CONTRIBUTIONS TO THE HISTORY OF ARMOUR, ARMS, AND MILITARY APPLIANCES IN EUROPE.

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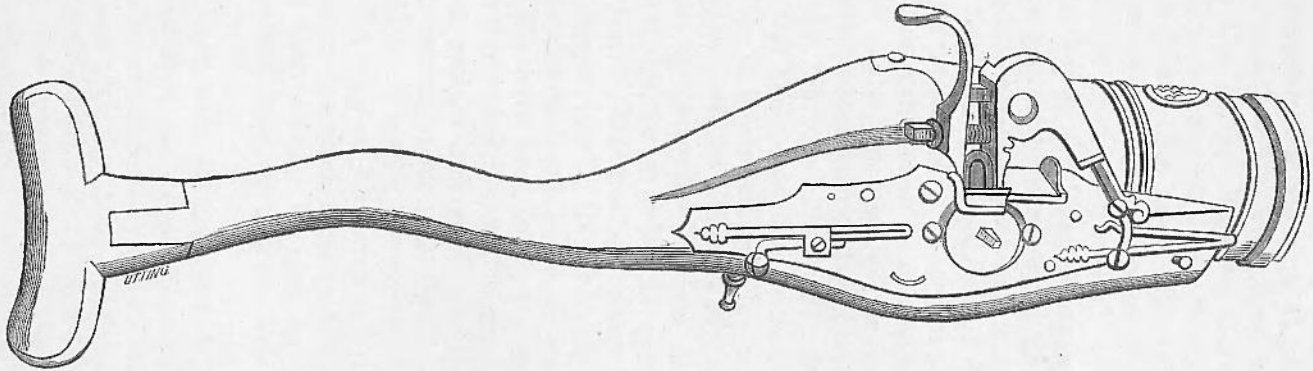
HAND-MORTAR OF THE BEGINNING OF THE SEVENTEENTH CENTURY, FROM THE ROYAL ARTILLERY MUSEUM, WOOLWICH.

In bringing under the notice of the Institute this very curious weapon for firing off grenades from the shoulder,—one of several examples preserved in the Royal Artillery Museum, at Woolwich, kindly lent for our examination by General Lefroy,—it may be desirable to take a glance at the rise and progress of explosive shells in our own and foreign services; not, however, including those of the present day.

The well-known figure of a hinged shell in the work of Valturius, published in 1472, had long been accepted as the prototype of the bomb; but very competent judges of our own day have thrown doubt on this evidence, believing that the shell in question was charged with incendiary composition, and not intended to inflict injury by its fragments on bursting. Not venturing to offer an opinion on this knotty question, I shall content myself with quoting the words of Valturius as they appear in the Libri manuscript, lately acquired by the British Museum. The invention is there described as "machina quâ pilæ æneæ tormentarii pulveris plenæ, cum fungi aridi fomite urentis, emittuntur." Though we hear nothing more of bombs till the sixteenth century, it may very well have happened that such an invention was made at the early period here noticed, and left in abeyance for a time, as we often see inventions in the military art,—and, indeed, in all arts.

In the sixteenth century the explosive shell, under the form of the Grenade, makes its appearance. In 1537, we learn from Père Daniel, who cites the memoirs of Du Bellay, that, in making preparation for resisting an attack upon



Hand-Mortar in the Royal Artillery Museum, Woolwich.

Date, early in the seventeenth century

Arles by the Emperor Charles V., that place was furnished with "lances, pots, et grenades, dont on fit faire grande quantité" (vol. i. p. 585). We must therefore, adds Daniel, fix the invention of grenades, at the latest, under the reign of Francis the First. Six years afterwards (in 1543) we have a very curious and clear account of the fabrication of explosive shells in Stow's "Annales." Under the 35th of Henry VIII. he writes:—"King Henry, minding wars with Fraunce, made great preparation and provision, as well of munitions and artillery as also of brasse ordinance, amongst which, at that time, by one Peter Baud, a French-man borne, a gunfounder or maker of great ordinance, and one other alien, called Peter van Collen, a gunsmith, both the king's feed men; who, conferring together, devised and caused to be made certain *morter pieces*, being at the mouth from eleven inches unto nineteen inches wide; for the use whereof the said Peter and Peter caused to be made certaine hollow shot of cast yron, to be stuffed with fire-worke or wild fire, whereof the *bigger sorte* for the same had screwes of yron to receive a match to carry fire kindled, that the fier-work might be set on fire, for *to breake in small pieces the same hollow shot*, whereof the smallest piece hitting any man, would kill or spoyle him" (p. 584, ed. of 1631). This seems clearly the mortar and bomb, as we now understand those terms. We have here, distinctly named, the mortar-piece, of which the "bigger sorte" carried a shell upwards of a foot and a half in diameter; and the purpose of this cast-iron shell was to break into small pieces when falling among the enemy. Whether the worthy "Peter and Peter" had got hold of a copy of Valturius and modified his device to the result above described, must be left to our conjecture. I may remark that cannon founded by the above-named Peter Baude are still preserved in the Tower and Woolwich collections.

