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Large culverines <del>are</del> for battery <add>&amp; piercing</add> are forty <ms>quintals</ms> &amp; eighteen <ms><fr>pans</fr></ms> long. Their ball, of the <ms><pro><pn>King</pn></pro>'s caliber</ms> &amp; for battery, is 30 <ms>lb</ms> and thus lighter than that of the cannon. And thus, it does not carry so much ammunition for fifteen <ms>lb</ms> suffices for its charge. The cannon makes a bigger opening due to the size of its ball, but the culverine hits more fiercely &amp; propels faster, having greater force due to its length. At the breech it carries the <ms>thickness of two of its balls &amp; the <del><fr>es</fr></del> <add><fr>a</fr></add> <del>three</del> <add>third</add> <del><fr>s</fr></del> part of a ball</ms>, at the front the <ms>thickness of one ball &amp; two thirds</ms>. Culverines serve to batter defenses from afar when one cannot easily make an approach, and cannons approach more closely. They also serve to support the battery. One needs fifteen or sixteen <al>horses</al> for moving it. They are <del><fr>tout</fr></del> of the same alloy as the cannon, as are all pieces <del>that exceed</del> <add>smaller than</add> average, for to these, one adds a little more <m>metal</m> in order to make the melt run better. And for two <ms>quintals</ms> of <m><fr>rosette</fr></m>, one adds six twenties <ms>lb</ms> of <m>metal</m> for the smaller pieces. <add>They shoot at point blank 8 or 9 hundred <ms>pace</ms>s &amp; up to a thousand <ms>pace</ms>s if the <m>powder</m> is strong &amp; at range half a <ms>league</ms>.</add></ab>

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Some invented the loading of cannons with cartouches.</ab>

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Some <del><fr>po</fr></del> do not put the <m>powder</m> in the cannon all in one go but in two &amp; ramming each time, saying that each ramming raises &amp; gives a further <ms><bp>thumb</bp></ms>. But this is not certain for large pieces which are loaded with a lot of <m>powder</m>.</ab>

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The <df><fr>bastarde</fr></df>, which is a <del>culverine</del> <del>moyenne</del><comment>c\_018r\_01</comment> middle-sized piece, weighs thirty <ms>quintal</ms>s and its ball weighs <del>xx <ms>lb</ms></del> <add>xv <ms>lb</ms></add> and carries as its charge x or xii <ms>lb</ms> of <m>powder</m>. Its proportion is at the breech the <ms>thickness of two of its balls &amp; <del>the</del><add>the</add> th<del>ree</del><add>ird</add> part of of a ball</ms>. At the front, the <ms>thickness of a ball &amp; two thirds</ms>. <del><add>or</add></del> They serve to batter defences of little importance such as <env>gabions</env> and <env>garrets topped with a tower</env> &amp; similar things. It is thirteen or xiiii <fr><ms>pan</ms></fr>s long like the large cannon. Ten <al>horses</al> can move it. It accompanies well the large culverine for point blank because it carries small ammunition.</ab>

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Some give it the <ms>thickness of three balls at the breech &amp; at the front of two balls</ms>.</ab>

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The culverine <fr>bastarde</fr> weighs 35 <ms>quintal</ms>s &amp; is xxv <ms><fr>pan</fr></ms>s long. It carries three balls at the breech &amp; two in front. Its ball is like that of the <fr>bastarde</fr> piece, weighing xv <ms>lb</ms>. These are fixed pieces which cannot be moved by carriage, but are for <env>city</env> defences. Some make these xxvii or xxviii <ms><fr>pan</fr></ms>s long, like the Cow of <pl>La Rochelle</pl>. But to such pieces one gives reinforcement at the breech as of three balls. At range, they can shoot around one <ms>league</ms>, &amp; <ms>a half league</ms> at point blank. Its charge is like the <fr>bastarde</fr>. And if one wants to shoot at some <pro>cavalry</pro> quite far off, one increases the <m>powder</m> a little. A tail of smoke follows the ball which <del><fr>de</fr></del> guides your <corr>sight</corr> to where the cannonball is going. This goes for the cannon and for the culverine, and not for small pieces.</ab>

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