Archaic Firearms

TL 2-3 Weapons
for Cepheus Engine

ZOZER

CEPHEUS ENGINE — COMPATIBLE —

Archaic Firearms is a hardware add-on for the Cepheus Engine roleplaying game.

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INTRODUCTION

Archaic Firearms provides you with a number of black powder firearms from Earth's history, that can be added without fuss directly into your Cepheus Engine or 2D6-based SF RPG.

Included are a small number of Rules Options that referees may find add a little more verisimilitude to combats featuring black powder firearms in Cepheus Engine. The Tech Levels covered (TL 2-3) have the following approximate Terrestrial equivalencies: *TL 2 Renaissance/Early Modern* (1300 – 1700 AD), TL 3 *Industrial Revolution* (1700-1860).

Reference in Archaic Firearms is made to the monetary 'credit' found in Cepheus Engine, if using this book in a fantasy, historical or alternate setting, change this in your setting to silver pieces, Spanish Reals, American Dollars, Dutch Florins, French Livres or English Shillings as you see fit.

The referee may use this book in several ways:

1) Add detail to a TL 2 or 3 planet.
2) Assist in creating a 'Flintlock Fantasy' setting.
3) Assist in creating an historical RPG setting for Cepheus Engine, set somewhere between 1500 and 1860 AD.

FLINTLOCK FANTASY

'Flintlock Fantasy' settings often include magic and monsters, with gunpowder technology added to the mix. Examples of modern fantasy authors creating such a setting include Brandon Sanderson (the *Mistborn* series) and Brian McClellan (the *Powder Mage* trilogy). The author Naomi Novik wrote the *Temeraire* series, which are "a reimagining of the epic events of the Napoleonic Wars with an air force - an air force of dragons, manned by crews of aviators". Meanwhile, Django Wexler (author of the *Shadow Campaigns*) created a world resembling Europe and North Africa of the Napoleonic era, with its own version of the French Revolution, and a supernatural conspiracy fighting for control of the remnants of magic.

Established roleplaying settings with a gunpowder/musket element include Mystara's Red Steel for D&D, Alderac's 7th Sea, Privateer Press' Iron Kingdoms and Cakebread and Walton's fabulous Clockwork and Chivalry RPG. Of course you can create your own flintlock fantasy world, or even establish a post-apocalyptic future where Mankind has clawed its way back up to the gunpowder age.

MAKING HISTORY

At first glance, one might think, "who wants to set a roleplaying campaign in the 15th, 16th or 17th centuries? Isn't it all too close to the modern era to be really interesting?" Let's have a look at a few obvious campaign ideas:

Age of Piracy – Piracy began in the Elizabethan era and continued into the 'Golden Age' during the middle of the 1600's. Gaining a boat, a crew and a reputation makes for a great roleplaying game – especially if you mix in some horror or fantasy elements too, as the *Pirates of the Caribbean* movie series has proven.

Pioneer Spirit – Life in the Old West prior to the American Civil War (the early 1800s), is full of roleplaying opportunities, adventure, danger and the chance for striking it rich. Be a trapper, frontiersman, gold prospector, cowboy or bounty hunter, gambler, Indian guide, sheriff, outlaw or settler.

French Musketeers – The 17th century king of France needs protection, and his elite guard of musketeers are there to defend his honour, protect him in battle and (of course) fight an unending secret war against the true power in Paris – Cardinal Richelieu. Duels, horse chases, rooftop battles and audacious rescues are the order of the day.

Colonial Horror – The Roanoke colony (established in 1585) looms tall here. The colonists all went missing quite mysteriously, which has inspired countless books, movies and a recent TV series, American Horror Story: Roanoke. A referee can throw a load of English player-character led colonists onto the Eastern shore of North America in an epic survival roleplaying campaign, made even harsher with the introduction of horror – either native American, or perhaps even Lovecraft-inspired.

They Seek Him Here – The French Revolution (began 1789) was rife with blood, intrigue, daring do and adventure, at least according to Baroness Orczy's novel The Scarlet Pimpernel. The PCs may, like the hero, Sir Percy Blakeney, fight tooth and nail to rescue doomed aristocrats from the clutches of the perfidious citizen Robespierre.

War of Independence – The American Revolutionary War (1775–1783) may prove a viable roleplaying setting for a referee interested in the period. He might want to run a band of militia minutemen, striking against the British army, or the PCs could be British redcoats, fighting to preserve the British Empire from traitorous revolutionary forces – especially if those forces are being masterminded by a global conspiracy.

Cities of Gold – Spanish conquistadores of the 1600s sought out El Dorado, the legendary city of gold. And there were rumours of lost cities, of fabulous treasures and … for those remembering the Eighties animated TV series *The Mysterious Cities of Gold* (1982), lost technologies from the civilization of Mu. Of course other bold conquistadores, led by Hernan Cortez, plundered and conned their way across Mexico in a series of adventures, battles and twists of Fate.

