HAND OPERATED PROJECTILE WEAPONS

by Dr. Charles S. Hendricks

DR. CHARLES S. HENDRICKS

All weapons used from the time of man until the full use of FIRE ARMS were weapons of some sort, operated by the use of the hands and were projected.

There is a possibility that there would have been no use for weapons if the boys in the "Stone Age" had not feuded and thrown stones at one another.

Weapons are used for hunting, including sporting weapons, and fighting weapons. Just as there are two kinds of fighting, there are two kinds of weapons, Defensive and Offensive. An Offensive Weapon, whether, it be a simple club or an automatic rifle, is an arm which will lengthen the reach of man enabling him to strike from a greater distance than that from which he can be struck.

With the Defensive Weapon, man hopes to ward off blows which are directed at him and are solely for his protection. The first Defensive Weapon was Eve's Fig Leaf. Through all the ages, mans first thought has been for the protection of himself, his family and friends. It may be a a wooden shield, a suit of armor, or a fort. Every device we have contrived in the past to shorten the lives of our fellow man has robbed of much of its terror and finely nullified by some counter measure, which has been man's defense. From any records or from simple conjecture, from prehistoric time to the present, man has had defensive weapons. In the stone age a favorite stone that fit the hand was always kept handy, clubs, hammers, spears etc. were part of the fighting mans equipment. These defensive weapons developed into "Side Arms," swords, daggers, sabers, bayonets, etc. Women protect themselves with pocketbooks, bags, umbrellas, hat pins, etc. Fathers and husbands have in past times protected their daughters and wives in their absence with Chastity Belt, but the maker at times gets greedy and makes two keys. The second one he could sell at a good profit.

We can only guess what weapons man first made for himself, but he was always ready to make some form of weapon or improvise in a hurry when danger was eminent. Didn't Sampson in Biblical times slay 1,000 Philistines with the fresh Jaw Bone of an Ass. Perhaps in the stone age man found a rock that fitted well his hand, then he found by fitting a thong or vines to it he could use it for a weapon by whirling it about his head and then letting it go. This was the crude beginning of the Sling. A loop at one end to slip on a finger and the loose end let go. A pouch or cradle for the stone was extra refinement. That the sling was powerful was testified to by David at the age of 15, in about 1070 B.C., when he slew the powerful giant Goliath with his sling and a pebble. Later the one end of the thong was attached to a stick that was held in the hand.

The spear came next. At first a stick that was sharpened by charring one end and rubbing on a stone. Later a flint was inserted by splitting the end of the stick, sometimes bone was used. It was found that flint could be shaped into axes, hammers, knives etc.

Some sort of Bow that discharged arrows was used in prehistoric days as there is evidence of arrow heads.

In the Copper and Bronze age (5,000 to 1,000 B.C.) by some accident probably it was found that Copper could be melted and molded into shape. By accident some tin was melted with the copper, which was much harder. This was bronze. It could be shaped only with difficulty, but a cutting edge could be put on and a sword was made. Copper and Bronze weapons first appeared in the lower part of the Tigress-Euphrates Valley and spread in all directions. Spears, Arrow-heads, Battle Axes and Maces were made from Copper and swords were made from Bronze.

Asiatic Composit Bow which are reflex, were invented about this time. A very powerful Bow made of carved pieces of wood and bound together. This was the principal Asiatic weapon until replaced by guns. The Egyptians used a short straight Bow.

The early Chaldeans only used a copper cap and a shield as a defense weapon, but the Assyrians who followed them had body Armor of overlapping Bronze. This protective was also used in Egypt.

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Both the Egyptians and the Assyrians used chariots and mounted two or more quivers to carry extra arrows.

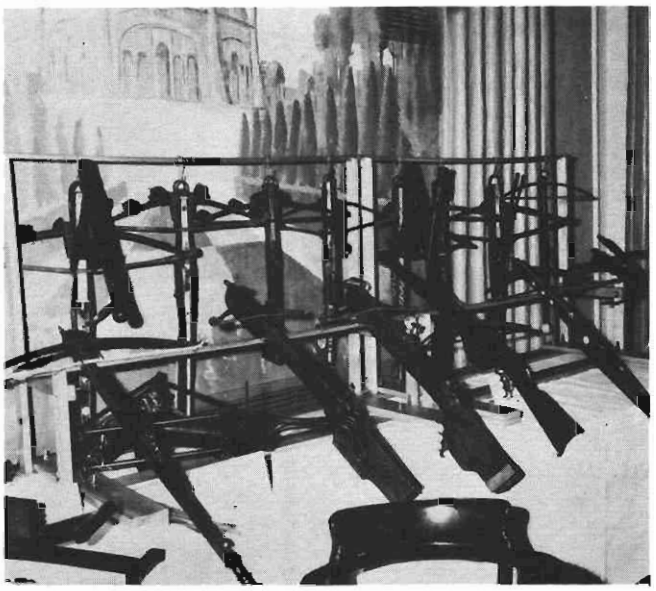
The weapons of the early days of Greece, about 1,000 B.C. were bronze, the Javlin sword and dagger, for defense and offense. Iron was also used at the time of the Trogan War. It made much better fighting weapons. Spheres, Javelins, swords and arrow-head. Bronze was still used for shields and armor.

