

INGLES

500 YEARS OF BASQUE FIRE-ARMS MANUFACTURE EIBAR



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500 YEARS
OF BASQUE FIRE-ARMS
MANUFACTURE

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Donado por Family R. Laranga
2017

There is something important in the life of any town, its history, its roots and its idiosyncrasy. We, as inhabitants of Eibar, have our own history, which we present, in our task to "recuperar Eibar", by means of the book "500 Years of Basque Armoury", a prelude to the Armoury Fair which is going to take place next June. The armoury sector has existed for centuries in our history, however it has been unknown and therefore many times manipulated. That is the reason for the publication of this work, that is, to make people know the reality of the same.

We have had a rich industrial development, but being our past important, we are trying to prepare ourselves for the future. We are aware of the difficulties of nowadays armoury sector, and that is why we have organized this Fair, which will be located at the Armoury School premises.

This kind of events, including the Industrial Show celebrated in March 89, are framed within the future perspective we have pointed out before. A future where we must continue being a fundamental part.

Finally, I would like to encourage all the inhabitants of Eibar to go on working so that we can offer our children a better and more important future.

AURORA BASCARAN MARTINEZ

Mayoress of Eibar

INTRODUCTION

When, some time ago, Santiago Gorrochategui, councillor of the Most Excellent Town Hall of Eibar and president of the Department of Economic Development, spoke to me about his plan for organising a great exhibition on the armaments industry for the summer of 1990, the least that I could provide, was to cooperate by writing a brief and superficial list of information of the uninterrupted five hundred years of our armaments industry. Encouraged by the mayoress of the city of Eibar, Aurora Bascaran, and with the help of my companion Juan L. Calvó Pascual, an expert in cataloguing antique guns, I have been able to make this historical journey which the reader is holding in his hands.

The only thing which this little work intends is to divulge, in an elementary and simple way and for everybody, the most important characteristics contained in strict, historical documents.

There is also further instructive information for increasing the understanding of portable firearms, built by the gunsmith of this region over such a long period. There are also interesting illustrations.


This is also a homage to the many thousands of craftsmen-artists as Jovellanos called them - who, in Eibar and the arms manufacturing area, working towns, workshop towns I would say, have been the source and origin of the manufacturing diversification of today.

For them, the important thing was a goods well done. A gunsmith never thinks about how his arm might be used: that is a question which concerns those using it. Therefore, we can state here what a certain central European gunsmith wrote many years ago: "Shooting is beautiful; with one exception: which I reject and hate as much as I love all the rest. I do not accept shooting against people. Precisely the gunsmiths - the real masters of the trade - could never approve war, because otherwise they would not have made such beautiful arms".

RAMIRO LARRAÑAGA

(de la "Real Sociedad Bascongada de los Amigos del País")

THE FIRST REFERENCES

 Our portable fire-arm industry has reached over half a millenium of uninterrupted manufacture of small cannon, shotguns, harquebuses muskets, rifles, carbines, short carbines, pistols, revolvers, etc., with all the different types which have appeared during the last five hundred years.

The ironworkers-gunsmiths of the Basque territory excelled in the making of manual devices in forges from the final years of the fifteenth century. These were very rudimentary and not very effective at the beginning because the gunpowder did not have sufficient force. They can be considered as the first manufacturers of these arms. in mass production. This ocurred some time before the period generally stated by some historians for the introduction of portable fire-arms in Spain. It is usually attributed, wrongly, to certain gunsmiths brought from Germany by the Emperor Charles I around 1530. Our gunsmiths were already working on them during the reign of Ferdinand and Isabella, before the discovery of America, according to strict references.

The first known reference dates from the year 1480 when all types of arms for the army were requested urgently from the ironworks of Guipuzcoa, Alava and Vizcaya. From this time on the requests for arms are constant from the Spanish monarchs. In 1485 gunsmiths from Guipuzcoa went to the war in Granada.

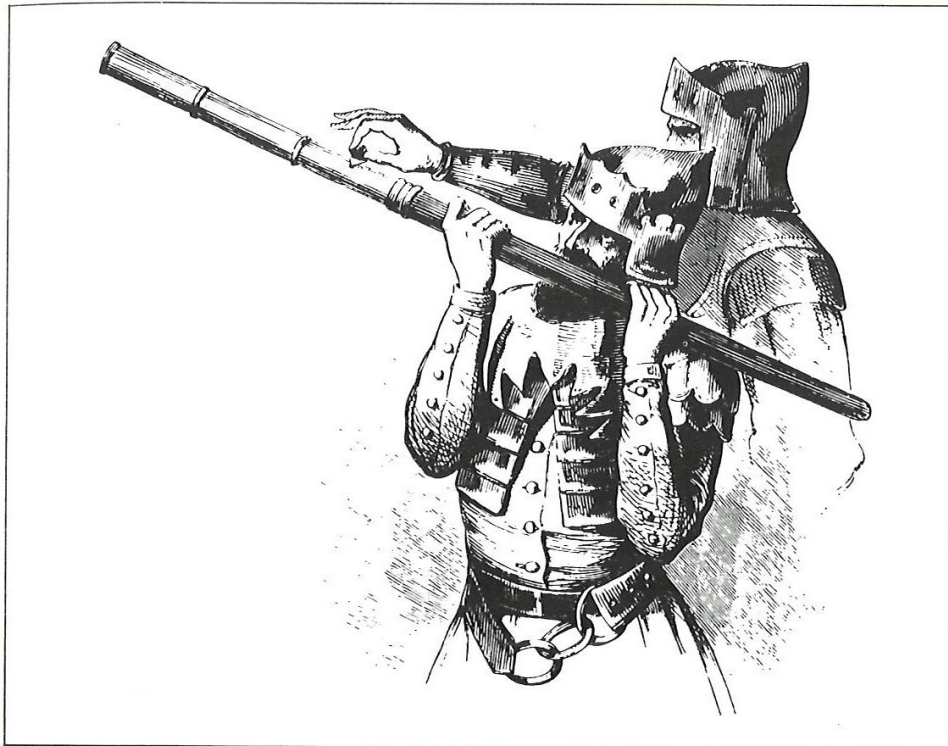


Arms forgers

Although these documentary references do not point out exactly those places where the arms were built, during these years of the fifteenth century, it can be deduced that the villages in the Deba river basin are the main areas for this work. In fact, in the first years of the sixteenth century in many authentic registers, it is possible to know the names and the towns of master harquebus makers, which made up the portable fire-arms together with the pikes-lances, coats of armour and tools. Pro-

duction was considerable. Each master worked at his forge and water device with his trained workmen, generally at the foot of a conduit providing a waterfall producing driving force.

Amongst these first master gunsmiths, who formed the basis for the organization of the guild set up some years later, it is possible to mention Martin de Zamudio, Juan Ibañez de Loyola, Juan de Ordanza, Anton de Urquizu, Juan de Orbea, Martin Ibañez de Unamuno, Juan de Hermua, Martin de Orbeaga, Juan Martinez de Churruca, and more who from the first decade of the sixteenth century figure in different fire-arms supply contracts, and who were established in the towns of Larrabezua, Placencia, Eibar, Elorrio, Ermua and Durango.



Print showing the experimental "fire stick"

These arms manufacturers also subcontracted work out to other similar workshops. This is shown in one of the documents of Anton de Urquizu from Elorrio where he stated that the harquebuses were manufactured in different towns of Guipuzcoa such as "*Mondragon e Oñate, e Vergara, e Plazenzia e Heybar, e asimismo en esta villa de Helorrio*". Production was considerable and increasing during the first third of the sixteenth century and the Deba basin was emerging as the most important and almost exclusive source for the supply of portable fire-arms in the Iberian peninsula. Both the army and the navy and the troops for colonizing the recently discovered America were supplied by our area. This area also supplied the arms and tools for Magellan's first round the world expedition, which was finished by Elcano.

The town of Elgoibar, called "*Villamayor de Marquina*" according to its foundation charter, with its famous iron-works and the river port of Alzola, was where shipments were concentrated for shipment down river to the coast, for unloading at Deva for other ports. It also received materials and distributed them to the iron works for manufacturing.

The importance acquired by this industrial complex obliged the crown to nominate representatives or commissioners to these arms manufacturers, in order to select conventional models, fix prices, delivery times, testing and other matters concerning the supplying of arms, which by means of a contract or payment on account had to be supplied punctually and within the foreseen time period.

THE GUILD PERIOD

The guilds or brotherhoods are social phenomena appearing in the Middle Ages for the defense and organization of persons working in the same profession. The gunsmiths could not be any different. From 1501 when a certain Juan Pz. de Tolosa began his job as the commissioner-receiver of arms for Guipuzcoa and Vizcaya, and even more so when in 1542 Francisco de Roxas, an artillery captain was designated as the royal commissioner in our arms manufacturing area, the need to promote and organize an association benefitting all arms manufacturers was evident, and this could not be done in any other way than by the guild system. These concerns materialized in 1573, when once the guilds were organized, they offered their services to King Felipe II to manufacture all types of arms for the army and submitting their work to inspectors named by royal decree and as a guarantee of a permanent occupation and means of subsistence for the gunsmiths and their families. The guild headquarters were set up in Placencia de Soraluze under the mention of "Royal Factories", so called because they worked for the crown. The guilds were regulated into cannon makers, stock makers, lock makers and riggers. In this way all the workshops existing in Eibar, Elgoibar, Ermua, Mondragon, etc., were associated. Apart from those from Placencia, every year they named their guild representatives and they held their meetings to resolve their internal questions, social as well as economic and concerning labour. They bought the materials to be manufactured on a credit basis and distributed the orders amongst all the workshops throughout the arms manufacturing area, amongst which the towns of Eibar and Placencia were always prominent because of the large number of masters registered there; their industrial history is similar. Generally the examining masters came from these two towns.