HISTORY

A confusing number of weapon types, calibres, firing mechanisms and names were employed over a four hundred year period. In this book we concentrate on the requirements of the roleplayer, describing black powder weapons by their form (pistol, musket, blunderbuss, etc.), damage, cost, weight, range and a new Cepheus Engine value: recoil. Over four hundred years, three different methods of powder ignition were invented - the matchlock, wheellock and later, the flintlock. Each was an improvement on the last, being more weather resistant, more reliable and less complicated to operate. These different firing mechanisms do not impact the rules of Cepheus Engine, but are explained below for the interest of referee and players.

GUNPOWDER

Ancient alchemists in China spent centuries trying to discover an elixir of life that would render the user immortal. One important ingredient in many of the failed elixirs was saltpetre (potassium nitrate). During the Tang Dynasty, around 850 A.D., an enterprising alchemist mixed 75 parts saltpetre with 15 parts charcoal and 10 parts sulfur. This mixture had no discernible medicinal properties but it did explode with a flash and a bang when exposed to an open flame. According to a text from that era, "smoke and flames result, so that [the alchemists'] hands and faces have been burnt, and even the whole house where they were working burned down."

Song Dynasty military forces from around 900 A.D. used gunpowder devices against their primary enemy, the Mongols. These weapons included "flying fire" (*fei huo*), which seems to have been an arrow with a burning tube of gunpowder attached to the shaft. Flying fire arrows were small rockets, which propelled themselves into enemy ranks and inspired terror amongst both men and horses. Other Song military applications of gunpowder included primitive hand grenades, poisonous gas shells, flamethrowers and landmines.

The first artillery pieces were rocket tubes made from hollow bamboo stems but these were soon replaced with ones made of metal. McGill University professor Robin Yates noted that the world's first illustration of a cannon comes from Song China, in a painting from about 1127 A.D. This was made a century and a half before Europeans began to manufacture their artillery pieces. Perhaps the first use of cannon for military purposes in the western world was the Moorish cannon used during the defence of Seville in 1248 and of Niebla in 1262. In both cases, the city's Arab residents fired some sort of primitive gun at the Spanish who were besieging them. The first all metal cannon was probably the Pot-de-Fer that was presented to

Edward III upon his accession to the English throne in 1327. It was essentially an iron bottle (the name is French for “pot of fire”) with a narrow neck that was loaded with gunpowder; it fired an iron bolt.

The composition of proper gunpowder developed with time. Baptista Porta reached approximately the modern proportions in 1515. Typically, European manufacturers used saltpetre 75 parts, sulphur 12.5 parts and charcoal 12.5 parts, all, of course, by weight. The ingredients would have been of high purity, and the charcoal would have been obtained from alder, dogwood or willow, although charred straw was used for brown gunpowder. Sodium nitrate was sometimes used instead of potassium nitrate. It was cheaper than saltpetre, and made a slightly more powerful product, although it tended to absorb moisture from the air.

In the Original Star Trek episode, Arena, Captain Kirk defeats his opponent by manufacturing gunpowder from the mineral deposits he finds on the planet. He utilises coal, potassium nitrate and sulphur and repurposes a hollow, bamboo-like stem as a barrel. His projectiles were diamonds.

EARLY HANDGUNS (1300-1500)

Gunpowder was first invented in China during the 9th century, and hand cannons (also called an arquebus) began to see usage in China sometime during the 13th century. Their use then spread to other parts of the world, gaining acceptance across Medieval Europe during the 14th century. By 1500 these ‘first generation’ handguns were supplanted by the TL 2 matchlock musket.

These primitive weapons consisted simply of an iron barrel mounted on the end of a wooden handle. A German document from 1390 indicates that the barrels of such weapons were filled with powder for about three-fifths of their length, followed by a wooden sabot and then an iron or stone ball. At first the ammunition had simply been composed of arrows or even pebbles picked up from the ground. Handling the weapon required that the gunner use one hand to hold the gun after it had been placed on a rest, and the other to apply the slow match.

In some cases, however the gunner held his arquebus in both hands while the slow match was applied to the touch hole by an assistant. Later hand cannons included a flash pan attached to the barrel and a touch hole drilled through the side wall instead

of the top of the barrel. The flash pan had a leather cover and, later on, a hinged metal lid, to keep the priming powder dry until the moment of firing and to prevent premature firing. These features were carried over to subsequent TL 2 firearms.

MATCHLOCK GUNS (1500-1700)

Matchlock firing mechanisms were designed to free up the shooter's hands for steadying and aiming the gun. Previously the hand gunner had to use one hand to touch his match against the touch hole of the arquebus. Usually, an 'S'-shaped arm pivoted forward when the trigger was pulled, touching a slow-burning match on to an iron pan filled with gunpowder. This ignited and passed the flash into the barrel to detonate the main charge propelling the musket ball forward. All the shooter had to do was sight down the barrel and pull the trigger, but the matchlock still had its disadvantages. The match had to be kept burning all the time, which was dangerous around powder and it was difficult to use in wet or windy weather. Pistols, cavalry carbines, muskets and blunderbusses were all put into service with the matchlock mechanism.