The Roman soldiers from 200 B.C. to 400 A.D. had little change in their weapons. In later years the Roman soldiers were hired and did not have the old punch. The sword was longer to help keep the enemy further away. It was during this time that the Projectile Engines or Siege Guns were brought into play. The Onager, it was a spring operated gun with one beam and through a large stone. The BALLISTA, a CATAPULT containing a large Bow resembling a Bow gun.

Rome was the keystone which sustained the European civilization of her time, and when she fell the whole structure went down with her. So complete was the demoralization that even records are fragmentary.

One of the earlier scattered groups that got together for protection, was the Franks, under Clovis, about 480 A.D. They used iron but were not very good in molding it. Their main weapon was the throwing axe.

The Anglo-Saxon, about 800 B.C., had learned to harden iron more. They extended their Pruning Bill into the first Pole Arm. They used a variation of the MACE called the Morning Star. This was a spiked ball connected to a handle by a short chain. About this time Knighthood was set up in England. The Anglo-Saxons used the Bow, but more for hunting, depending more on the sling. The Cavalry was formed of Knights and the foot soldiers became and remained useless for several centuries.



PART OF DR. HENDRICKS FINE DISPLAY OF CROSSBOWS.

During the 14th and 15th centuries the Long Bow was the cherished weapon of the English, while the Cross Bow held a similar position in France, Germany, Italy and Spain.

The Long Bow, glorious as its accomplishments were in the hands of our Ancestors, was but a hewn stick of Foreign Yew of no intrensic value, while the Cross Bow gave the Artist, the Engraver, the Inlayers, and the Mechanic every chance of exercising their talents to utmost. Unfortunately there are but one or two English Long Bows in existance, while there are more beautifully constructed Medieval Cross Bows.

The Cross Bow was said to be derived from the large siege gun, the Ballists and it is from this that the Cross Bow is named Argubus. It was first introduced into England when the Normans invaded England in 1066.

The Cross Bow was first used as a military weapon. Early in the 12th century the construction of the cross bow was much improved and became quite popular in both English and the continent of armies.

However the wounds inflicted in warfare were considered so barbarous that its use, except against infidels, was prohibited by the Second Laterans Council in 1139 under penalty of an Anathema as a weapon hateful to God and unfit for Christians. This prohibition was confirmed by Pope Inocent III. King Conrad III, of Germany, forbade the use of the cross bow in his army and kindred 1138-1152.

Richard I, who reigned in England from 1189 to 1199, was an expert with the cross bow. At the siege of Ascalon, though prostrated with fever, he was carried from his tent on his mattress so that he might enjoy the pleasure of shooting bolts at the intruders of the town. As the enemy consisted of Turks and Infidels his act then would have been sanctioned by the church of Rome. But through his reign the use of the cross bow was common in the English and Continental Armies. When Richard I was killed by a bolt from a cross bow at a siege near Lemoges, France in 1199, it was thought to be a judgement from Heaven, inflicted on him for his disobedience.

From 1200 to 1460 A.D. the cross bow was the favorite weapon on the continent. It was also equally popular with the English Command and soldiers until about 1290.

The Genoese were always famed for their skill in construction and management of the Cross Bow, and were hired for service by all nations on the continent. In Holland, when Edward II defeated the French in 1340, the French had as many as 20,000 Genoese Cross Bowmen on their ships. The largest number of Cross Bowmen ever seen in order of battle on land, were 15,000 Genoese that formed the front rank of the French Army at Cresy in 1346.