In a sense, the guild organization run by the gunsmiths was like cooperativism amongst the small workshops, which all to



Cannon makers and stock makers guilds

gether formed the "Reales Fábricas de Armas de Guipúzcoa y Vizcaya", (The Royal Arms Factories of Guipuzcoa and Vizcaya) sometimes called "de Cantabria" and later on "de Placencia". The guilds had a social fund, which was covered by two percent of the amount of all important invoices. This is somewhat similar to a union in modern times. The apprentices were contracted before a notary, there are frequent cases recorded, and the masters and trained workmen had to pass a proficiency examination. Our arms industry was founded on a social and economic basis. It produced amazing figures, many thousands, of the models of each period, methodically and mass produced by means of the corresponding guild specialties and their sub-groups.

At the beginning of the sixteenth century the Casa de Contratación was founded in Seville, and through it several supplies



Lock and rig makers guilds

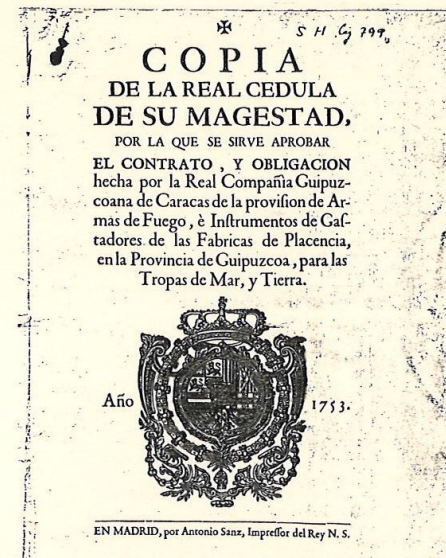
of arms and tools were made for the American colonies. The incessant work of our gunsmiths is also evident in the conflicts at Oran, Flanders, the Phillipines, etc. The Real Fabrica de Armas (Royal Arms Factory) was founded in Tolosa around 1630 and specialized in steel arms. A continuous relationship began because the bayonets and swords were a complement to the firearms produced in the Deba valley area.

Production grew considerably in the seventeenth century. Perfection and skill increased in the building of barrels and bolt mechanisms and arms were built to order for important persons and members of the nobility.

The delays in payment - thousands of arms were produced - created frequent conflicts which were bad for everybody involved. There were claims, agents sent to Madrid and someti-

mes, even suspension of production. The intervention of the powerful Real Compañía Guipuzcoana de Caracas with regards to the Basque arms guilds from 1735 onwards ensured punctual payment, applying their commission or benefit. However the control restricted some aspects and powers of the four guild delegates. However, production was increased and a lot was exported to America.

In 1748 there was a contract for the supply of 180,000 infantry muskets, apart from the other contracted obligations. Corresponding to this period is the famous Lamot engraving, 1756, which shows interesting details of the workshops in the firearms manufacturing area as well as its organization.



Historical document

The following table shows the composition of the firearms guilds during the eighteenth century:

YEAR	MASTER CANNON MAKERS	SPARK-GAP	MASTER STOCK MAKERS	MASTER RIGGERS
1721	25	64	56	48
1756	30	86	77	77
1790	38	97	64	65

In a document presented to the King by the "Sociedad Bascongada de los Amigos del País" in 1766, the following significant paragraphs can be read: *"The natives of the Basque country showed a natural aptitude for all types of manufacturing. The perfection reached in arms manufacture in Eybar, Placencia and surrounding areas, more than hints at this.* This explains why some of our master barrel makers carried out a royal command to start the manufacture of barrels for portable firearms at Naples, in 1760.

The personnel working in the firearms industry at the end of the eighteenth century is shown in the following document, the text of which runs as follows:

"Royal Factories of muskets, shotguns, pistols and their stocks, which are made in the towns of Placencia, Eybar and Elgoybar to supply His Majesty's Army and private persons, and in which 765 men are continuously working, counting Masters, Trained workmen and Apprentices, as follows:

Guild of Masters, Trained workmen and Apprentices working continuously at the said Royal Factories making barrels for muskets, shotguns and pistols..... 235

Guild of Masters, Trained workmen and Apprentices, Riggers of muskets, shotguns and pistols..... 95

Guild of masters, Trained workmen and Apprentices making bolt mechanisms for muskets, shotguns and pistols.....331

Guild of Masters, Trained workmen and Apprentices macking stocks for muskets, shotguns and pistols.....104

Total workforce including Masters, Trained workmen and Apprentices.....765

These eighteenth century documents correspond to that brilliant period in the Basque firearms industry which was called "the best in Europe". This condition has not been sufficiently established by present day commentators on industrial history.

Another very special detail of those times, is that the contents of the contracts and commands affecting the members of the guilds, was previously explained to them in Basque, or as stated "Lengua bulgar bascongada", which was what they normally spoke and used, so that they were duly informed.

A large supply of tools for building were sent to Cadiz and eventually America. The curious detail is that the price was "by weight", so that the 15,388 pounds weight at one "Real" and 1/4 "Vellons" was worth 19,235 silver "Reales". This was in 1761.

The guild masters did not ignore the making of steel arms in Eibar and the surrounding villages. In 1787, through an order from the Marquis de Sonora, two hundred infantry sabre and another two hundred cavalry swords were sent to the island of Santo Domingo. These are mere references, and nothing more, of what was manufactured.

The feastday of Saint Barbara was celebrated as the patron saint of the activity and different feasts were organized.



XILOGRAFIA S. XVIII

Saint Barbara, Patron Saint of arms makers

Due to their art and workmanship, the following families became conspicuous during this century: Bustindui, Gabiola, Astiazaran, Zuloaga, Zarrandona, Aldazabal and others, while at court, the royal harquebus makers Zelaya, Zenarro and other Basques became prominent. Eusebio Zuloaga, grandfather of the famous Eibar painter Ignacio Zuloaga, ended the century with this important title.

In 1784, Ignacio Maria de IbarzabalAldazabal founded his workshop in Eibar which soon became enormously important. In a short time he became general contractor for the guilds and he increased his own production to provide the guards and scabbards for the swords and sabres made at the Steelarms Factory in Toledo. Ibarzabal also contributed to the founding of the Artillery Museum in Madrid in 1804, when he was summoned by the Prince of Peace. His son Gabriel Benito succeeded him at the head of the industry.

The French invasion of 1793, with the burning of Eibar, provoked a massive emigration of gunsmiths from the area, and the government of the nation took advantage of this event and using them, set up the musket factories at Oviedo and Trubia. The same thing happened with the war of Independence (Peninsula war) a few years later, when our gunsmiths sought refuge first of all at Zaragoza and then began to establish workshops and factories at Molina de Aragon, Valencia, Seville and Ceuta. However, between both wars, in the period between 1800 and 1808, there was a very high production, and even after several deliveries, 30,000 muskets remained in store.

The first Carlist war newly hindered development in the arms manufacturing region. Eibar was a Liberal bastion. But, the gunsmiths were divided ideologically and on this occasion worked for both sides. The guild organization suffered badly and its end was predicted after three hundred years activity.