In 1562, we learn from the Memoirs of Castelnau, cited in the "Milice Française," that grenades were used at the siege of Rouen, and that the Comte de Rendan was there killed by the bursting of one (vol. i. p. 585). At the siege of Vaktendonck, in the Low Countries, in 1588, bombs appear to have been employed with great success. "Nothing," says Strada, "terrified the townsmen more than certain great hollow iron balls filled with powder and with other materials, which were

inextinguishable. They had a fuse and were cast from a mortar. Falling upon the roofs of the houses, they broke through them, and as soon as the charge ignited, they burst, spreading on all sides a flame that could with difficulty be extinguished with water" (Daniel, vol. i. p. 580). In the "Commentaries" of Sir Francis Vere we read that, at the siege of Ostend, in 1601, the defenders had "firkins of ashes, to be tumbled upon the enemie to blind them; little quadrant tenter-nails, three sticking in the ground and one upright; many great heaps of stones and brickbats, which the soldiers brought from the old church they had shot down; ropes of pitch; hoops bound about with squibs and fire-works to throw among them; *great store of hand-granadoes;* and clubs, which we called Hercules'-clubs, with heavy heads of wood, and nails driven into the squares of them" (Commentaries, p. 170).

In 1634 the French first adopted the mortar and shell, and it was from an Englishman that they obtained this powerful auxiliary. "The late king, Louis XIII.," says Blondel, in his "Art de jetter les Bombes," "caused the 'Sieur Malthus,' an English engineer, to come from Holland for this purpose;" and we have seen him, he adds, in several sieges directing the mortar batteries with great success. In the "Pratique de la Guerre" of Malthus himself, the author describes his mortar, which was 12 in. in diameter, 3 in. thick at the mouth, and three at the chamber: the bomb was $11\frac{1}{2}$ in. in diameter, its thickness an inch and a fraction: the fuse was of wood. Ward, in his "Animadversions of Warre," published in 1639, tells us:—"The last kinds of ordnance are the morter-peece, the square murtherers, tortles, and petards." The first three of these were mortars. The mortar is also called by him Saints' Bell—"fashioned like to a morter or Saints' Bell" (p. 113). Granadoes, he adds at a later page, are of two kinds, for morters and for hand. "Those that are to be shotte out of a morter-peece are to be cast in brasse for the principall service, or made of glasse or earth. There is another sort made of canvas, and that is used properly to set fire upon houses and townes" (chapt. 243).

Nathanael Nye, "Master Gunner of the City of Worcester," in his "Art of Gunnery," published in 1647, remarks that the soldiers of his day were by no means fond of hand-

ling the grenade: they were loath "to meddle with the hand-granadoes, the using of them being somewhat dangerous" (p. 75). He further apprises us that "mortars of brass and iron being wanting, they may be made, for a need, of wood and pastbord. The bore into which you put your powder must be plated with copper or lattin, if it be possible." And he adds:—"There is a very honest man in the market town of Bromsgrove, named John Tilt, who can make either morter-peeces or ordnance, with tin, wire, pastbord and glue, of excellent durance and service, if not wronged in the charge or loading of them" (p. 56).

In 1667 the Grenadier became a regular constituent of the French army: every company of the *Régiment du Roi* had four of them. In 1670 they were united into a single company: in 1672 the first thirty regiments of the line had each its company of grenadiers. The adoption of grenadiers by Louis XIV. is thus explained by Marshal Puysegur in his "Art de la Guerre,"—"The king, having formed many sieges, at first volunteers were invited for throwing the grenades. At length his majesty resolved to establish Companies for that service. These had pouches to carry the grenades and hatchets to use in attacks in the trenches and other places, for cutting down palisades, and breaking through doors" (vol. i. p. 222).

Turner, in his "Pallas Armata," 1671, says:—"The fourth kind of ordnance is the mortar, under which comprehend pot-pieces, square-murtherers, tortles, and petards. The pot-piece shoots granados, fireballs and stones" (p. 192).

In 1676, Louis XIV. formed the company of *Grenadiers à cheval*, consisting of 130 men, with their special officers. They carried, besides their pouch of grenades, sword, fusil and pistols.