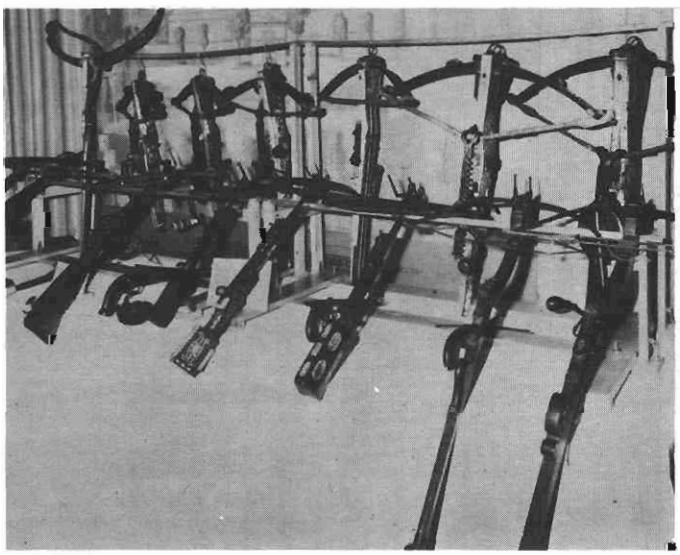
The first cross bow used consisted of a bow of swamp wood. This bow was very easily bent and the cross bowmen was able to cock his bow by stringing it by hand. To get more power the wood bow was reinforced by whale bone secured to the wood bow with thongs of sinew. This required more force to string the bow. It was done by a claw fastened to the belt. Later a cord fastened to a hook on the bow stock running through a pulley hooked to the bow string with the other end hooked on the belt - this gave more strength when the body was straightened up.

The bows of the cross bow of the Genoese at Crecy were still composite ones, made of wood horn and glue. Bows of steel had not as yet been introduced. The bow was bent either by hand alone or as more probable by a claw or a thong and pulley or by means of a goats foot leaver. This being a slow operation the French were soon thrown into confusion by showers of arrows from the English Long Bowmen. The English Cavalry galloped over the cross bowmen, cutting them down with their swords. The Genoese gave as an excuse that their bow strings became wet and stretched, rendering their cross bows useless. This is very doubtful as the strings of the cross bow were always kept covered with bees wax. Whatever the cause the Long Bow at the time of Crecy excelled considerably the cross bow in range and penetration.

There is no evidence as to the exact period when the powerful military cross bow, which was popular on the continent in the 15th century, was perfected and first used in warfare. It had a thick and broad steel bow, was cocked with a windless or a cranequin for the smaller ones. It was first alluded to in contemporary accounts shortly before the last quarter of the 14th century. This cross bow was used until the close of the 15th century and the construction of it was never changed. But even with this powerful cross bow it was rightly considered to be less effecient in open warfare than the Long Bow which was light, inexpensive, easily carried, and could discharge 5 or 6 arrows while the cross bowman was occupied in cocking his cross bow. The Long Bowman would continue to assault him with a succession of arrows and he had discharged but one bolt. For this reason the cross bowman was often attended in battle by a companion who shielded him with a shield of wood and hide while he was pulling up his bow string.

The large cross bows could not be carried by the Foot soldier nor could they be strung by the Cavalry while on a horse. But they could be employed in defense of a castle or fortress. Here behind the shelter of turrets and loop holes a heavy cross bow could be restrung aimed at besieging forces. The Long Bowman required a height of seven foot, at least, in order to shoot an arrow with effect.

The other type is the sporting cross bow. As was true of the military cross bow, the sporting cross bow never found as much favor in England as it did on the continent. It was in limited use among the Nobles and Gentry of the Kingdom for killing deer. It was accurate and threw a heavy bolt adapting it to the chase. It could be shot in crouched position behind trees or lying in ambush, where the string of a long bow could not be drawn. It was powerful and accurate and for this reason it survived until serious introductions of firearms.



Much time and money was spent in ornamentation employing the best workers in metal, ivory, and mother of pearl. The stock often covered with artistic representation of animals, birds and hunting scenes, surrounded by scroll work, all finely carved and inlayed in silver, ivory and pearl. The metal was polished and even the bow was sometimes deeply engraved and inlayed with traces of gold. Different workers constructed different parts. One set of craftsmen made the stock, another the windless or cranequin as well as the lock and bow string. The most important were those who forged and shaped the steel bow. The bows from Mondragon, Spain were of the same quality of steel as the famous Toledo sword blades and those from Pyromont, Germany were noted for their strength and tempra.