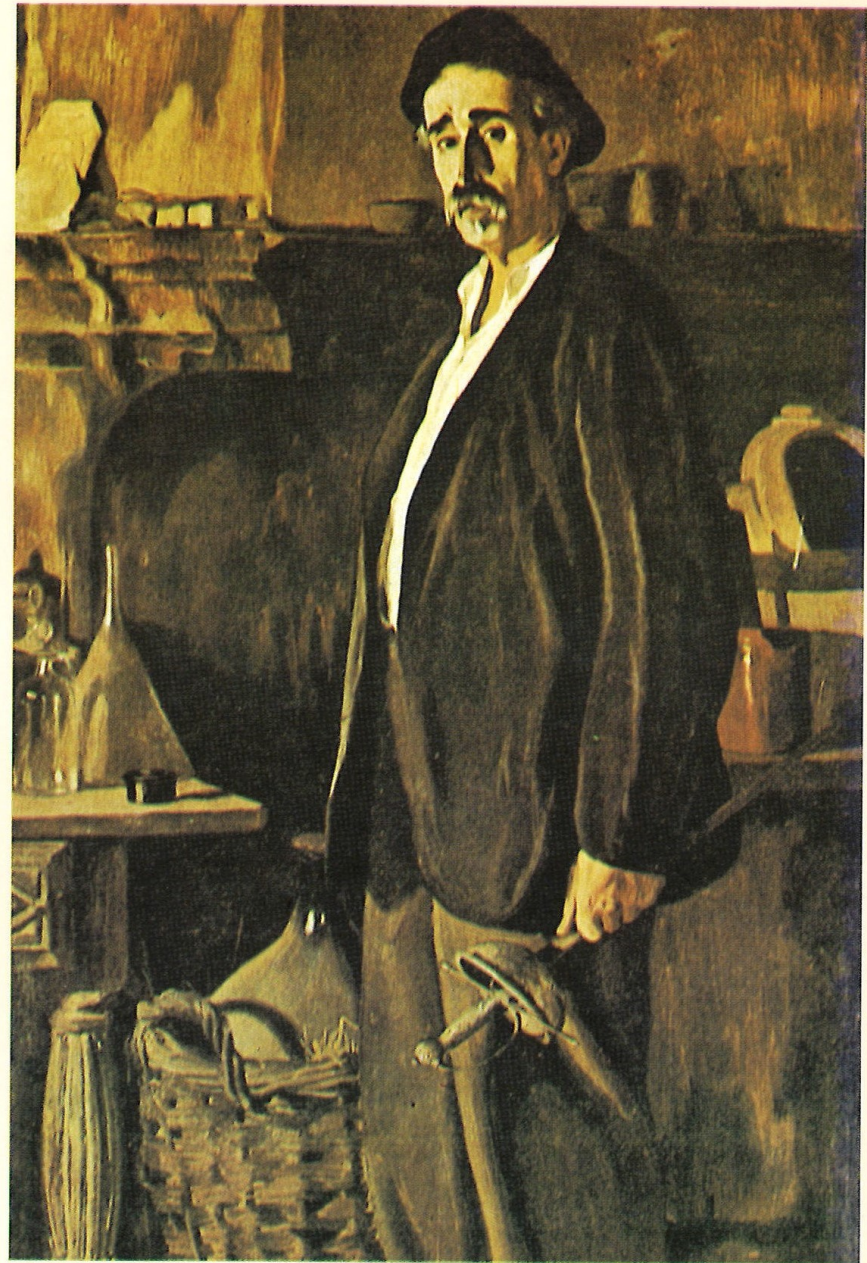
INDUSTRIALIZATION

New formulas were coming to light in the world of labour. There is no doubt that the guilds had positive aspects in their time, but before the new mercantile horizons which were opening up, they did not have the conditions of freedom so that each manufacturer could seek out his own clients and develop his own initiative and requirements. Little by little the free market was coming into being and it was necessary to adapt to the new social and working postulates. Furthermore, some arms manufacturers had started to offer more advantageous arms prices to the government than those presented by the guild organization itself; a very significant detail.

The nineteenth century was not only conflictive because of the wars and struggles which went on in Spain from the beginning to the end, so that one more negative factor has to be added to the notable backwardness in industry, but it was also revolutionary in the manufacture of firearms, both for military use and hunting.

The flintlock was substituted by the plunger for muzzle loading armament and soon the evolution of the cartridge provoked the substitution of muzzle loading for breech loading, and at the same time gun barrels began to be bored. Bullets began to lose their spherical shape for shapes more in accordance with the boring of barrels. Repeating arms began to be generalized after the invention of the revolver and smokeless gunpowder allowed the development of semi-automatic and automatic mechanism which revolutionized the arms industry.

The decoration of luxury weapons was also developing and in this aspect the work of Eusebio Zuloaga at his factory



Plácido Zuloaga at his isorkshop. Printed by his son Ignacio Zuloaga.



"Kontadorekua", Fortified Manor House.

founded in Eibar in 1848, was of great importance. His methods of decorating with inlaid of gold and silver, called "damaskeening", were perfected by his son Placido by means of "knife grooving", and this art from Eibar, conceived for luxury arms soon spread to other localities and was used in many different objects, most of them not related to the original employment.

The family home of the Zuloagas, called "Kontadorekua" was burned down in Eibar in 1937, during the civil war. There used to be a very complete museum in it, and it also contained the original workshop where very notable works in damaskeening, engraving, enamelling and chiselling could be found. The magnificent pantheon of General Prim, a large table-top clock for Napoleon III, a chest for Rothschild,



Gral. Prim Sepulchre, Damaskeened by Plácido Zuloaga and Cooperators.

different pieces for the Royal Armoury in Madrid, an altar for the Sanctuary at Loyola, amphoras and urns and many other types of work which nowadays are irreplaceable.

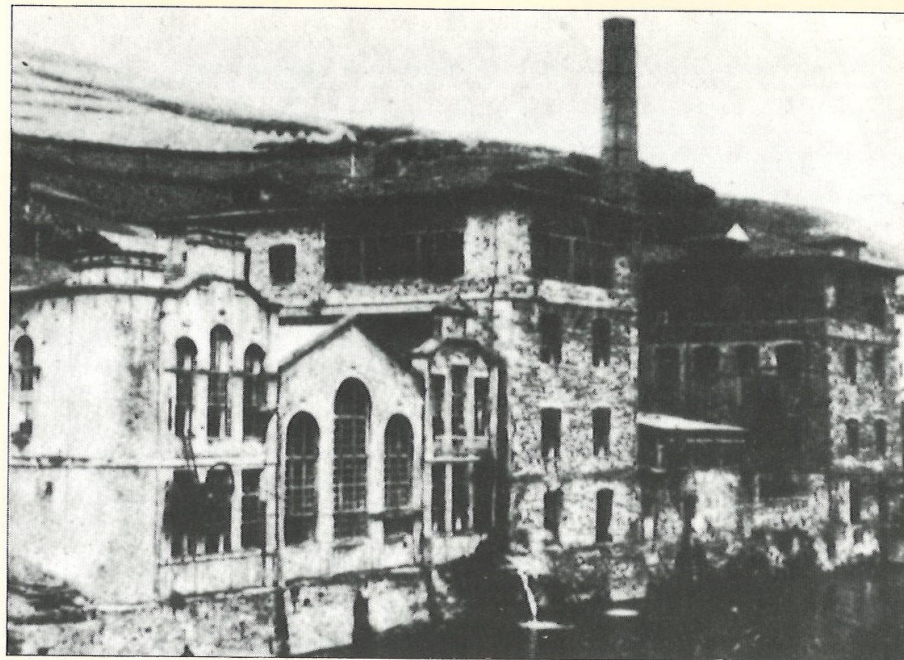
Eibar has had notable engravers, both in damaskeening and stroke engraving. In witness of this are the many shotguns and pistols throughout the world, forming part of many collections, thereby showing the artistic ability of many craftsmen, generally anonymous, and who rarely registered their work.

In 1865 a Receiving Commission designated by the Ministry of War wound up the property of the guilds due to the Royal Orders for suppressing the Royal Factories at Placencia, which had been the headquarters of the four guilds. A ne-

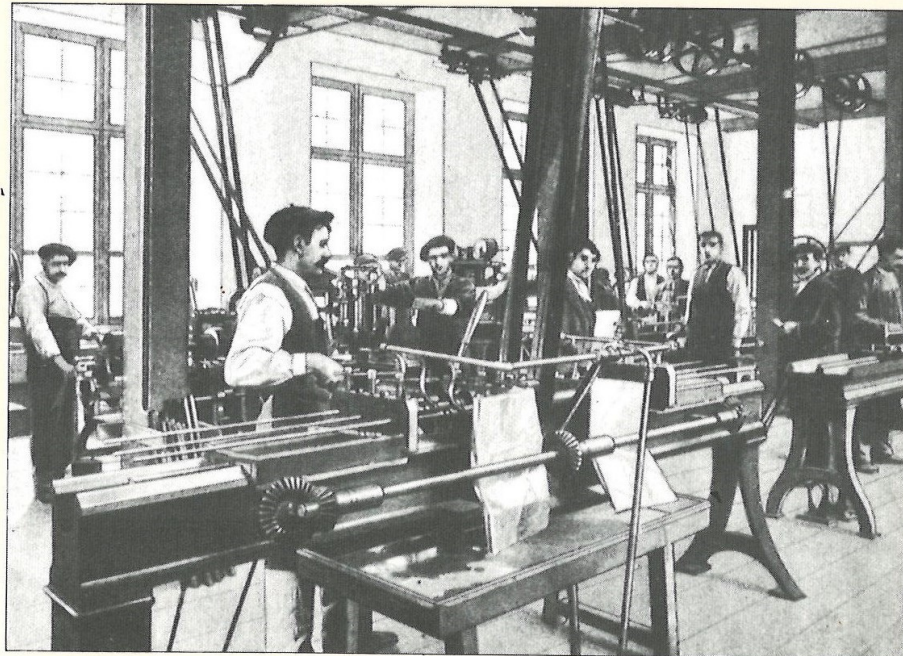
gative aspect of the Comisión was the transfer to Madrid of a deposit of antique arms which the master gunsmiths kept.

During the nineteenth century, apart from the Ibarzabal factory already mentioned, several others were founded and functioned successfully, including: Orbea Hermanos, Larrañaga, Anitua y Charola, Zulaica, Garate y Anitua which developed from the workshop of Manuel Garate, the first builder of the revolver in Eibar according to the records. All of these companies were in Eibar. Ibarra and the Euskalduna company were in Placencia de las Armas; Riera, Lopez y Compañia in Durango. There were very many gunsmith workshops in the most unsuspected places, even in cellars and garrets in some cases, who worked for these companies at agreed prices until many of them could set themselves up as small businessmen. This is the way the gun manufacturing companies grew during the last years of the nineteenth century and the first third of the twentieth century. Many important companies can be pointed out such as Victor Sarasqueta, Aramberri, Zulaica, Vicente Arizmendi, Jose Cruz Echeverria, Treviño, Juaristi, Areitio, Crucelegui, Zamacola, Apalategui, Ugartechea and many others who followed these in the manufacture of long arms, or like Bonifacio Echeverria, the Gabilondos or the Uncetas in sidearms, and others like ALFA, Beistegui and others at the outstart.

In an electoral census at the beginning of the present century, the following data can be observed: Eibar had 1,149 gunsmiths; Placencia had 257 and Elgoibar 103. The first two towns had more than 50% of the total census and the same thing occurred in Ermua. Furthermore there were 115 engravers in Eibar.



"Euskalduna" factory in Placencia



Victor Sarasqueta Cortaberría y Cía, 1902. Machines department. Drilling and boring of long arms.