Under the year 1678, Evelyn in his Memoirs tells us that, in the month of June, he visited the Camp at Hounslow Heath, and adds:—"Now were brought into service a new sort of soldiers called granadiers, who were dextrous in flinging hand granados, every one having a pouch full. They had furred caps with coped crownes like Janizaries, which made them looke very fierce; and some had long hoods hanging down behind, as we picture fools. Their clothing being likewise pybald, yellow and red" (vol. i. p. 497, ed. 1819).

From the Manuals for the Exercise of British Troops, published by royal command, we learn the armament of the grenadier from 1682 to the end of the century. In 1682 he has pouch of "grenados," match, fusil with bayonet, and hatchet. In 1690 he is provided with pouch of "granades," match, fusil with plug bayonet and sling, *cartridges*, and primer. It may be remarked that while, at this date, the grenadier and dragoon have cartridges, the musquetier still carries his charges in the old "collar of bandeliers." In 1694, St. Remy gives us a good and well-detailed print of the French grenadier's pouch, hatchet, and belt ("Mémoires d'Artillerie," pl. 88), and of his fusil with bayonet (pl. 80).

The horse-grenadier is found in England as well as in France. Grose, in his "History of the English Army," gives us an account of two of them "riding before Queen Anne's coach with fixed bayonets; which bayonets had handles with rings fixed to them, for the admission of the barrel of the piece" (vol. ii. p. 342).

In 1735 we have the curious work of Bernard Lens, "limner to his Majesty," published by his son, and to be had only, as he tells us, "at his lodgings at Mr. Mitchell's, a peruke maker's, in Jermyn Street, Saint James's." The prints, he says in his Dedication to the Duke of Cumberland, "naturally fly to your Royal Highness's patronage, and are with the profoundest respect and humility," &c., &c. The armament here consists of pouch, match, fusil with sling and *socket* bayonet, and basket-hilted sabre. The figures are nineteen in number, and 7 inches high; one of which, labelled "Blow your Match," is here reproduced.[1]

An arrangement, by which large and small shells might be fired at the same time from one mortar, is shown in Daniel's "Milice Françoise" (vol. i. p. 587, and pl. 41). The smaller shells are called *Perdreaux;* resembling, he tells us, a covey of young partridges, among which the bomb represents the mother partridge—"comme une compagnie de perdreaux, dont la bombe represente la mère perdrix." This device does not appear to have had any very great success, presenting probably too much analogy to the equally ingenious invention of the large aperture for the cat and the

[1] The title of this curious and rare book, of which a good copy exists in the Royal Artillery Library at Woolwich, is "The Grenadiers' Exercise of the Grenado in His Majesty's First Regiment of Foot Guards."

Grenadier of H.M. First Regiment of Foot Guards, 1735.

From an engraving by Bernard Lens, limner to George II.

smaller one for the kittens. Wall-grenades are, as their name indicates, for use in defence of walls against a besieging force. In Grose's "Ancient Armour," there is a curious plate of an instrument, which he calls "a Tinker's mortar": "this," he says, "being fixed on a stick, was used for throwing grenades." It is figured on plate 49 of his work. Somewhat similar are the cups affixed to fusils for firing grenades, of which examples will be found in the Tower and Woolwich collections. Those in the Tower are of the time of James II.

The HAND-MORTAR now before us appears to be of the early part of the seventeenth century; the invention itself being probably of about the same date. It has a wheel-lock, the brass barrel has the arms of Wurtemburg chased upon it near the muzzle. The calibre of the mortar is $2\frac{3}{8}$ in.; of its chamber 1 in.; depth of the chamber $2\frac{1}{4}$ in.: of the mortar $4\frac{5}{8}$ in.: total length of the weapon $2\frac{1}{4}$ ft. The stock, it will be seen, is contrived in the view of lightening the piece as much as possible. It is inlaid with ivory, having the figure of a cannonier directing his battery against a walled town. Several other examples of the hand-mortar will be found in the Tower and Woolwich museums, all having flint locks. There is one in the Goodrich Court collection, figured in the second volume of Skelton's "Illustrations." It has both match and wheel-lock. In the fine specimen-number of M. Micol's *Panoplie Européenne*, depicting various arms in the Museum of Bordeaux, we have a representation of a hand-mortar of the eighteenth century. It closely resembles the most recent of the Woolwich examples. It seems clear, from the rarity of specimens, that this implement, the Hand-mortar, was never of extensive adoption; and the same may be said of the Fusil-mortar. Indeed, a whole museum might be filled with projects for destruction which have never destroyed anything but the fortunes of their inventors.