenades contain phosphorus (pp. 172, 188), thermite (p. 188), or a similar burning agent. While primarily used to create smoke, they're sometimes employed against personnel or to destroy artillery, maps, radios, vehicles, etc., at immediate risk of falling into enemy hands.

- *Smoke* grenades produce smoke for concealment or signaling. The smoke isn't harmful to humans and animals, although its aroma is a little unpleasant.

Various *nonlethal* grenades for police operations (e.g., riot control) appear at TL7-8.

Dirty Tech: Hand-Grenade Booby Trap

Booby traps involving hand grenades are common in guerrilla warfare. A classic example – widely encountered during the Vietnam War – is a fragmentation hand grenade placed inside a can fixed to a stake or a tree. The can is tilted downward so that a little pressure from the tripwire (p. 203) causes the grenade to slide out of the can, releasing the arming lever. The grenade explodes seconds later. Setting such a trap takes a couple of minutes and requires a roll against Soldier or Traps+4.

At TL4-5, grenadiers normally prepare their own grenades just before going into action. At TL6-8, hand grenades require little preparation but come unprimed. Grenade and detonator are shipped separately, and only combined before combat (10 seconds per grenade).

Except as noted below, *all* hand grenades are activated by pulling out the safety pin with its attached ring and letting the arming handle fly off (a Ready maneuver). The fuse doesn't begin to act until the handle is released, but the handle need move only a fraction of an inch. The pin can be reinserted.

Veteran fighters often “cook off” a hand grenade by letting the arming handle fly off, taking two Wait maneuvers, and *then* throwing the weapon. With a four-second fuse, this leaves no time for a defender to pick it up and throw it back (see p. B410). If a critical failure on Throwing causes the attacker to drop a cooked-off grenade, *he* may have no time to pick it up!

Diving on a live grenade is often portrayed in film and fiction as the ultimate sacrifice by a soldier for his comrades (see pp. B377, 415).

Grenade à Main (France, 1670-1850)

The *Grenade à Main* (simply “hand grenade”) was the main weapon of French grenadiers for two centuries: a 4-pounder iron ball, about 3.2” across, with a removable screw-plug for loading the powder. The plug held the fuse – a short length of match (p. 187). Other militaries fielded similar designs. Use of these unreliable and somewhat fumble-prone grenades declined during the 18th century but never quite broke off until the late 19th century.

The grenadier had to light the fuse prior to throwing the grenade (a Ready maneuver). This was *impossible* in rain, etc. A typical fuse burned for around five seconds.

The *Grenade à Main Mle 1882* (1882-1914) was the same basic grenade given a mechanical time fuse for improved safety and reliability (Malf. 16): Wt. 2.6, Fuse 5. It was armed by pulling a ring (a Ready maneuver). This weapon was still in use during WWI.

Stielhandgranate (Germany, 1915-1928)

During WWI, the Germans adopted a style of concussion grenade that remained standard until the end of WWII: the *Stielhandgranate* (“stick hand grenade”). Americans nicknamed it the “Potato Masher” after its appearance. German military influence manifested itself in similar or identical patterns in Bolivia, China, Finland, and elsewhere.

The long wooden handle gave good leverage for a throw, compensating for the extra weight (+2 ST to figure distance; see p. B355). It also made the grenade awkward to carry and hide; German soldiers stuck it in their belt or even their boot, and improvised carriers from sandbags. To activate the grenade before throwing, the user twisted the end cap off the handle and pulled sharply on the string inside (two Ready maneuvers).

Several models existed during WWI and the interwar years. During WWII, the standard type was the *StiHGz24* (1928-1945), filled with TNT rather than black powder: Dmg 7d cr ex, Wt. 1.4. From 1943, one in three had a detachable 0.3-lb. fragmentation sleeve: Dmg 5d [2d] cr ex, Wt. 1.7. A 33-lb. case held 15.

Dirty Tech: Homemade Surveillance Gear

Regardless of its Legality Class, surveillance gear is difficult to acquire “no strings attached.” Even in low-Control Rating areas, simply buying a bug or a wiretap from a novelty “spy shop” can attract unwanted attention. A credit card leaves a paper trail – and while you can always pay cash, anyone who sells security cameras will almost certainly have video of *you* making the purchase!

Luckily, such equipment isn't difficult to build. The parts are common enough that purchasing them attracts little attention, and you might even be able to scavenge what you need from electronics purchased at a garage sale or dug out of the trash – a great use for Scrounging! Most audio and video bugs require about half a day's work, \$10 to \$20 in materials, and an Electronics Repair (Surveillance) roll. Tiny projects are hard to pull off with a soldering gun, though. For any device smaller than a matchbox (SM -9), apply SM+9 as a penalty to skill; e.g., a 1/2" audio bug (SM -13) gives -4.