WHEELLOCK GUNS (1500-1630)

The wheellock firing mechanism did not replace the matchlock, but was a parallel development, an improvement in many ways, but with enough disadvantages that it would not catch on. Indeed matchlock and wheellock guns existed side by side until the invention of the flintlock, which quickly made both mechanisms obsolete. A wheel mounted on the side of the gun created sparks by scraping a piece of iron pyrites held in a clamp, but the mechanism, although far more reliable than a slow-burning match, was delicate and overly complex - and therefore expensive. For these reasons it did not replace the matchlock, but was adopted by hunters and by some elite cavalry troops. It was mainly cavalry firearms, such as pistols and carbines, that were made with wheellock mechanisms, although some wheellock muskets were manufactured and used.

FLINTLOCK GUNS (1630 – 1860)

The flintlock firing mechanism was gaining popularity by 1630, it represented, at last, a reliable system of firing a handgun. The concept of clamping a sparking stone (in this case flint) on the end of an arm was retained, but now the arm was propelled forward by the trigger and it struck the face of an upright metal plate called the frizzen (or 'steel'), sparks were created and as the frizzen was pushed back it exposed the pan containing gunpowder which ignited and fired the musket ball within the barrel. Here was a fairly weatherproof firing mechanism, the pan was covered by the frizzen and the sparks provided by a flint that was immune to wet weather and high wind. No wonder then, that the flintlock became the standard firing system more than two centuries.

The Flintlock Mechanism

THE FUTURE: PERCUSSION (1820-1860)

From around 1820 a stepping stone to the modern brass cartridge was developed – the percussion cap. Its extreme simplicity and virtual waterproof design made possible the revolver. Now instead of flint dropping down when the trigger was pulled, a hammer fell on to a raised metal 'nipple'. To fire a shot, the user placed a cup-shaped copper cap containing a primer which exploded when struck by the falling hammer. The flash of the cap passed through a channel in the nipple and ignited the charge in the barrel. By the late-1820s, old flintlock guns were converted to use the new system and new guns were being churned out to take advantage of the technological improvement. The explosive cap also made possible the first practical repeating arms, like the early revolvers. Even when modern brass cartridges came on to the scene, percussion cap (caplock) guns were the most commonly used in the American Civil War (1861-65). As the war drew to a close, however, caplocks were obsolete.

CARTRIDGES (1860 onwards)

Metallic cartridges dominated firearms from 1860 onwards. This innovation brought the bullet, gunpowder and percussion cap together into a single metallic cartridge. Now, instead of pouring gunpowder and bullet down the barrel, a user could push a single cartridge into the barrel at the rear (the breech). The pin-fire method first developed, but soon other types, including the rimfire and centre-fire cartridges, became popular. Usually the trigger forced a firing pin to hit causing the charge to explode and push the bullet down the barrel. This is TL 4 technology, however, and beyond the scope of this book…

RULE OPTIONS

The following rules are optional add-ons that will help the referee introduce gun-powder technology to his game in a seamless and realistic manner.

GUN COMBAT SKILL

Gun Combat skill at TLs 2 and 3 is not a cascade skill. The skill of Gun Combat is relatively new and covers not just the firing, but the complex maintenance and reloading procedures for a black powder weapon. Anyone with firearms training simply has Gun Combat 1, Gun Combat 2, or whatever.

RECOIL

When you make an attack, compare your Strength DM to the Recoil rating of the gun. If the gun's Recoil is higher than your Str DM, then you suffer a – DM to your attacks based on the difference. ie. a Str 4 (DM -1) user tries to wield a blunderbuss (Recoil 2) … the difference is 3, so he shoots with a -3 penalty to his attack roll.

DOUBLE BARRELLED

Some gunsmiths produce double-barrelled versions of muskets, pistols or blunderbusses, capable of two shots, but with weight and cost multiplied by 1.25.

MISFIRES

Gunpowder firearms are notoriously unreliable. A referee wanting to add extra realism (and complexity) should ask a player to roll 1D6 at the point of shooting. On a '1' the gun misfires and must be reloaded before it can be fired again. The unfortunate player does not have to roll again for a misfire during that combat.

