

cannot be easily ascertained, but it may be regarded as certain that the Chinese employed guns extensively about the beginning of the nineteenth century.

A number of years elapsed before gunpowder came to be generally used in Europe as a means of throwing projectiles.

About the year 1200 A.D., it would seem to be pretty sure that gunpowder was in use in India, and as the Saracens were about this time making their inroads into the West, it is possible that through their influence the knowledge of it reached Europe by way of Spain. The Saracens made use of the Grecian fire in their fights with the Crusaders.

Though we are indebted to the East for the discovery of the valuable explosive, due credit must be given to its European inventors. Roger Bacon takes a front rank among these, but he did not seem to design its use for war. Brother Ferrarius, a Spanish contemporary of Bacon's, is credited with having given the ingredients of Grecian fire, charcoal, saltpetre and sulphur, which are the same as gunpowder, though differing in proportion. Barthold Schwartz, it is related, was mixing the ingredients in a mortar, and placed a stone on them; but they accidentally took fire and projected the stone for some distance. However, the knowledge and general adoption of gunpowder as an element of war in Europe seems to have proceeded from Spain, whereto it was probably brought, as has been said, by the Moors and Saracens. Once it became known in Europe, the discovery was easily spread to different countries, through the medium of mercenary soldiers, who were to be found in large numbers at this period. They, too, were probably instrumental in spreading the knowledge of fire-arms through the continent.

Artillery was probably the first important implement of war in which gunpowder was given a practical application. At least, as such was it first employed in Europe, particularly, perhaps, in siege operations. But during a number of years, we do not find much mention of its extensive application on the field. Of course there were a few cannon used by the different armies, but it required a long time to educate the people to adopting it generally. This fact may perhaps be accounted for as a result of the imperfect state in which it yet was,

or it may have been owing to the ignorance of the people at the time, in the mechanical arts. For the nature and power of gunpowder should, even then, have been recognized, and it should have assigned to it that important position in military methods which belonged to it. Such was not the case, however, and for about two hundred years it took almost a minor part in the prevalent wars. It is always difficult to part with old associations, and change time-honored methods for those of nearer date. Such may have been the case in this instance. Though the early development was slow, the fact was placed beyond doubt that sooner or later gunpowder would assert its supremacy in the military art, and be considered the most important agent of destruction in the contests between rival nations; and that such has been the case, the last few hundred years of the world's history has abundantly proved. When the explosive was first used in battle it must have caused considerable consternation in the ranks. It exerted a moral as well as a physical influence, in showing that it required more than mere numbers to obtain victory.

At the battle of Crecy, A.D. 1346, it would seem that artillery was used in the field for the first time. Though it did not play a very important part, still it was retained in the English service, and was soon adopted in the others, according to Captain Hime. It showed its possibilities. Hence are we to look for the reason of its adoption. Artillery may have been used in naval service previous to its appearance on the field, or at least it received here a ready acceptance. There is not so much mention made of small arms at this time as of artillery, which may be owing to the fact of the latter's being considered the more important, and that archers reached a high degree of perfection in their art. But the application of gunpowder to small arms gradually came about, and the infantry became a most important factor in the army's list. Muskets seem to have been the generic name for small arms in their early state.

Artillery continued to be used more or less in the more important battles, from the fifteenth century, but for a number of years did not decide the fates of battles. During the seventeenth and eighteenth centuries the art of gunnery made great