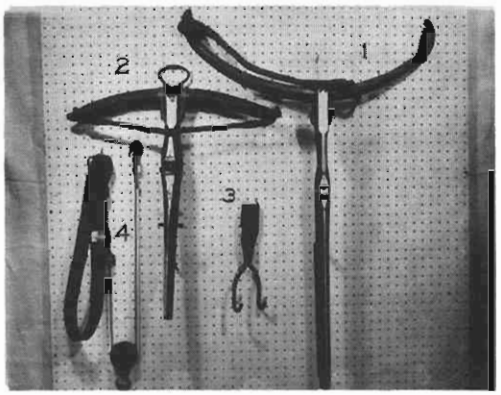
As new bow strings had to be added from time to time, a contrivance known as a bastard string, was clamped just inside of where the bow string went over the end of the bow. The bastard string was drawn tight by the windless or cranequin which bent the bow sufficient to slip the bow string over the ends of the bow. The bastard string was then removed.

The sporting cross bow of the 16th century was a very effecient weapon for the purpose for which it was intended. It was popular on the continent, particularly in Germany, Italy and Spain for killing deer until about 1635. A similar position was held in England until 1631.

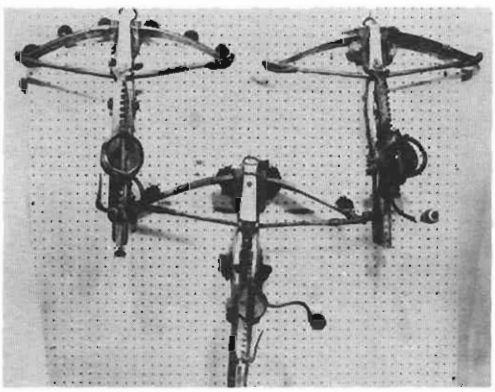
Early in the 16th century the double string stone bow was introduced and became very popular with sports-

CROSS BOW BEING COCKED BY PULLEY AND ROPE WITH HOOK AND BELT.

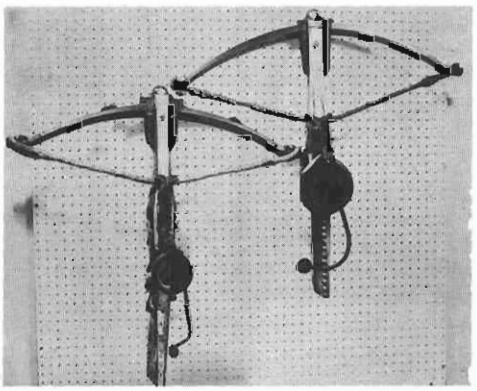
CROSS BOW BEING COCKED BY BELT HOOK.



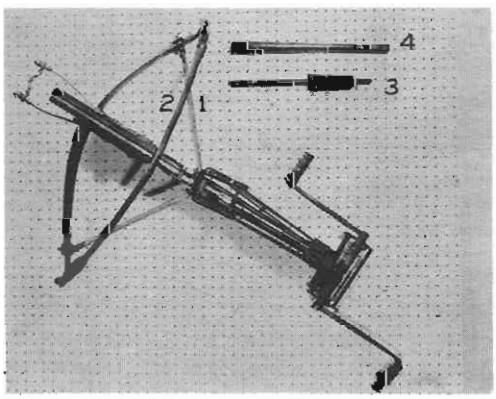
(1) EARLY 13th CENTURY CROSS BOW, ENGLISH, WITH REFLEX BOX MADE OF SWAMP ROOT, BOW EASILY BENT BY HAND. (2) 13th CENTURY CROSS BOX MADE BY THE GENOESE AND USED BY THEM IN THE FRENCH ARMY, BOX MADE OF SWAMP ROOT REINFORCED WITH WHALE BONE. FIRST COCKED BY USE OF BELT HOOK (3) AS SHOWN IN Figure #2, LATER COCKED BY ROPE AND PULLEY WITH HOOK ON BELT AS SHOWN IN



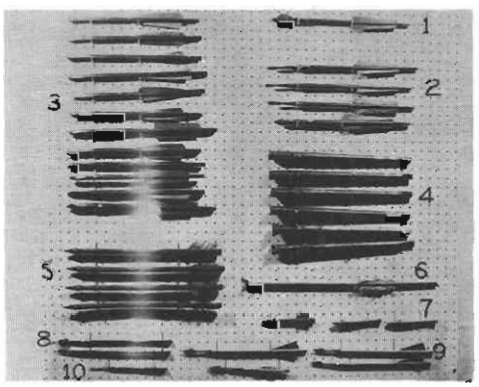
16th CENTURY GERMAN INLAYED SPORTING CROSS BOWS WITH CRANIQUENS.