RELOADING

Reloading a TL 2 or 3 firearm is a complex and time-consuming business in comparison with the modern ability to simply pull the trigger a second time. With these archaic firearms, the gunpowder has to seated on the pan, and the rest emptied down the barrel, the musket ball was 'patched' (wrapped in greased linen to give it a tight grip inside the barrel) and then rammed into the barrel with a ramrod. Only then can the gun be raised for firing. Later, TL 3 percussion rifles do not require gunpowder to be sprinkled on the pan, instead they require a brass-cased percussion cap to be fitted to the firing 'nipple'. All this takes time – and with training and experience that time decreases. Check the character's skill level on the following table:

Gun Combat Skill	Rounds Required
0	4 full rounds
1-2	3 full rounds
3+	2 full rounds

- Use of paper cartridge assumed (see *Faster: the Paper Cartridge*, below)
- For loose powder, poured from a flask, add +1 combat round

Faster: the Paper Cartridge – Often, gunpowder was poured into the barrel from a flask or powder horn carried by the user, and balls are kept in a bag or pouch on the user's belt. But from around the 1600s onwards, paper cartridges became widely available for those who could afford to pay for their complex construction. A paper cartridge combined a pre-measured amount of powder along with the ball in a sealed unit made of layers of 'cartridge paper' (yes, *that* cartridge paper). This eliminated the ad hoc measuring out of gunpowder during reloading. Where multiple projectiles were used, such as the shotgun pellets of a blunderbuss, the cartridge also served to package up the submunitions, so that they did not have to be measured or counted out. The cartridge paper was not thrown away, but served as a patch in smoothbore firearms which shot ammunition that was smaller than the diameter of the bore, and required a paper or cloth patch to be wrapped around the ball to make it snug.

AMMUNITION

Gunpowder (TL 2)
Enough gunpowder for 20 shots. Weight: 0.25kg. Cr10

Gunpowder Keg (TL 2)
A relatively small, easily transportable wooden keg of gunpowder, 33cm long and 28cm wide. It is bound with strappings of reed or sapling wood rather than iron bands to avoid sparks and is bulky, encumbering and requires two hands to carry. Contains 3kg of gunpowder - enough for 240 shots. Total weight: 5kg. Cr130

Musket Balls (TL 2)
One pound (0.5kg) of musket balls for Cr10. How many you get depends on the calibre – Pistol 30 balls, Musket/Rifle/Carbine 20 balls.

Paper Cartridges (TL 2)
Twenty paper cartridges, complete with powder and shot. Cr20

Percussion Caps (TL 3)
Twenty brass percussion caps for a caplock rifle or revolver. Paper cartridges will also be required. Cr10

OTHER EQUIPMENT

Bayonet (TL 3)
A long spike-like weapon, frequently attached to a musket. When *not* attached to a musket or rifle, the bayonet performs as a fighting dagger. This spike bayonet was in use from around 1600 onwards. Damage 3D6 Piercing, Weight 0.35kg, Cr50.

Cartridge Box (TL 2)
A stiff leather box with a tinned and compartmentalised interior for holding up to 40 paper cartridges. Comes with a leather shoulder strap. Rain-proof. Cr2

Cleaning Tools (TL 2)
Four useful tools for cleaning and maintaining a black powder firearm. They are kept on a metal ring on a chain to prevent them being dropped or getting lost. Cr5

Flints (TL2)
Spare gun flints, shaped and prepared for use in a flintlock weapon. Cr3

Leather Belt Pouch (TL 0)
Keep your shot and strips of cloth for use as patches in here. Cr4

Leather Shoulder Bag (TL 0)
For shot, patches, tools, powder horn and other accoutrements.Cr15

Percussion Cap Box (TL 3)
A small rain-proof leather pouch containing up to 40 brass percussion caps. Cr10

Powder Measure (TL 2)
A small brass gunpowder measure for the accurate pouring of powder from powder horn into the musket or pistol. Comes with a leather lanyard for hanging around the neck or from the wrist. Cr5

Powder Horn (TL 2)
A cow horn converted into a lidded powder container on a shoulder sling, when full it contains powder for up to 20 shots. Cr3

Petard (TL 2)
This breeching charge is a conical or bell-shaped metal canister designed to direct the blast of gunpowder. The aim of the petard is to blast a hole through a timber palisade, wall or gate. It is secured to the wall or palisade with timber props or nails. The metal canister weighs 5kg, the powder 3kg and the timber, rope, nails and tools to secure it weigh 5kg. Once the fuse is lit the petard does 9D6 damage in one direction. Anyone standing up to 4m behind it suffers 2D6 damage. If the Armour Rating of the wall is exceeded, then a hole or split is made that is 10cm across for every point the Armour Rating was exceeded by. If the damage equalled the armour rating exactly, then there is no breach, but the rating is reduced by 1-3 points. Use the Armour Ratings below as a guideline. Cr100

Obstacle Type	Armour Rating
Wooden Pallisade	12
Wooden Gate	10
Iron-Bound Wooden Gate	16
Brick Wall	20
Iron Portcullis	20
Non-Fortified Stone Wall	26
Fortified Stone Wall	40
Major Fortified Stone Wall	80

A petard is fixed against an outer brick wall of Newgate prison (Armour Rating 20) by Morgan Winter, veteran soldier of the King's army. The blast does 9D6 dice damage and after rolling that equates to 34 points, 14 more than is needed. Multiplying 14 x 10 we get a hole or breech that is 140cm or 1.4m wide.