In the manufacturer's census of 1929 the following data is obtained:

Nº OF HANDGUN MANUFACTURERS	IDEM OF LONG ARMS	MECHANIZING OF PARTS
Eibar 50	Eibar 41	Eibar 73
Placencia 5	Placencia..... 15	Placencia..... 15
Elgoibar 2	Elgoibar 2	Elgoibar 4
Ermua 11	Elgueta 1	Ermua 9
Gernica 2		Zaldibar 1
Zumárraga 1		Berriz 2
		Elorrio 2
		Elgueta 5
		Bergara 1
		Legazpia 1

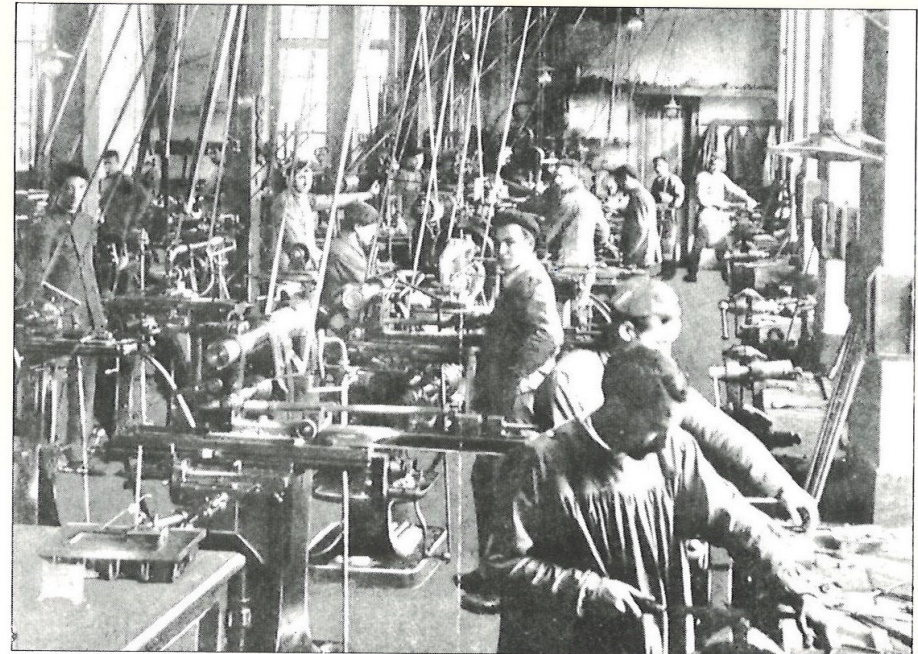
A fact should be pointed out in remembrance of those gunsmiths of the past: thanks to them and to their vigilance and initiatives there is still an armament industry throughout the Deba valley. And that other great industrial activity for which it is famous is also directly derived from the gunsmiths craft because there it has its origins. This is the industrial heritage which should always be considered throughout the arms manufacturing area, with Eibar as its focal point.

Therefore, to do justice to this industrial inheritance, a "Monumento to the Gunsmith" should be set up, also showing something concerning the engraver.

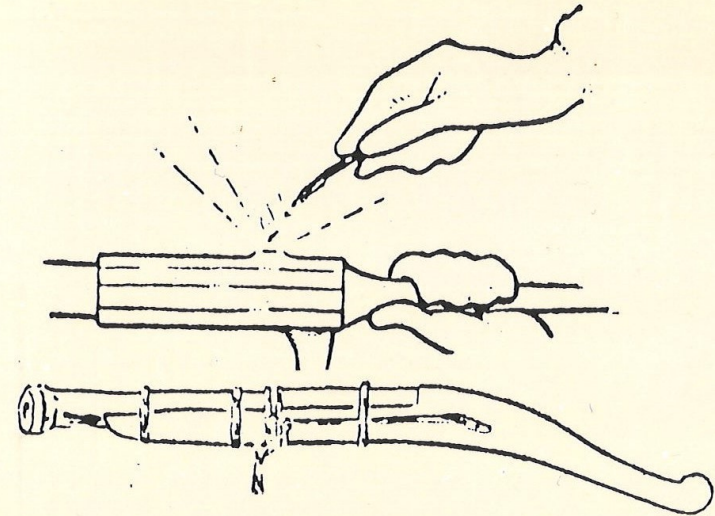
Also, and for the same reason, it would be reasonable to organize in the Arrate Shooting Ground, national and international competitions for muzzle loaders, not only because guns of these characteristics have been made here for centuries, but also because the making of replicas occupies an important sector of our gun making industry.



Victor Sarasqueta, Cortaberría y Cía. 1902. Adjusting section.



Arms factory in Eibar at the beginning of the century.



Tentative essays for the hand-held cannon.

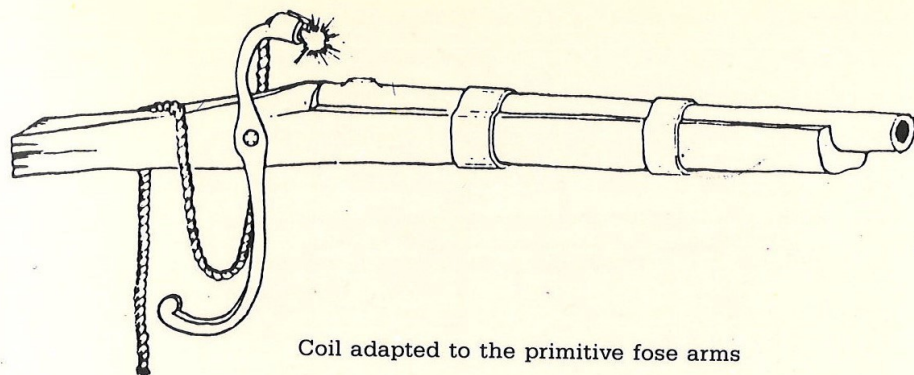
Hand held cannon.-The first hand or portable device was derived from the artillery as such, which was quite some time before individual firearms. This is because of the low power which gunpowder had at the beginning. It was a rude cannon, small and short, held by brackets to a wooden support, and which was fired by means of a fuse, independent, usually applied by a second person who helped the marksman. It went out of use during the fifteenth century when the crossbow remained a lot more effective. This primitive device was also known by other names such as the "thunder stick" or "fire stick".

Espingarde - Moorish gun.-Portable firearm with a very long barrel and supporting butt. This is mentioned because during the first years of the fifteenth - documents from the Simancas General Archives 1511-14 - a large number were made in the Basque arms. manufacturing area. They were com-

mon amongst the arabs, and generally, the examples which have been conserved have the stock and fittings inlaid with mother of pearl and metals forming patterns.

Shotgun.-At the beginning it was a military weapon and until the first few years of the harquebus. The first records mentioning the name in our area go back to the last years of the fifteenth century and massive production has been demonstrated in documents at the beginning of the sixteenth century. At the present time the shotgun means a hunting gun exclusively. However, in some country homes it was called "arkautza" until quite recently. This is the Basque derivation of the term hunting harquebus.

Harquebus.-Long firearm used, especially, by the infantry since the beginning of the sixteenth century, when it is clearly differentiated from the Moorish gun in the documentary records of 1511.



Coil adapted to the primitive fose arms

At the beginning it was probably quite a heavy arm, because in 1515 there is a description of "four arquebuses, like thunder from the sea", which describes the size and sound which these arms may have had at the beginning. The arquebus became lighter as the bolt mechanisms were improved and its calibre was reduced. It also became the weapon the nobility used for hunting. The name fell into disuse at the beginning of the eighteenth century and was substituted by the name fusil, were by reducing its weight some more, allowed the application of a bayonet.

Musket.-Double the weight and calibre of the arquebus, it had to be supported on a fork rest for firing. Thousands were built in the Basque arms manufacturing area. In 1526 they were being built, apart from the arquebuses for the troops of the emperor Carlos I, by the gunsmith Martin Ibañez de Unamuno according to certain actions wich were

taken at the time. And in the Simancas General Archives there is evidence of constant supplies from the year 1533. In the year 1594 there is a mention of "muskets with different ammunition" which, contrary to what it would appear, were probably pieces with less weight and calibre.

Horse pistol or "little arquebus".-A semi-short firearms used by the cavalry, who used a hook to hold it to the saddle. In 1636 a supply of "200 horse pistols" and another "400 flint carabines" were made to the army operating in Pernambuco, which shows that large scale production by the gunsmiths at this time, was normal.

Fusil.-This was the substitute of the arquebus and the name was generalized at the beginning of the eighteenth century. In an inventory carried out in the stores of Royal Arms Factories at Placencia on 8th June 1701, the "flintlock muskets" and the "match-cord muskets" figure alongside other arms known up to then. Arquebuses were not mentioned, which seems to be a definite substitution by the new name, although the builders continued to call themselves master Arquebus builders, even in the nineteenth century.

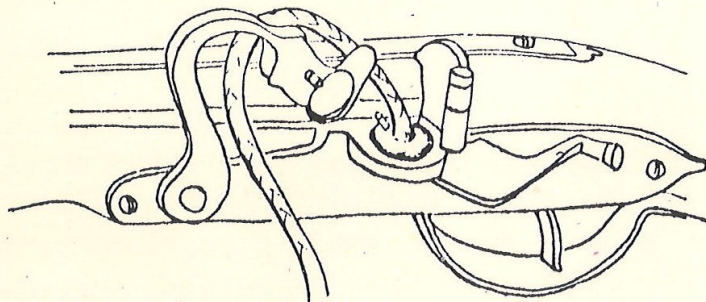
Generally, as variations of the fusil which was basically an infantry weapon, were the following with smaller dimensions: the "large musket" for use by the artillery and engineers; the "carabine" for the Marines and other special units; the "tercerola" a short carbine for the Cavalry. Of the last two types, many examples were built in our workshops up to the first years of the present century.