Subminiature Video Bug (TL8). The smallest video bugs are the size of a multivitamin capsule (SM -13); in fact, they're used to diagnose intestinal problems when an endoscope would be too invasive. Transmitter range is less than 500 yards. The special internal battery lasts for 48 hours. \$1,500, neg. LC3.

Video Bug (TL8). An over-the-counter “spy shop” video bug is still a capable surveillance device. About the size of matchbox (SM -9), it can transmit a high-quality video signal up to two miles away. \$250, neg., T/week. LC4.

Tracking Devices (TL7)

Tracking devices range from the benign – like the personal rescue beacon (p. 59) – to the more sinister “tracking bugs” used for surveillance. All communicate via radio and are subject to that medium's inherent limitations (see *Radio*, pp. 37-40).

Radio Beacon (TL7)

This is the classic Hollywood “tracking beacon” – a radio transmitter designed to be attached to a vehicle, hidden in a briefcase, etc. Its signal is detected using a radio direction finder (pp. 38-39). Anyone scanning for bugs has +4 to find this “noisy” device. Each tracker has a special coded signal that allows those who planted it to recognize it easily. Range is 25 miles.

Radio Beacon (TL7). \$300, 0.5 lb., S/month. LC4.

Radio Beacon (TL8). \$300, 0.25 lb., XS/month. LC4.

Cell Phone (TL8)

Cell phones (p. 39) broadcast a constant identification signal while turned on, even when not making calls. This is

how the cellular network “knows” where to route incoming calls. Those with access to the network – e.g., government agents with a subpoena – can fix a cell phone's location to within half a dozen blocks in an urban area or a few miles in a rural setting.

Cellular Locator Beacons (TL8)

A cellular locator beacon is a GPS receiver (p. 53) that communicates its current position – accurate to within a few feet – over a cellular telephone network. A service (\$50/month) is available that lets anyone with an Internet connection and the correct password track the beacon in real time. The locator may be set to transmit a record of its position history at regular intervals and then switch off its transmitter. While this prevents tracking in real time, it saves power and reduces the chance of detection. Multiply battery life by 10 for hourly updates, 100 for daily updates.

Cellular Beacon (TL8). This device can run off its onboard battery pack or be connected to a vehicle's power supply for indefinite operation. It must be in reach of a cellular network to relay its position, and is susceptible to jamming. *Triple* cost for a version that uses satellite phone (pp. 39-40) technology, which can be tracked anywhere in the world. \$1,500, 1 lb., S/week. LC4.

Personal Cellular Beacon (TL8). This is a smaller unit built into a wristwatch, bracelet, shackle, etc. \$400, 0.1 lb., T/month. LC4.

ENCRYPTION

Encryption is a body of techniques for concealing a message's meaning from anyone but the intended recipients. It's crucial at TL6-8 owing to the prevalence of easily intercepted telecomm technologies. The wars of the first half of the 20th century drove this point home, with encryption (and its defeat) influencing several prominent successes and failures.

Encryption takes two basic forms:

- A *code* is a series of prearranged secret meanings; e.g., “One of by land, two if by sea.”

- A *cipher* is a method of transforming data – whether via a simple substitution (e.g., Morse code) or a mathematical algorithm. The strongest ciphers disguise the signal as seemingly random gibberish. A recipient who has the key can “decrypt” the message and extract its information.

Code-Breaking (TL5)

In 1929, Henry L. Stimson – U.S. Secretary of State at the time – quipped, “Gentlemen do not read each other's mail,” and closed the U.S. State Department's cryptographic unit (the Black Chamber). Meanwhile, unbeknownst to Stimson, the U.S. Navy and Army were intercepting Japanese traffic. Overseas, Britain and Poland were working like mad to defeat the Enigma machine (see *Cipher Machine*, p. 211).

To break a simple, ad-libbed code or cipher, *win* a Quick Contest of IQ-5 with its creator. Either party may substitute the Cryptography skill (p. B186). Beating the systems under *Encryption Devices* (p. 211) and *Encryption Standards* (p. 211) *requires* Cryptography, however.

Backyard Docs and Body Shops

Adventurers in trouble might not have the option of seeking legitimate medical help – often because they're short on cash or wish to avoid trouble with the authorities. Enter the "backyard doc." This might be an unlicensed dentist operating out of a filthy tenement and preying on the poor . . . or a hotshot surgeon treating celebrities at a private mountain resort. Costs can run from cut-rate to exorbitant; quality, from first-class to quackery.