FIREARMS

The table below lists the archaic firearms from TL 2-3. Each column is described as follows:
Name: The type of firearm, general categories are used, not specific examples.
Range: The range category for this weapon.
Dmg: The damage a weapon inflicts.
Wgt: Weight in kilograms (kg).
Cost: Price in Credits (Cr).
Recoil: Lists the weapon's recoil when fired.

Weapon	Range	Dmg	Wgt	Cost	Recoil
Arquebus	Pistol	2D6+2	8.0	500	2/0
Pocket Pistol	Pistol	2D6	0.8	100	0
Black Powder Pistol	Pistol	2D6	1.2	100	0
Black Powder Carbine	Assault *(Max Long)*	2D6+1	3.0	80	0
Black Powder Musket	Assault *(Max Long)*	3D6	5.0	100	1
Black Powder Rifle	Rifle	3D6	4.5	160	1
Blunderbuss	Shotgun	4D6	4.0	120	2
Percussion Revolver	Pistol	2D6	0.9	150	0
Percussion Rifle	Rifle	3D6	4.0	200	1

Arquebus (TL 2)
The arquebus, or hackbut, has an iron barrel only 30-40cm long, attached to the end of a long wooden stock. The barrel has been forged with an integral iron hook on its underside. The hook enables the gun to grip a low wall or a wooden rail, preventing the recoil of the gun from kicking the weapon backwards. The overall length of the arquebus is 1.30m, and it has a caliber of 0.9' or less. Two Recoil values are given, the first is used when the arquebus is carried in two hands, the second is used when the gun is hooked over an embrasure, wall of wooden fence. Length: 130cm

Pocket Pistol (TL 2)
A small, concealable pistol, constructed with wheellock or flintlock mechanism, as appropriate. Length: 18cm.

Black Powder Pistol (TL 2)
A substantial black powder pistol, constructed with wheellock or flintlock mechanism, as appropriate. These pistols were initially developed for the cavalry, who required a weapon that they could reload while mounted. Even then, many cavalrymen carried several loaded pistols into battle with them. Soon adopted by sailors, officers,

highwaymen and duelists. When empty, the barrel can be grasped and the brass-weighted butt used as an effective club. Length 46cm.

Black Powder Carbine (TL 2)
A cavalryman's weapon, providing the range that a pistol could not. The carbine is a shortened musket, and can be holstered next to the saddle and reloaded while mounted. Other troops have found this shorter musket of use, as have coach-drivers, pirates, highwaymen and sailors. Length: 90cm.

Black Powder Musket (TL 2)
A direct development of the arquebus, the musket is longer for better accuracy, yet lighter and slightly more accurate. Without the rifling grooves within the barrel, the musket ball has no spin when it leaves the muzzle, making it inaccurate compared to later rifles. The blunderbuss, black powder pistols, pocket pistol and carbine are all, likewise, smooth-bore weapons. The musket is a soldier's standard weapon and he learns to drill with it, eat with it and sleep with it. Once fired he can (at TL 3) fit a spike bayonet to the end of the barrel. This bayonet has a ring which fits around the muzzle, allowing him to reload quickly if needed. The bayonet turns the unloaded musket into a short spear. Length: 150cm.

Black Powder Rifle (TL 2)
The rifled barrel, where a spiral groove was cut onto the inner face, imparted spin to the bullet as it passed along, improving accuracy. Rifled muskets existed in the 17th century, but only became commonplace in the early 19th century. To follow the grooves, the ball had to fit snugly which made ramming it down the barrel during reloading a more time consuming task. Because of this, the rifle was for many decades a weapon of the hunter and sportsman.
Length: 150cm.

Blunderbuss (TL 2)
The blunderbuss is a shotgun-style black powder weapon, often with a bell shaped, flared muzzle. It is loaded with shotgun pellets and is a short-range weapon of significant stopping power, used by mail coach drivers, naval officers, and some cavalry troops (calling the blunderbuss, the 'dragon' and giving them the name 'dragoons'). Length 50cm.

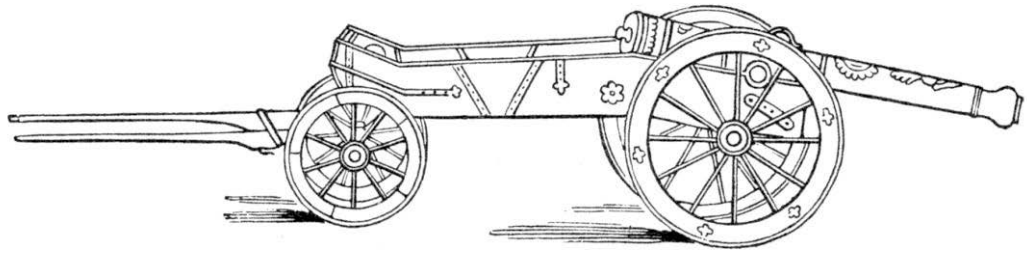
Percussion Revolver (TL 3)
The percussion cap mechanism allowed for the concept of the revolver to take hold.This 6-shot revolver, once loaded, was the world's first reliable repeating firearm. Reloading takes longer, however, triple the character's reload time. An example of the percussion revolver is the Savage 1861 Navy revolver; such weapons were popular with military officers. Length: 35cm.