The long firearm, at the present time used for hunting is now known as a "rifle".

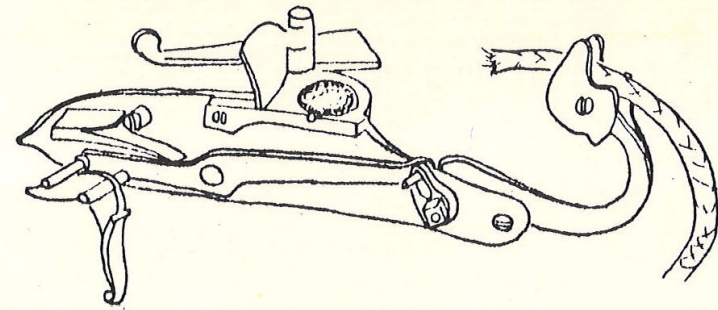


For an elementary idea of evolution, let us examine the mechanisms in the different periods.

Matchlock or "live firing".-This consisted of an "S" shaped part which had the lighted fuse on one of its ends and, when displaced by manual pressure on the other end, lit the powder placed as the primer in the pan, which was on the side of the barrel and transmitted the fire through the "oido" to the inside of the barrel provoking the shot. This was the method used from the beginning of the fifteenth century up to and including the seventeenth century and which had substituted the "hand cannon" or "fire stick" which was the first device inspired by the artillery and prior to manual firearms.

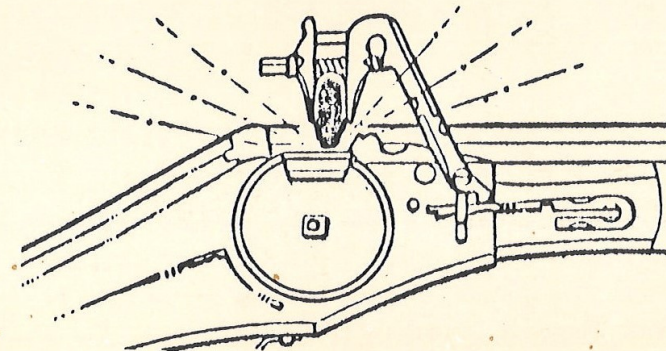


Design for fuse system



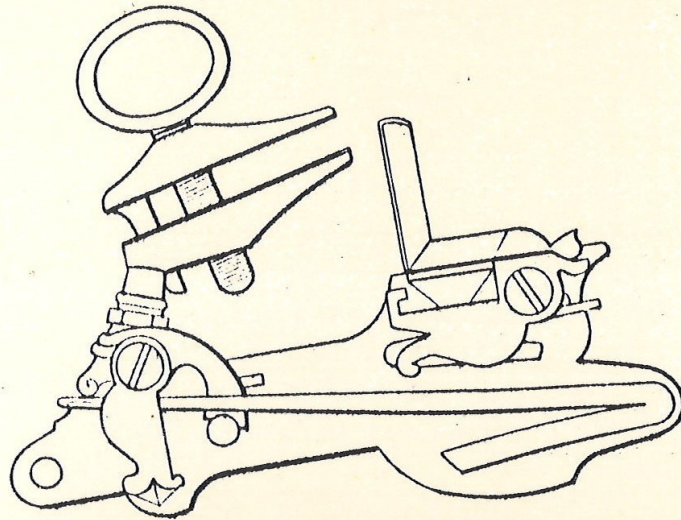
Design for fuse system

Wheel lock or "dead fire".-A piece of pyrites was screwed between two supports of an articulated part, producing a series of sparks when a steel, grooved wheel was released on pressing the trigger and entered into contact with the pyrites. In this way the primer or powder in the "pan" was ignited, obtaining the same result as with the previous lock. The mechanism of a vulgar cigarette lighter gives an exact idea of how it worked, and it was used especially by the cavalry. There is written evidence that it was produced in our region.



Key to wheel system

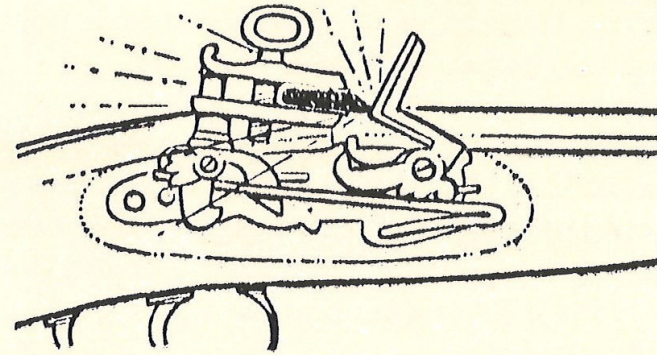
Flintlock.-This also had several other names in Spanish. It differed from the previous one in that the spark which ignited the primer was produced when the flint, screwed between two pieces forming the percussor, called "cat's foot" struck against another steel part called "wardlock", which simultaneously retreated exposing steel pan. Ignition occurred as in the cases mentioned above.



Spark-gap key

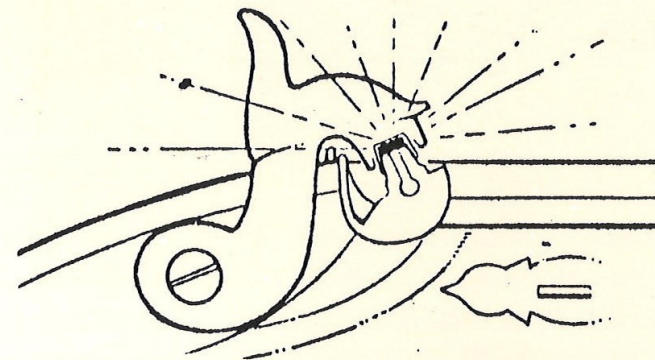
There were several variations of this lock, and it was started to be produced by Basque gunsmiths during the sixteenth century. There are documentary references. Due to this the members of the lockmakers guild are called "sparks" in Spanish. This system was used for a long time up to the first third of the nineteenth century. Flintlocks were last used during the first Carlist war.

Piston or "percussion" locks.-Invented at the beginning of the nineteenth century, it gradually eliminated the earlier types. Ignition occurred when the percussor struck the



Spark-gap in operation

small capsule containing mercury fulminate and placed in the "chimney" which stuck out from the barrel of the arm at the same place where the touch-hole used to be on previous models, and which transmitted fire to the inside.



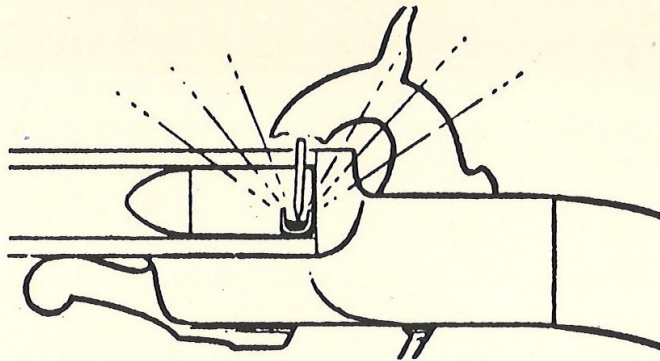
System of percussion gap shooting

CARTRIDGES WITH BUILT IN PRIMER



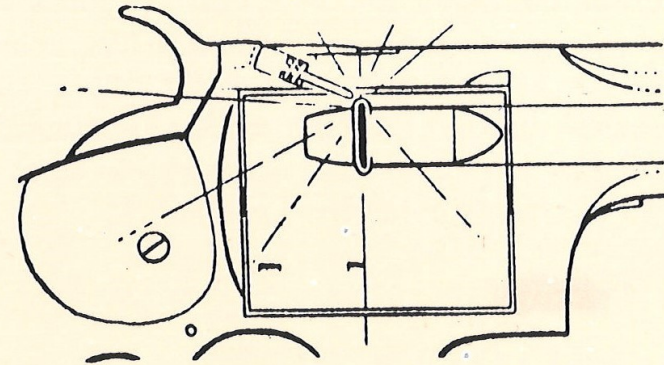
f the lock mechanism described above marked the evolution of muzzle loading guns, the advance obtained in the use of cartridges made it possible for breech loading guns to advance strongly.

The Frenchman Lefauchaux first had the idea for "pin" type cartridges in 1835. The shot was fired by percussion on the pin which emerged from the cartridge at a right angle. The "Lefauchaux system" became very popular and well known because of the different arms built from the middle of the nineteenth century.



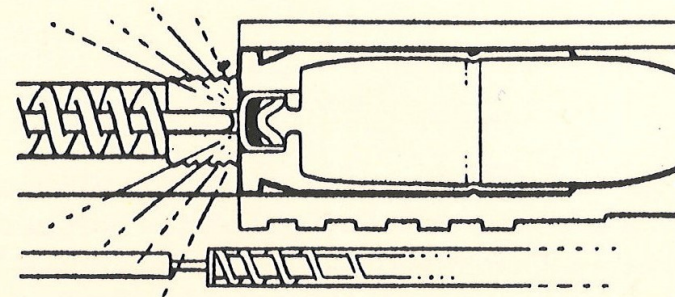
System of percussion in pin format

The percussion or central firing.-is the system in use at the present time because it is superior to the previous types. Its use became generalized during the last third of the last century, thanks to the experiments carried out by E. Boxer and H. Berdan. With the fulminat in the centre of the base of the cartridge, this is the system used in all modern armament.



