[**Daniel**](http://pyracy.com/index.php?/profile/352-daniel/)

* Pyrate Captain
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[Posted February 18, 2010](http://pyracy.com/index.php?/topic/16541-cannon-size-and-ammunition-types/&do=findComment&comment=379939) · [Report post](http://pyracy.com/index.php?/topic/16541-cannon-size-and-ammunition-types/&do=reportComment&comment=379939)

Books on piracy often show the many different kinds of ammunition that period cannons used: round shot, chain shot, bar shot, grape, canister, case, and langrage.

However, pirates generally used quite small cannons: Konstam suggests that four-pounders were typical. Were some of these more exotic kinds of shot practical for small cannons? I would guess that grape, canister, and langrage would be useful in just about any cannon; they used langrage all the time in swivel guns and pattereroes, after all. But would chain or bar shot be practical for a four-pounder? Indeed, is even round shot practical for a four-pounder? How about for larger calibers? Is there a certain minimum size of cannon you need to make round, bar, or chain practical?

[**Hawkyns**](http://pyracy.com/index.php?/profile/407-hawkyns/)

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[Posted February 18, 2010](http://pyracy.com/index.php?/topic/16541-cannon-size-and-ammunition-types/&do=findComment&comment=379961) · [Report post](http://pyracy.com/index.php?/topic/16541-cannon-size-and-ammunition-types/&do=reportComment&comment=379961)

Just about all of the bar shot I have seen is sized for 3, 4, or 6 pounders. Expanded length seems to run about18-24 inches. It doesn't take much to rip rigging away. Chain shot was originally designed for use from 3 pounders. It seems to have been developed by Gustavus Adolphus during the 30 Years War to be fired at a flat trajectory into a cavalry charge to break the horse's legs and stop the charge. Most of that was being fired from his leather cannon which were approximately 3 pdrs.

3 and 4 pd solid shot can be fairly useless against a heavy hull. Most naval ships carried heavier guns, 12-24pdrs, if they planned to sink ships. Remember, pirates did not want to sink the other ship, so light anti-personel cannon and anti rigging cannon were more useful and common.

Hawkyns

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[Posted February 19, 2010](http://pyracy.com/index.php?/topic/16541-cannon-size-and-ammunition-types/&do=findComment&comment=379986) · [Report post](http://pyracy.com/index.php?/topic/16541-cannon-size-and-ammunition-types/&do=reportComment&comment=379986)

 On 2/18/2010 at 5:41 PM, Hawkyns said:

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Hawkyns

Thanks. I'd been wondering if chain shot was ever used on land; now I see it was.

[**MarkG**](http://pyracy.com/index.php?/profile/10527-markg/)

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[Posted February 21, 2010](http://pyracy.com/index.php?/topic/16541-cannon-size-and-ammunition-types/&do=findComment&comment=380082) · [Report post](http://pyracy.com/index.php?/topic/16541-cannon-size-and-ammunition-types/&do=reportComment&comment=380082)

 On 2/18/2010 at 11:40 AM, Daniel said:

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Surprisingly, chain shot was used in pieces as small as a musket. In this case a musket ball was split in half, hollowed out a bit, then a wire run between the two halves. The pieces were forced back together with the wire fitting in the hollowed out part.

I don't know how effective this was but I saw several originals in an old copy of the Company of Military Historians' magazine.

Mark

[**Jas. Hook**](http://pyracy.com/index.php?/profile/11157-jas-hook/)

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[Posted February 21, 2010](http://pyracy.com/index.php?/topic/16541-cannon-size-and-ammunition-types/&do=findComment&comment=380121) · [Report post](http://pyracy.com/index.php?/topic/16541-cannon-size-and-ammunition-types/&do=reportComment&comment=380121)

From a NZ web site -

Jas. Hook

**The Gun - Smoothbore Era 1550-1860: Projectiles**

<P class=ft align=center>[previous](http://www.riv.co.nz/rnza/hist/gun/smooth3.htm) | [index](http://www.riv.co.nz/rnza/hist/gun/index.htm) | [next](http://www.riv.co.nz/rnza/hist/gun/fuzes.htm) <P align=justify>As the arrow was the principal projectile in use prior to the advent of the gun, so it continued to be used with early 14th century ordnance which were of light calibre. <P class=ft align=center>

<BR clear=all>Gun arrows. The upper piece was made in England c. 1600. Note the leather wrapping on the lower gun arrow. <P align=justify>Known as 'darts', 'quarrels', 'carreaux', 'garros', etc, gun arrows were short, with heavy oak shafts, iron points or 'heads' and metal 'wings' in place of feathers. Wings were mounted on three or four sides to ensure the projectile was centred in the bore and stabilised in flight, while the shaft was wrapped with leather to assist in centring and at the same time to provide a gas-tight fit.