Percussion Rifle (TL 3)
The rifle became more reliable and easier to operate when constructed around a percussion firing system. The M1841 Mississippi rifle, British Brunswick and Austrian Lorenz rifles are all fine examples of the type. Length: 140cm.

ARTILLERY

Big guns – the artillery, preceded the arquebus, and although the hand-held firearm continually evolved, there was very little technological innovation regarding cannons. They remained essentially giant smoothbore muzzle-loading arquebuses until the 1800s. Of course with better and better casting methods, their size grew and so did their power. But the weight and difficulty of manoeuvre meant that they did not play a significant role in military conflicts of the 16th and 17th centuries. The musket was king. At sea, cannon were the primary form of offence and defence. It was not until advances in weight-saving during the 1700s allowed the TL 3 cannon to gain more mobility on land, and play a much more active and useful part in military engagements.

Sea-going cannon are mounted on heavy but compact wheeled carriages. These are pushed forward so the barrel projects from the side of the hull for firing, then hauled back with ropes for reloading. On land, wheeled cannon are hitched up to a two-wheeled 'limber' turning them both into a four-wheeled gun carriage. Several (sometimes many!) horses will be needed to pull a field cannon weighing a ton or more. A second wagon will contain enough ammunition and powder for 100 shots.



FIRING PROCEDURE

The firing procedure for a typical cannon is generally as follows: after a shot the barrel is 'searched' for burning embers or wadding with a long corkscrew-like tool. The gun barrel is then sponged to put out any sparks, of course this must be followed by someone drying the barrel. The powder charge (a bag of gunpowder) is put into the barrel and pushed home. Then a wad is rammed into the gun before the cannon shot is rammed in after it. This separates the shot from the powder. The gun captain then inserts priming wire into the touch-hole and primes the hole with powder. He must also insert a 'pricker' into the touch-hole to tear open the bag containing the powder. On a ship the cannon is then run forward on its wheels so the barrel clears the hull of the vessel; the gun crew stand clear and the gun captain fires the gun, either by placing a smoldering match (on the end of a pole or 'linstock') to the touch-hole, or by jerking back a lanyard to activate a friction primer, until the cannon was 'warmed up' with a few shots the linstock was generally used. At TL 3 a flintlock trigger was used.

THE CANNON

The table below lists the archaic firearms from TL 2-3. Each column is described as follows:

Cannon Size: The type of firearm, using the terminology of the day, the cannon is referred to by the size of cannon shot it can fire.
Vehicle Space: The space this weapon takes up in the Cepheus Engine Vehicle Design system. Typically relating to ships.
Dmg: The damage a weapon inflicts on a vehicle, building or person.
Wgt: Weight in kilograms (kg), this includes gun carriage and related equipment.
Cost: Price in Credits (Cr), this includes gun carriage and related equipment.
Crew: The number of gunners required to regularly and efficiently operate the cannon. If the crew is reduced by 25% the ROF drops to half. Below 50% the gun cannot be fired. Crew also represents the number of horses required to pull an army field gun of that size. At TL 2 (pre-1700) the carriage systems are inadequate and the number of horses must be doubled.

Cannon Size	Vehicle Space	Dmg	Wgt	Cost	Crew
1 pounder 'Falconet'	3	4D6	25	1,000	2
3 pounder 'Saker'	6	5D6	400	1,200	4
6 pounder 'Minion'	12	6D6	800	1,500	4
9 pounder 'Demi Culverin'	*18*	7D6	1200	3,000	6
12 pounder 'Culverin'	*24*	7D6+2	1700	4,000	6
24 pounder	28	8D6	2500	6,000	8
32 pounder 'Demi Cannon'	30	9D6	2750	6,500	12
42 pounder 'Full Cannon'	32	10D6	3200	9,000	14*

*A very large TL 3 cannon only usable at sea or within a fortification. The 42 pounder cannot be routinely moved across the battlefield by horse during this period of history. Therefore the crew rating only refers to its gun crew, not the number of horses used to pull it.

INFLICTING DAMAGE

Cannonballs shot on land act like a destructive bowling ball and the gunners aim for 'grazing shots', wherein the ball bounces off the ground and continues on its merrily destructive way. Against packed formations of men in this time period, the result is hideous. Assume a metre-wide, 10m long trail of damage. Anyone in that 10m-long corridor must make a Difficult (-2) Dexterity roll or take full damage.