The best backyard doc is an able former professional with a troubled background. Perhaps he lost his license after a messy court battle, or was set up by a vindictive employee. Maybe he's an immigrant whose foreign credentials aren't officially recognized. He probably has a white-collar day job – but on the side he runs a tidy little medical practice, doing favors for licensed doctors in exchange for equipment and supplies, and providing services to those in the know at 10% of the going rate. He's likely to have clean facilities and modern tools, but a limited supply of drugs. He might even have a key to a licensed doctor friend's clinic in case some serious need crops up. It's estimated that *thousands* of unlicensed doctors operate such businesses in the U.S., avoiding taxes and regulation, and gaining clients by word of mouth.

There are seedier options, of course. A washed-out alcoholic with shaky hands may be the only doctor who will treat a gunshot wound at 3 a.m., no questions asked. The risks are high: dirty, obsolete tools, antibiotics (if any) well past their expiration date, and a slug of whiskey as "anesthesia." His sutures might look like the work of Dr. Frankenstein. He can, however, save a life and keep his mouth shut.

Surgical Kit (TL6). Instruments include precision locking forceps, small and specialized scalpels, and other all-metal tools that are easy to clean and sterilize. The reusable needles and scalpels require occasional sharpening. The included suturing material is *sterilized*. \$300, 15 lbs. LC4.

Surgical Kit (TL7). These light, ergonomically designed instruments allow lengthy procedures that don't fatigue the surgeon, and include micro-tools for dealing with tiny vascular problems. Many components are disposable; needles and scalpels, sharpened to a keen edge at the factory, are discarded after a single operation. Everything is hypoallergenic and easily sterilized. +1 to skill. \$300, 15 lbs. LC4.

Surgical Kit (TL8). As TL7, but adds micromanipulators for handling nerves, plus scalpels and scissors with micron-thin cutting edges. Rechargeable batteries power a sizable portion of the tools, allowing quicker, less labor-intensive, and more finely tuned work. Many items are constructed from titanium and exotic alloys. Interestingly, catgut is *still* used for suturing. +2 to skill. \$300, 15 lbs. LC4.

Surgical Theaters (TL5)

Sometimes a surgeon needs more than just a bone saw and a scalpel. Generally, treating a major wound or performing reconstructive surgery (e.g., repairing a crippled limb) demands a surgical theater. Such equipment requires external power at TL6-8.

Operating Theater (TL5)

This is an entire room full of specialized gear – including the best anesthesia equipment (see *Anesthesia*, pp. 224-225) for the TL. It gives +2 (quality) to Surgery. \$200,000, 1,000 lbs. LC3.

Portable Surgery (TL5)

This complete surgical setup typically travels in a utility vehicle, a trailer, or a large hospital cart, and includes portable anesthesia equipment appropriate to the TL. The military often uses it as a mobile field surgery. Packing or unpacking it takes *at least* five minutes; half an hour is more typical. It gives +1 (quality) to Surgery and +2 (quality) to First Aid. \$50,000, 500 lbs. LC3.

Specialized Operating Theater (TL6)

As *Operating Theater* (above), but dedicated to a single Surgery specialty; e.g., neurosurgery or heart surgery. It gives +TL/2 (quality) to *that* specialty but counts as basic equipment for other purposes. \$1,000,000, 1,000 lbs. LC3.

Suturing Kit (TL6)

Commonly found in paramedic bags and crash kits, and sometimes sold as a "surgical kit" by military surplus stores, this gear counts as basic equipment for *simple* applications of Surgery; e.g., stitching non-major wounds. It's improvised equipment – giving -5 (quality) – for all other purposes, including treating major wounds. The GM decides which tasks are "simple." \$20, 1 lb. LC4.

Surgical Laser (TL8)

This multi-purpose tool can cut flesh, debride a burn, or administer cosmetic surgery (p. 225), and counts as fine-quality Surgery equipment. It inflicts at most 1d-3 tight-beam burning damage. \$100,000, 200 lbs., external power. LC3.

ANESTHESIA

After 1850, anesthesia for surgery was commonly available in Europe and the U.S. – including at most American Civil War field hospitals, contrary to popular myth. Inhalant anesthetics are volatile, and require storage in airtight containers until shortly before use. It takes about a minute to put a cooperative patient under, or three to five minutes for an uncooperative one. If the roll to administer anesthetic fails, Surgery skill is at -2, just as for no anesthetic (see *Surgery*, p. B424).

These rules cover *general* anesthesia. Local anesthetics for minor surgery are available after 1885, and are included in medical kits that need them.

Chloroform or Ether Mask (TL5)

Make a Physician roll to use this device to administer chloroform or ether. Each dose costs \$5. \$50, 2 lbs. (plus anesthetic). LC3.

Quick-Swap†

You've perfected the art of juggling a one-handed weapon between hands. Once per turn, *on your turn*, you can switch hands as a free action. The receiving hand must be empty. However, Old West shootists often *draw* two handguns but only *fire* the one in their dominant hand, and then swap pistols once that gun is empty – a feat called “crossing the border.” Quick-Swap lets a gunman do this in one second instead of two. You must specialize by weapon skill: Quick-Swap (Pistol), Quick-Swap (Throwing), etc.