**Round Shot**

<P align=justify>Gun arrows were expensive to make and soon gave way to lead balls. The latter, being made slightly oversize in calibre to ensure a gas-tight fit, had to be forced into the bore, for which purpose each gun was supplied with a 'drivell' (drift) and a hammer. Of course this method of loading was suitable only for the small-calibre breech-loading bombards then in use. Neither gun arrows nor lead shot were suitable for the larger pieces which began to appear during the last quarter of the 14th century. It was still possible to use lead - with windage - but lead was expensive. Gunmakers thus turned to other materials. <P align=justify>History records that the Italians, then a step ahead of other nations in the development of artillery, used small quantities of bronze and iron shot early in the second half of the 14th century. However, use of these materials appears to have been short-lived, probably because bronze was expensive and the iron shot - probably of wrought iron - were expensive also. By 1364 the Italians, closely followed by other countries, were using stone shot. Stone was plentiful as well as cheap. In addition the spate of church building then taking place ensured there were always stone masons ready to turn their skills to the conversion of blocks of stone to spherical shot. The projectiles thus formed were called 'gun stones', a term which survived for some years after stone was superseded by cast iron! Although cheap stone had its disadvantages. The shaping of shot by hand was a slow process. It was light compared to iron; to be effective a shot had to be heavy, and to be heavy it necessarily had to be large, hence the 'think big' bombards. Furthermore, stone shot fired at a solid target often broke up on impact without causing appreciable damage. Something better was needed. <P align=justify>As the technique of casting iron in Europe developed during the 15th century, so iron roundshot began to supersede gun stones. Italy was using cast iron shot during the early 1400s, closely followed by Germany. When England commenced is not clear, but records show she was producing large quantities of iron roundshot by 1512. But stone shot died hard; one English authority mentions its use as late as 1578. Cast iron roundshot was to be the chief projectile for the whole of the smooth-bore era, ie to the middle of the 19th century.

**Hot Shot**

<P align=justify>Gunners soon found that the ideal projectiles for the destruction of wooden targets, eg ships, buildings, etc, were cast iron roundshot heated to redness. Loading, of course, had to be smartly carried out, and to prevent the hot shot from igniting the propellant charge, a wad of turf was inserted in front of it. Stephen Batory, King of Poland, is credited with having pioneered the use of red-hot shot in 1579. <P align=justify>Note that the Royal Navy usually avoided the destruction of enemy ships by sinking or setting on fire, preferring to capture them, put prize crews aboard, bring them back to England, and there sell them. The prize money was distributed among the crew, of which the Captain got the lion's share, other Officers the bulk of the remainder, while the ordinary seaman got enough to get drunk on. Grape was the preferred weapon; it cut through rigging and killed the crew, thus putting the enemy ship out of action without damaging it too much.

**Grape Shot**

<P align=justify>Grape was so-called because in its original form a round resembled a bunch of grapes. Termed 'quilted grape', it comprised a number of heavy iron balls. A later form was 'tier grape'. The balls in each type, known as 'sand shot' varied in weight from a few ounces up to 4 lbs (1.8 kg) each, according to the calibre of the gun. Grape was never fired from bronze guns as it damaged the bores, nor was it used in the field. Grape was superseded by case toward the end of the smooth-bore era. Its maximum effective range was 600 yards (549 m).



Quilted Grape



Tier Grape

**Case Shot**

<P align=justify>The ancient forerunner to case was 'langridge', a quantity of junk such as bits of scrap metal, old nails etc, even gravel, loaded loose into the gun and used against troops in the open. Then Gunners put the junk into containers and called it 'canister' or 'case'. Further improvement followed; the container or case of sheet iron or tin in cylindrical form was filled with cast iron balls each varying in weight from 2 ounces (57 grams) to 8 ounces (227 grams) for the smaller guns, and from 8 ounces to a pound for the heavier. Case was fired from all natures of ordnance against troops in the open, at ships' rigging and boats, effective range being about 350 yards (320 m). On being fired the metal canister burst open at the muzzle, the contents producing a shotgun effect. <P align=justify>Case proper was first used at the siege of Constantinople in 1453 and was still being used in World War 2, eg in the American QF 37-mm anti-tank gun. In the latter projectile the canister was filled with lead balls of about 12-mm diameter set in rosin and was said to be effective against troops in the jungle warfare of the Pacific Islands.

**Carcass**

<P align=justify>Centuries before the coming of the gun, incendiary missiles fired with Greek fire or similar compositions were hurled at enemy buildings by mechanical engines. Incendiary missiles designed to be fired from guns were termed 'carcasses'. The early carcass was oval in shape. Inside the frame of metal bands was a container of canvas, paper or other suitable material into which was poured a molten mixture of gunpowder, saltpetre and tallow which was allowed to harden. In order that the flash from the propellant charge would easily ignite the filling, the walls of the container were pierced with two or three holes into which priming composition and quickmatch were inserted. Later carcasses were made spherical and in the 19th century were hollow cast iron spheres. Carcasses were fired from mortars and howitzers only. The image on the right is an early form of carcass frame.

**Bar, Chain and Expanding Shot**

<P align=justify>There were innumerable examples of these projectiles. All were designed to damage ships' rigging, small boats or any unfortunate sailor who happened to get in the way. They date from the 17th century.



Bar Shot

Chain Shot

Expanding Shot

Expanding Shot17th century shot, designed to damage ships' rigging, small boats, or any unfortunate ssailor who happened to get in the way.

**Common Shell**

These were merely hollow cast iron spheres filled with gunpowder and fitted with a time fuze. They were fired from mortars and howitzers only until the introduction of shell guns during the 19th century. Shell have been with us almost as long as shot, the earliest reference to their use being by the Italians in 1376. Early time fuzes were simply pieces of quickmatch cut to length by questimation, inserted into a hole in the shell, and ignited by a linstock or portefire thrust down the barrel of the piece. The howitzer was then fired quickly - the Gunner in the meantime praying to St Barbara that it would not backfire! Both mortar and howitzer barrels were very short in the early days. It is said that at the siege of Limerick in 1639 a Gunner accidentally discovered that the flash of the propellant charge would ignite the fuze by way of the windage allowed in those days. He had forgotten to light the fuze before firing his mortar! The invention of the watch in 1674 made more precise fuzes possible. We shall examine their development later in this paper.

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A late discovery: the *Whydah* pirate ship carried all kinds of bar shot, and also round shot, for her three pounders. Saw it myself at the Real Pirates exhibit in the St Louis Science Center.