SKILL

The Heavy Weapons skill is used to aim, fire, maintain and reload a cannon efficiently.

RANGE

All cannon use the Very Distant row on the combat range chart. Shooting Anti-Personnel shot (canister or grapeshot) reduces the cannon to using the Distant row on the combat range chart.

RATE OF FIRE

Rate of Fire is 1 shot every 3 combat rounds. Should a commander be wanting a volley, barrage or broadside all fired simultaneously then the guns need to co-ordinate and may instead fire once every minute. These rates quickly slow down as the combat progresses.

Manpower	Rate of Fire
100%-76%	1 per 3 full rounds
75%-51%	1 per 6 full rounds
50%	Not allowed

Speed reduces as combat wears on. After every six shots, add another combat round to the RoF. The ROF cannot be slower than 1 per 20 rounds (2 minutes).

ANTI-PERSONNEL SHOT

There are two main types of anti-personnel shot, Grapeshot and Canister. Grapeshot is canvas-wrapped sacks of smaller round shot which fitted down the barrel. Some grapeshot was made with thin metal or wooden disks between the layers, held together by a central bolt. The packages broke open when fired and the balls scattered with deadly effect. Grape was often used against an enemy ship to kill or injure the officers, or against enemy boarding parties. Canister shot is composed of a can filled with dozens of musket balls. The can breaks open on firing to turn the gun into a giant shotgun for use against enemy personnel.

Both of these types of shot do damage in a wide area 1m across, per damage dice (for example, a 6 pound 'minion' doing 6D6 damage ordinarily, has a grapeshot spread of 6m). Everyone within the zone suffers damage equal to 4D6.

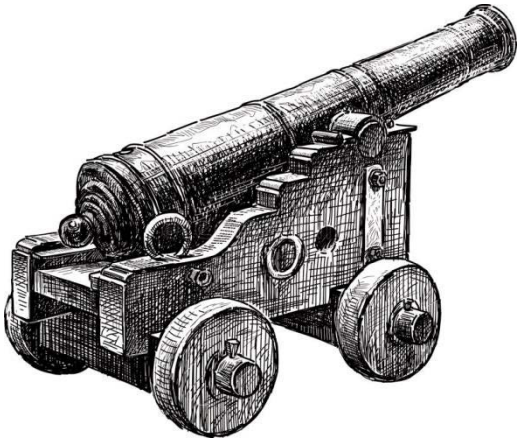
EXPLODING SHELLS

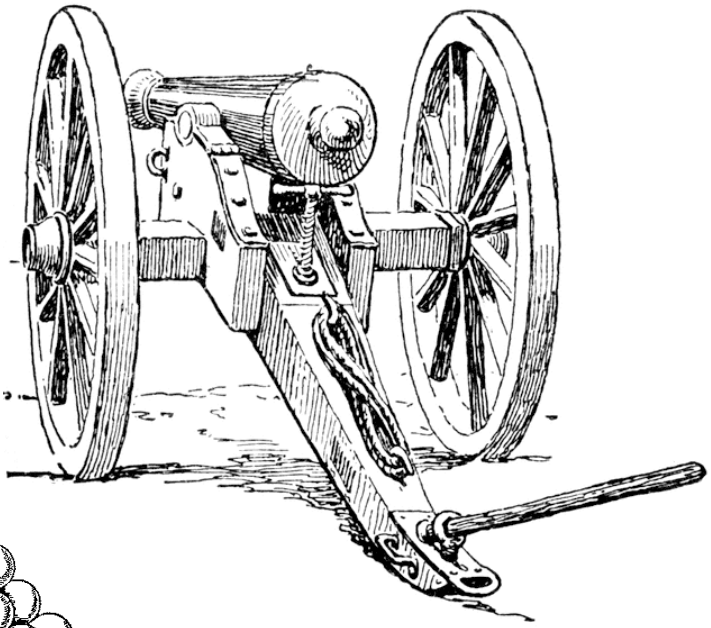
Fused shells were in use in the 16th, 17th and 18th centuries, although they were unreliable and rather dangerous. Two halves of a shell were filled with gunpowder, a fuse lit and then the shot fired at an enemy. It would hopefully explode, having an anti-personnel or area effect. The game effect is similar to firing an Anti-Personnel shot, but there is no range degradation here. When firing an explosive shell, roll 1D6 – on a result of 1 or 2 the shell breaks up, detonates early or fails to detonate resulting in no effect. Fused shot explodes when it lands, doing damage in a wide area 1m across, per damage dice (for example, a 6 pound cannon doing 6D6 damage ordinarily, has an explosive diameter of 6m). Everyone within the zone suffers damage equal to 4D6.