System of annular fire

The cartridge with peripheric ignition, **percussion or annular fire** is still used in some sporting guns. It was used in the first "Winchester" and in the initial revolver production of the Smith & Wesson company. It is also called the Flobert system.



System of central percussion

SHOTGUN CALIBRE EQUIVALENTS

CALIBRE	MILLIMETERS	INCHES
12	18,52	.729
16	16,81	.662
20	15,62	.615
24	14,71	.579
28	13,97	.550
32	13,36	.526

However, there are other methods which differ somewhat, although very little from these metric measurements, probably due to technical factors referring to the inside of the barrel, such as the different types of rifling, especially in weapons of war.

In side arms the decimal system is used starting from the type of bullet, although manufacturers of British origin express the measurements in fractions of an inch. Let us examine the following table:

CALIBRE IN MM.	OTHER DENOMINATION
	.22 Short
5,56	.22 Long
	.22 Long. rifle
6,35	.25 Browning
7,65	.32 Browning
7,65	7,65 Parabellum
7,63	7,64 Ø .30 Mauser
9	9 mm. Short / .380 Browning
9	9 mm. Long / 9 mm. Bergman Bayard
9	9 mm. Steyr
9	38 Super Automatic
9	9 mm. Parabellum
11,45	.45 A.C.P.



The different versions existing on this matter prevent us from giving a wide and extensive definition.

When the bullets were round, the calibre was determined on the basis of the number of spherical balls or bullets made of lead and of the same diameter as the inside of the barrel which made up an English pound in weight.

The calibre of shotguns is not usually expressed in millimeters, as in other arms, nor in inches. It has its origin in the primitive method described, so that if twelve lead balls made up an English pound, the calibre would be "12 bore"; if there were sixteen it would be a "16 bore", so that as the number of balls increased the calibre would be less, as follows:

SOME STATISTICAL DATA



In spite of the conflicts during the first half of the nineteenth century, productivity is shown in the following table which includes the overall number of long firearms - fusils and carabines - which were produced in the last moments of the guild era. Shotguns and sidearms are not included.

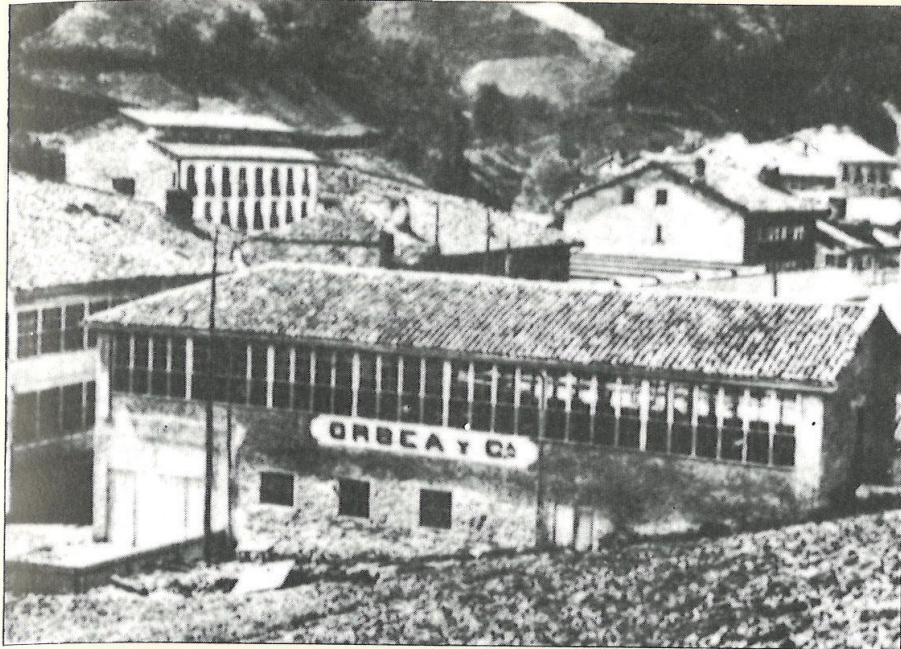
YEARS	NUMBER OF ARMAS
1800 to 1808	30.000
1815 to 1828	130.000
1828 to 1833	60.000
1844 to 1851	40.000
1851 to 1856	30.000
1856 to 1860	17.000
1860 to 1862	7.000
Built for the French Empire during the Peninsula War.....	30.000
TOTAL....	344.000

Production is not known for the civil war period 1833-39 and the following five years. However, in the years previous to the last war of the last century 70,000 fusils were built and a further 30.000 Remington fusils were lost because of the conflict.

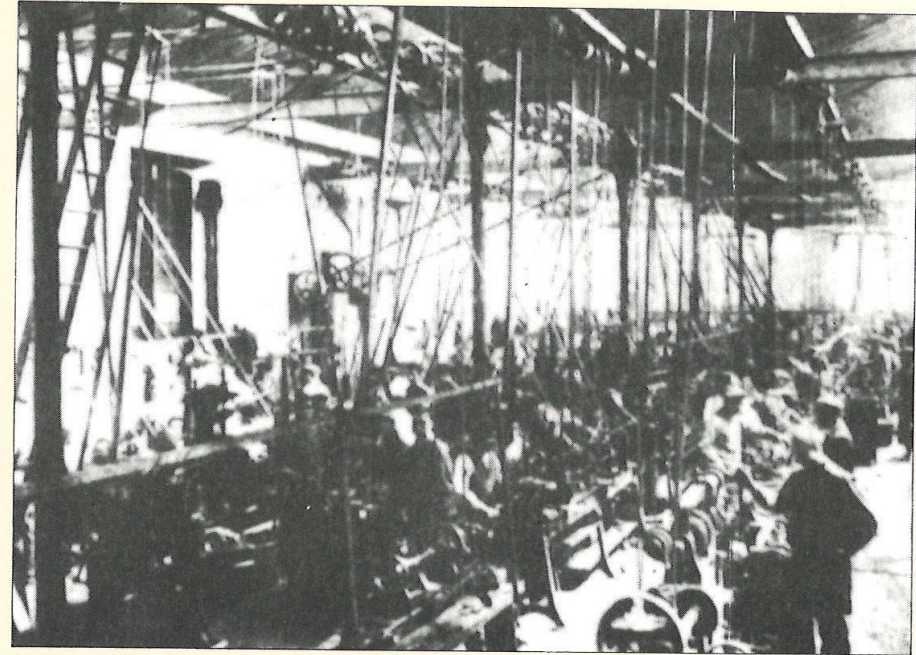
The increase in shotguns and sidearms is shown by the following table:

ARMS EXPORTED FROM EIBAR FROM 1879 TO 1928

YEAR	SHORT	LONG	TOTAL	INHABITANTS
1880	93.310	31.257	123.567	
1881	98.163	35.065	133.228	
1882	106.356	37.631	143.987	
1883	102.461	36.303	138.764	
1884	97.541	33.027	130.568	
1885	95.179	31.527	126.706	
1886	105.168	35.964	141.132	
1887	92.623	38.265	130.888	
1888	89.719	33.051	123.770	
1889	98.828	35.796	134.725	
1890	115.208	37.212	152.420	5.029
1891	116.691	40.349	157.040	
1892	116.582	44.620	176.202	
1893	115.982	52.060	168.042	
1894	110.057	50.267	160.324	
1895	115.290	41.733	157.023	5.532
1896	127.530	45.738	173.268	
1897	129.627	47.164	176.791	
1898	144.293	50.042	194.335	
1899	170.896	61.923	232.819	
1900	200.262	63.726	263.988	
1901	205.659	62.603	268.262	
1902	238.306	64.099	302.405	
1903	209.212	64.031	333.243	
1904	321.307	81.014	402.321	
1905	370.880	80.981	451.861	8.486
1906	390.055	76.063	466.118	
1907	396.976	66.910	463.886	
1908	428.120	56.204	484.324	
1909	455.294	42.592	497.786	
1910	470.942	64.749	535.691	10.220
1911	491.942	64.846	556.788	
1912	557.673	70.218	627.891	
1913	651.390	70.298	722.688	
1914	394.185	38.442	432.627	
1915	339.276	28.275	428.151	12.000
1916	682.535	42.442	724.977	
1917	708.551	26.243	734.793	
1918	393.929	25.305	419.234	
1919	226.033	39.136	265.169	
1920	367.896	49.849	417.745	
1921	421.917	46.327	468.244	
1922	387.907	42.132	430.039	
1923	351.955	50.400	402.355	
1924	431.344	53.471	484.815	
1925	336.393	62.495	398.888	
1926	263.777	71.580	335.357	
1927	246.178	54.998	301.176	
1928	229.488	66.501	295.989	15.000



Orbea & Cía. in 1910



Inside sight of Orbea & Cía. in 1910

The great step forward for Eibar was between 1900 and 1908 when the municipal budget was doubled. The manufacture of different types of arms which was 130.000 in 1887 increased by 200.000 since 1900 reaching a figure of 484.000 in 1908. The population and industry have also grown in other towns of the kingdom but the really unusual phenomenon is that Eibar has risen too quickly in the production of arms and other goods for which it is famous, selling more than 80% on foreign markets, which is a triumph practically exclusive amongst Spanish towns.

As curious statistical piece of information, we would also like to point out that Eibar worked day and night to supply arms to the antagonists during the First World War (1914-1918). During these war years a great number of si-

de arms were exported as shown by the following table:

<u>MODELS</u>	<u>NUMBER OF ARMAS</u>
"Smith & Wesson" revolvers	45.000
Oscillating revolvers	458.500
"Bayard" revolvers	94.450
Italian Officers revolvers	199.900
"Browning" type automatic pistols	709.775
"Star" type automatic pistols	23.000

Afterwards in the decade 1920-1930 there was an alarming crisis. This crisis due the closing of markets tended to be stable, and obliged the manufacturers to seek new products for domestic and foreign markets.