Shtick†

As noted under *Shtick* (p. B101), a “cool move” that provides no combat bonuses is a valid perk if it might occasionally be useful. An example is twirling a handgun around your trigger finger, spinning a pistol presented butt-first (usually to surrender it) to shooting position *instantly*. Roll against Guns or DX to perform the Shtick without dropping the gun, firing accidentally, etc.

Sure-Footed†

You've studied low, stable stances for fighting on shaky ground. This lets you ignore the -2 to attack for a specific type of bad footing. You must specialize. Sure-Footed (Slippery) covers mud, oil, and blood. Sure-Footed (Uneven) covers rocks, piles of corpses, etc. Sure-Footed (Naval Training) covers fighting on a rocking ship or boat. The GM may allow other versions.

Weapon Bond

You own a weapon that's uniquely suited to you. Its quality might be no better than normal, but when *you* use it, you're at +1 to effective skill and all techniques based on that skill. This isn't a mystical attunement, nor does it require a specially modified weapon; it's a physical matter of balance, fit to your hand, and intimate familiarity.

You can have a bond to a weapon of any type or quality – even modern, mass-produced firearms display individual quirks and qualities to which an owner may bond. The bond changes neither the weapon nor its price. If the weapon is lost or destroyed, the bond doesn't transfer to a new weapon (not even one from the exact same production batch!), although you can buy a new Weapon Bond in play. To avoid such fates, buy the weapon as Signature Gear (p. B85).

Fictional examples include Indiana Jones' bullwhip and Hellboy's Samaritan revolver. Lara Croft's twin H&K USP pistols qualify, too – but two weapons require *two* Weapon Bonds! This perk needn't be cinematic; consider Texas Ranger Frank Hamer's Colt M1873, “Old Lucky.”

GUN SKILLS

In games with lots of gunplay, two skills merit further interpretation.

Combat Sport†

see p. B184

Since paintball, Airsoft, and MILES simulation participants face no real danger, they use Guns Sport/TL, not Guns. Shooting their “weapons” trains many habits and reflexes applicable to firearms, though; Guns and Guns Sport default either way at -3. Guns Sport *requires* specialization. Specialties match those for Guns (p. B199).

Guns/TL†

see p. B198

Along with operating and reloading firearms under combat stress, Guns has a host of *IQ*-based applications. These include *Cleaning and Maintenance* (p. 80), *Immediate Action* (p. 81), and *Precision Aiming* (p. 84); zeroing weapon-and-sight combinations; such trivial gunsmithing tasks as mounting and removing scopes and other accessories; and matching guns and ammunition to particular combat situations. Make a Per-based Guns roll to identify a familiar weapon by its shape or distinctive sounds.

NEW SKILL

Optionally, the GM may permit marksmen to learn a special cinematic skill.

Zen Marksmanship†

IQ/Very Hard

Defaults: None.

Prerequisites: Gunslinger or Trained by a Master, Guns at 18+, and Meditation.

This skill functions identically to Zen Archery (p. B228), but is for point-target small arms (such as pistols or rifles) instead of bows. You must specialize. Use the same specialties as Guns (p. B199); the GM is free to forbid specialties that seem inappropriate, like Grenade Launcher and Light Machine Gun. At high TLs, Beam Weapons (p. B179) specialties might also exist.

GUN TECHNIQUES

A *technique* is any feat of skill that one can improve independently of the governing skill. The following techniques obey all of the rules under *Techniques* (pp. B229-230). Being intended for trained gunmen, they depend on Gunner, Guns, and gun-related Armoury and Fast-Draw specialties. Those with “Gunner (Any)” or “Guns (Any)” defaults require specialization by skill. Penalties for unfamiliar firearms affect these techniques exactly as they affect the underlying skills; see *Familiarity* (p. B169).

An asterisk (*) indicates a *cinematic* technique that requires Gunslinger (p. B58) or Trained by a Master (p. B93).



Close-Quarters Battle

Average

Default: Guns (Any).

Prerequisite: Guns (Any); cannot exceed prerequisite skill+4.

You've practiced shooting on the run at nearby targets – a situation that SWAT officers and special-ops soldiers call “close-quarters battle” (CQB). Whenever you take a Move and Attack maneuver (p. B365) to fire at a target whose distance from you in yards doesn't exceed your Per, use Close-Quarters Battle *instead of* Guns. Apply the penalty for shooting on the move: -2 or the firearm's Bulk, whichever is worse. If the result exceeds your Guns skill, reduce it to that level. Then apply any other modifiers for the shot.

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