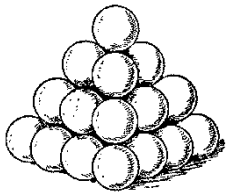
MORTARS & HOWITZERS

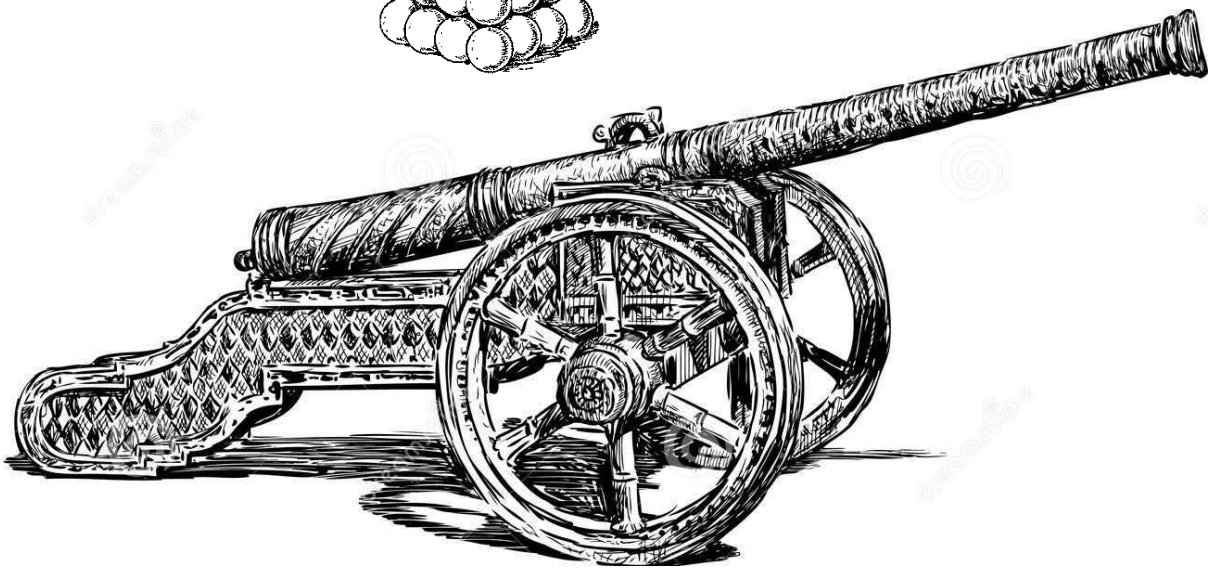
Some specialised cannon were constructed that were capable of high levels of traverse. Indeed they could not be lowered to shoot directly at a target. These howitzers were perfect for indirect fire, launching exploding shells into cities. Their explosive diameter is doubled. Howitzers suffer from a shorter range, but the falling shells have wider diameter area of effect equal in metres to *twice* the damage dice of the gun. Use the Distant row on the combat range chart.

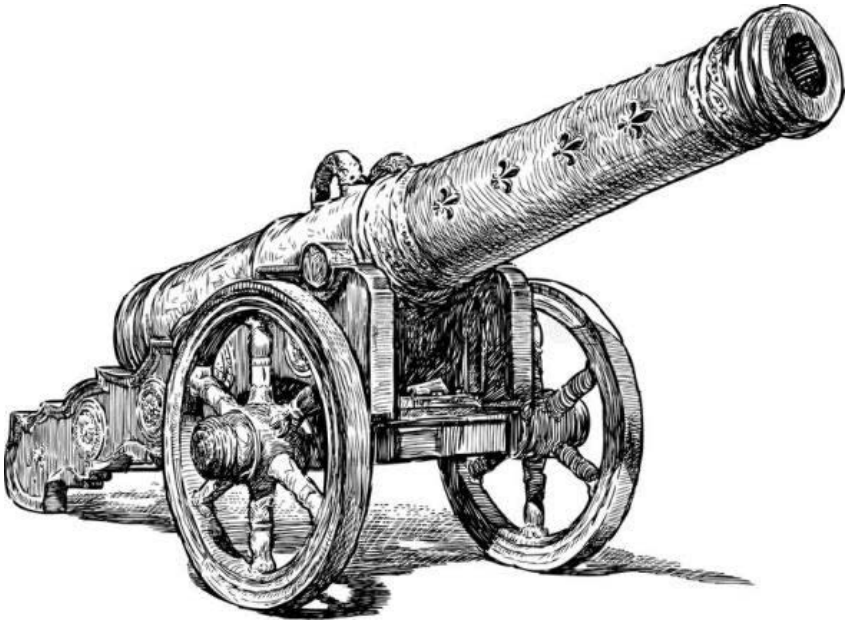
Mortars are similar to howitzers, but are much shorter-barrelled, and fixed at one angle. Only by varying the fuse can the range of the mortar be changed. Mortars are usually used to defend or besiege a city or castle. They are half the price of a standard cannon and cannot be wheeled.











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