PRESENT DAY INSTITUTIONS IN EIBAR



he Armoury School.-On the 6th January 1913, the Minister of Development, Mr Fermin Calbeton presided the act of placing the first stone of the building for the Eibar Armoury School. On 24th June 1914 this renowned institution, which has given such beneficial results to Eibar and its zone of influence, was opened.

This was not only the first school of its type in Spain, it was also the only one for years which was able to include courses on adjusting and precision, the theory and practice.

In this sense our Armoury School reached different and higher targets in the industrial sense, than those achieved by the schools of Arts and Trades.

In this way Eibar became the centre for the teaching of precision mechanism and armoury techniques throughout Spain, and was not inferior to similar centres abroad.



Mr. Fermín Calbetón at the foreground. 1912



Initial building of the "Escuela de Armería". 1914

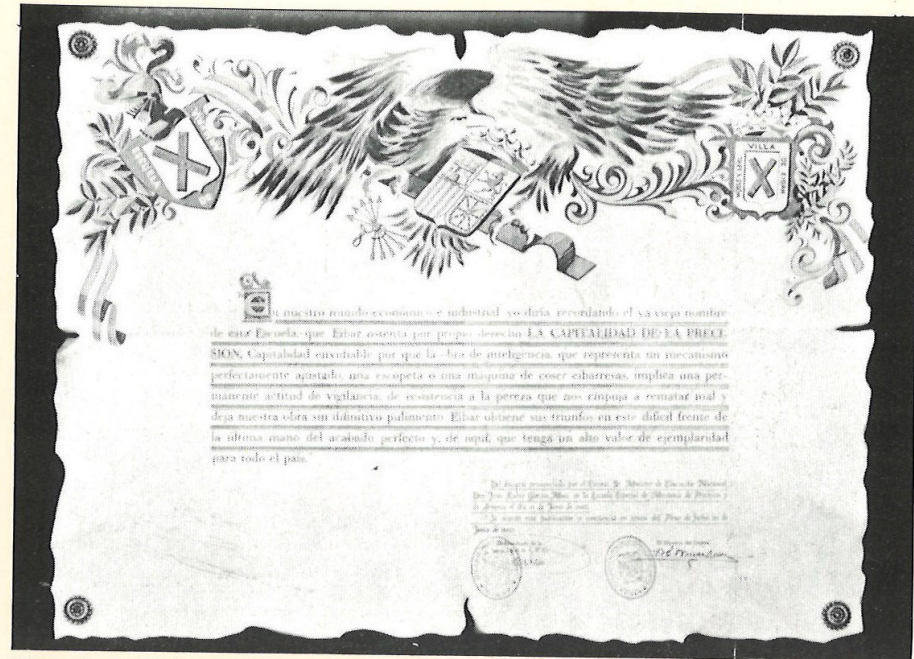
A survey carried out in 1967 showed that of the 380 industries existing in the town, the major part were managed by graduates of the School.

National industries presided over by graduates of the school are more than 600. 43% were industrialists; 24% managers or company directors, and the rest draughtsmen, mechanics...

Finally it should be pointed out that the School is visited continuously by foreign and national personalities. A list of these would be interminable. But at least we should mention some of them: His Majesty King Alfonso XIII and Queen Victoria Eugenia; Prince Otto and his sister (Children of the Empress Zita); Alfonso and Juan de Borbon (Count of Barcelona); General Primo de Rivera and General Franco; the Ministers of State Fermin Calbeton, Navarro Reverter, Conde



The then princes Juan Carlos y Sofia, 1973, at the arms museum.



Historical photograph.

of Romanones, Julian Besteiro, Muñoz Grandes, Solis, Nieto Antunez, Lora Tamayo, Menendez Tolosa, Oriol, Arburua, Gomez Gorria, Areiza, Marcelino Oreja, Jose Ramon Recalde, Enrique Mugica and the ex-president of the Basque government Garaikoetxea, the present president and vice-president of the Basque government Messrs. Ardanza and Jauregui and the General Deputy for Guipuzcoa) Mr. Imanol Murua and the other deputies and municipal authorities from all over the country.

But without any doubt the future of technical education in Guipuzcoa in general, and in the Deba valley in particular, means the creation of university schools. "All social sectors must support the efforts being made for the creation of Technical Engineering Schools with modern specialities to cover the socio-economic needs of the region.



Award of the Gold Medal of the Providence and the accrediting Diploma to the Armoury School



José Antonio Ardanza signs in the School's Golden Book in 1987.



Gold Medal of the Region Government of Guipúzcoa)

In the top part of the building is the Museum of Antique Arms. This will have to be moved to a better place with easier access for the visiting public. This plan or project has existed for several years. This is a list of the directors of the School.

- 1913 José Carnicero Guillemón.
- 1913 a 1938 Julián Echevarría.
- 1938 a 1940 Cándido Astaburuaga.
- 1940 a 1942 Jesús Aracama.
- 1942 a 1950 Juan Urizar
- 1950 a 1959 José Antonio Beltrán.
- 1959 a 1971 José Ormaechea.
- 1972 a 1982 Jesús M.^a Larrañaga.
- 1982 (desde) José Antonio Arkotxa.



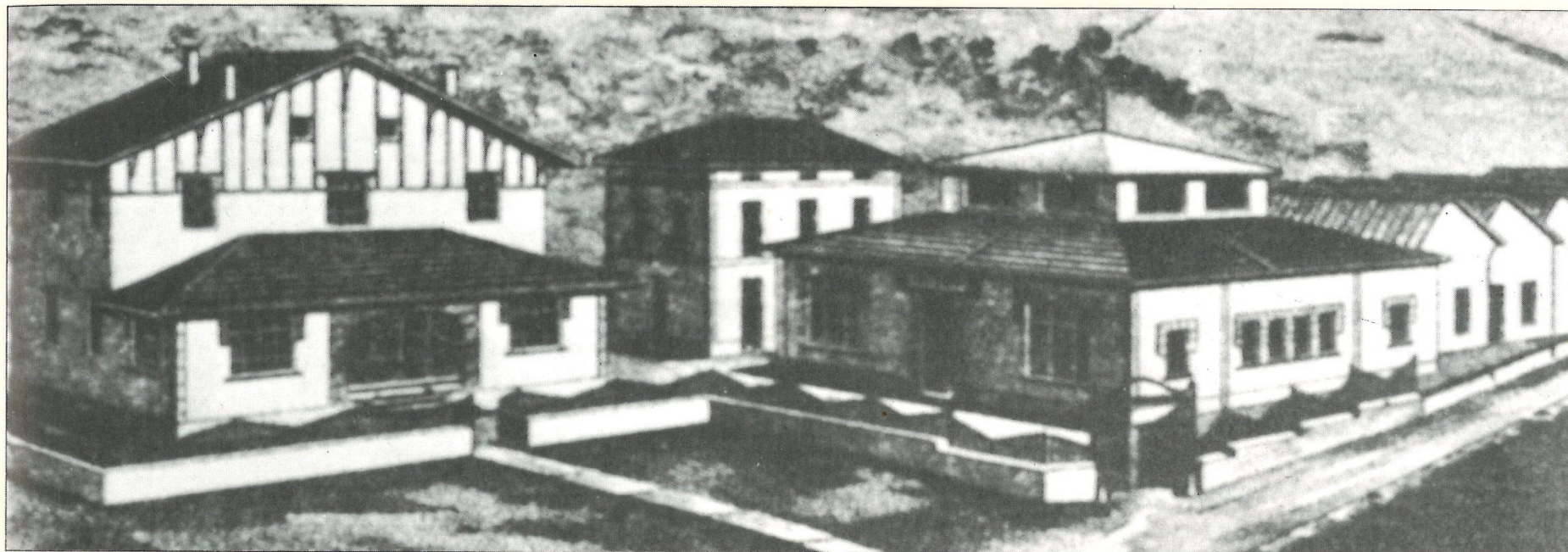
Official Arms Testing House.—There is evidence that the barrels of the arquebuses were tested from the sixteenth century. The tragic flooding of 10th June 1834 swept away the guild test bed which had been working in Placencia de las Armas. Later the gunsmiths set up a private one in Eibar in order to maintain the prestige of the manufacturers together with a safety guarantee for the firearms.

As official testbeds had been installed in some European countries and under state control, several applications were made to the state to set up in Eibar an Official Arms Testing Bed with the same authority as the foreign ones, because the arms exported were again subjected to tests at the destination point in order to get an official guarantee mark.

A law of 31-1-1915 set up the Test Beds. And, a Royal Order of 6-12-1919 definitely set up the Official Testbed in Eibar.

The persons between armament engineers and artillery officers who have directed this establishment is as follows:

- 1922—1928 Ricardo Nárdiz.—Comandante Director.
- 1922—1924 Cayetano Torres.—Capitán Subdirector.
- 1922—1934 Luis Revilla.—Capitán Subdirector.
- 1929—1930 Calixto Serichol.—Comandante Director.
- 1930—1934 Arturo Melero.—Comandante Director.
- 1934—1936 Sixto Allona Aizpurua.—Cte. Director.
Alfonso Calderón Lambas.—Cap. Subdtor.
Anastasio Carnicero.—Capitán Subdirector.
- 1936—1937 Casiano Guerrica-Echeverría Usábel.
Comandante Director.



Test bed of Eibar in 1920.

1940—1959 Juan Alonso Areyzaga.—Tte. Coronel Dtor.
 1940—1949 Jesús Aracama Atauri.—Cte. Subdirector.
 1949—1950 Roberto Quiñones.—Cte. Subdirector.
 1951—1962 Carlos Ruíz Díaz.—Cte. Subdirector.
 1959—1962 José Junquera Quintia.—Tte. Coronel Dtor.
 1962—1973 Carlos Ruíz Díaz.—Coronel Director.
 1964—1974 Fernando Pontijas de Diego.—Cte. Subdtor.
 1974—1979 Teodoro Prieto López.—Tte. Coronel Dtor.
 1974—1983 Fulgencio Ruíz del Orden.—Cte. Subdirector.
 1979—1984 Francisco Bonal Salanova.—Tte. Coronel Dtor.
 1983—1984 Santos Román Esteban.—Coronel Director.
 1984 (desde) Antonio José Cabello Oliva.—Cte. Dtor.

The Armoury Association.-This body was created around 1968 under the patronage of the Chamber of Industry, Commerce and Navigation of the Province of Vizcaya in order to promote exports of shotguns especially, and to protect and defend the interests of all the gun manufacturing workshops associated with it, which meant the major part of those in Eibar and the surrounding area where there are also other arms manufacturing companies.

The regulations have been adopted to the circumstances by means of modifications. The director over several years was Mr. Iñaki del Corte Goñi and at the present time it is Mr. Pedro Morrás.



Luxury Damaskeened Shotgun "Star".



32 Caliber "Star Gun".



Luis Atienza Economy Counsellor for the Basque G. and Councillors at the V Industrial Fair



Enrique Mújica, Minister of Justice. José Luis Tellería Counsellor of Culture

The ‘Ayuntamiento’.-In the same line of work as the Armourer’s Association is the Eibar Town Hall, through its department of Economic Development. This was created in 1988 and is carrying out an important task whose principal object is to develop industry.

This development is not only limited to the gunsmith sector, but rather covers industry in general, and mainly that of Eibar, but with important repercussions in the rest of the Community and above all in the region of the Deba Valley.

The most significant result of this work by the new Department was seen last year with the “V Industrial Trade Fair of Eibar and its Hinterland”.

In this sense, the periodical organization of different industrial trade fairs has been foreseen, which would study a definite sector of the industry each time.

In June of this year the “Ist International Arms Fair of Eibar will be carried out to relaunch this important sector of our industry.

NOTICE: Armoury Lexicón in "Eibar Basque Language".
As a curiosity, and in testimony of past crafts,
it has been translated in the Spanish jargon
of the Arms Makers.

ABUJIA: Aguja que produce la ignición.
AKABATZALLIA: (akabatzailea) Artesano que pulimenta
las piezas metálicas del arma.
AKABATZIA: (abakatzea) Pulir.
AKABERIA: (akabera) Toques finales en la armería.
AMABIKUA: Escopeta del cal. 12
APAILUGIÑA: Aparejero. Oficio gremial de accesorios
del arma.
ARGI ERAIN: (Argi-eragin) Abrillantado de piezas.
ARGI-MUTILLA: (Argi-mutila) Brazo de hierro que sos-
tenía un candelero.
ARIXA ARTU: (Haria hartu) Agarrar la rosca.
ARIXAK: (hariak) Roscado
ARIXAK EMON: (hariak eman) Roscar.
ARIXAK IXO: Estropear el roscado.
ARIXETAN LOTU: (Hariatan lotu) Atar a la rosca.
ARMAGINTZIA: (Armagintza) Armería.
ARMAGIÑA: (Armagina) Armero
ARMERIXIA: (Armagintza) Conjunto de artesanías de la
zona armera.
BARAUTZA: (Barautza) Broca del taladro.
BARAUTZ BIURRIXA: (Barautz-Bihurria) Broca en espiral.
BARRENARIXA: (Barrenaria) Oficio de rectificar el inte-
rior de los cañones.
BARRENATZIA: (Barrenatzea) Rectificar
BARRENATU: (Barrenatu) Rectificar.
BASKULAGIÑA: (Baskulagina) Basculero.

BEDANA: (Bedana) Pincel estrecho y curvado (bed d'ane).
BIROLIA: (Birolia) Arandela, suplemento.
BIZARRAK KENDU: (Bizarrak kendu) Raberbar el forjado.
BURDIÑ-GORRIXA: (Burdin-gorria): Cobre
BURDIÑIA: (Burdina): Hierro.
BURDIÑ-OLA: (Burdin-ola) Ferrería.
DORNIAZALLIA: (Dorniatzailea) Tornero.
DORNIUA: (Dornua) Torno mecánico.
DORNUA: (Dornua) Tornillo de banco.
DORNU-MARATILLA: (Dornu-maratila) Manivela del tor-
nillo de banco.
DORNU-ZILLA: (Dornu-zila) Macho del tornillo de banco.
DULTZIZALLIA: (Dultzitzailea) Dulcidor.
ENTAÑADERAK: (Entanaderak) Tornillo de mano.
EPAIKIXA: Sierra manual.
ERMANDADIA-HERMANDADIA: (Ermandadea) Socie-
dad de Socorros Mutuos de artesanos.
ERREIXAU: (Erraiatu) Estriar los cañones.
ERREMENTARIXA: (Errementaria) Herrero.
ERREMINTZIA: (Erreminta) Herramienta.
ERTZAK ILL: (Ertzak hil) Chaflanar, matar las aristas.
ESKUZKUA: (Eskuzkoa) Manufacturado.
ESMITZA: (Esmitza) Revólver de Smit & Wesson.
GUBILLA: (Gurbila) Buril.
GUBILLEKUA: (Gurbilekoa) Maestro del buril.
GUBILL-ZABALA: (Gurbil-zabala) Cíncel.
JORNALIAN: (Jornalean) A jornal.
JULIANDIA-KULIANDIA: (Kuliandia) Plantillas de nogal
para labrar la caja de escopetas. Culata.
KAMARIA: (Kamara) Cámara en la que se aloja el cartu-
cho en el cañón.

KAÑOIA (Kanoia) Cañón.
 KAÑOIGINTZIA: (Kanoigintza) Oficio de labrar cañones.
 KAÑOIGIÑA (Kanoigina) Cañonista.
 KAXAGINTZIA: (Kaxagintza) Labrar culatas.
 KAXAGIÑA: (Kaxagina) El que labra las culatas de las escopetas.
 KAXIA: (Kaxa) Culata de las escopetas.
 LEXA-PAPELA: Papel de lija.
 LIMA-ARRAZPIA: (Lima-arrazpa) Lima escofina.
 LIMA-AUTSA: (Lima-hautsa) Limaduras.
 LIMA-ESPIGIA: (Lima-espiga) Extremo de la lima en que se inserta el mango.
 LIMA-KERTENA: (Lima-kirtena) Mango de la lima.
 LIMAKUA (Limakoa) Maestro de la lima.
 LIMA-LATZA: (Lima-latza) Lima áspera.
 LIMA-LEGUNA: (Lima-leguna) Lima fina.
 LIMAN: (Liman) Trabajar en la lima.
 LIMA PIKARIXA: (Lima Pikatzailea) Repicador.
 LIMAPIKATZALLIA: (Lima pikatzailea) Repicador.
 LIMARIXA: (Limaria) Limador, ajustador.
 LIMIA: (Limia) Lima.
 ORBANA: (Orbana) Mancha, melladura.
 ORBANDU: (Orbandu) Manchar, mellar.
 ORTZA: (Hortza) Herramienta mordiente.
 OTXABIÑA: Operario que realizaba el ochavado de los cañones.
 OTXAUA: Escariador.
 PABONUA: (Pabonoa) Pavón.
 PIEZAKUAN: (Piezakoa) Trabajo a destajo.
 PIZTOIKUA edo PIZTOIDUNA: (Piztoiduna) Escopeta de pistón.

PROBADERUA: (Probaderoa) Banco de Pruebas de Armas.
 RRES-PAPELA: (Res-papera) Papel de lija.
 SALDIA: (Salda) Metal fundido.
 SOJADUNA: (Sojaduna) Hoja de metal. Grieta en el material
 SOJIA: (Soja) Tener hoja de metal.
 SUTEIXA: (Sutegia) Fragua.
 TAJUA: (Tajua) Cortante fijo en el yunque para cortar en caliente.
 TENPLIA: (Tenplea) Acerar las piezas. Templar el acero.
 TIRO-BATEKUA: (Tiro-batekoa) Escopeta de un tiro.
 TIRO-BIKUA: (Tiro biko) Escopeta de dos tiros.
 TORLOJOGINTZIA: (Torlejugintza) Tornillería.
 TORNIUA: (Tornua) Taladro horizontal. Torno.
 TRESNIA: (Tresna) Herramienta, útil de trabajo.
 TROKELA: (Trokela) Troquel.
 TROKELGIÑA: (Trokelgina) Troquelista.
 TXISPAGIÑA: (Txispagina) El que hace el dispositivo de la llave para las armas. Chispero
 TXISPIA: (Txispa) Llave o mecanismo que en las armas provoca la ignición.
 UGALA: (Uhala) Correa de transmisión.
 UGALA SARTU: (Uhala sartu) Meter la correa de transmisión).
 UGALAK URTEEN: (Uhala irteen) Salirse la correa.
 ZIRIXA: (Ziria) Pasador, pieza de seguridad.
 ZULATZAILLIA: (Zulatzailea) Obrero que trabaja en el taladro.
 ZULATUTZIA: (Zulatu) Perforar.
 ZULATZIA: (Zulatu) Taladrar.

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