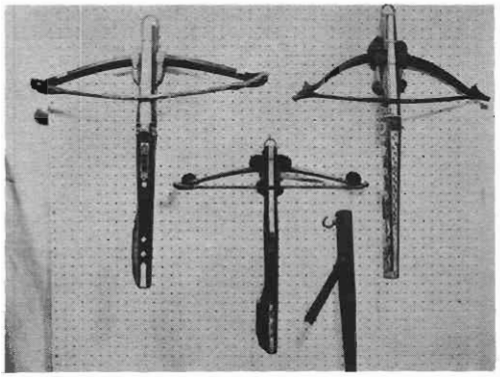
15th CENTURY GERMAN MILITARY CROSS BOWS WITH CRANIQUEN USED AS COCKING DEVICE.



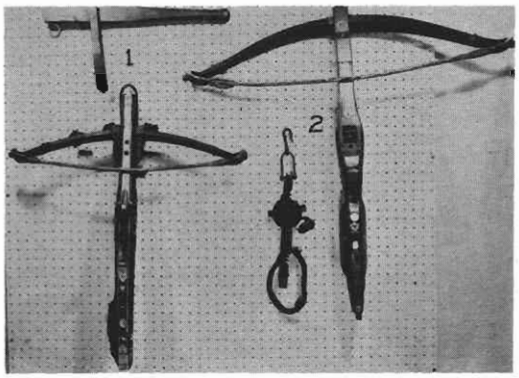
15th CENTURY HEAVY DEFENSE MILITARY CROSS BOW WITH HEAVY AND BROAD STEEL BOW COCKED BY WINDLESS, USED TO STRING BOW WITH BOW STRING (2) BOLTS USED WITH EARLY CROSS BOWS SHOWN AS (3), (4).



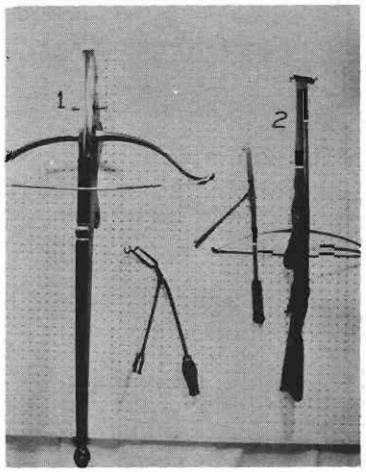
BOLTS, QUARRELS AND ARROWS (1) MILITARY INCENDIARY BOLT WITH TOW SOAKED IN OIL. (2) WOODEN BOLTS WITH METAL ENDS, WOODEN FINS USED AGAINST FOOT SOLDIERS WITH BUFF COATS AND LIGHT ARMOR (3) SAME AS (2) EXCEPT WITH LEATHER FINS SET TO SPIN BOLT IN FLIGHT. (4) SQUARE FACED METAL HEADS WITH CORNER POINTS SO THEY MIGHT NOT GLANCE OFF BUT GIVE A SMASHING BLOW TO MOUNTED MEN WEARING ARMOR. (5) LONG SHARP METAL POINTED QUARRELS WITH FEATHERED FINS FOR HUNTING. (6) BOLT WITH "Y" SHAPED METAL END AND FEATHERED FINS USED FOR KILLING BIRDS. (7) 20th CENTURY BOLTS USED WITH TARGET BOWS. (8) SOLID STEEL ARROWS FOR MODERN SPORTING CROSS BOWS. (9) SOLID ALUMINUM ARROWS WITH TRIPLE FINS AND SPEAR SHAPED HEADS USED WITH ENGLISH COMMANDO CROSS BOW OF W.W.II. (10) 19th CENTURY BOLTS FOR SPORTING CROSS BOWS.



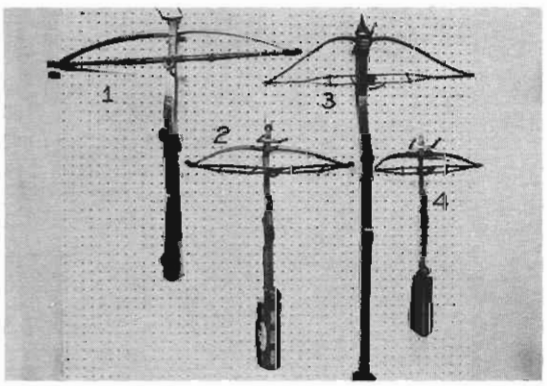
18th CENTURY INLAYED SPORTING CROSS BOWS COCKED BY WOODEN GOAT'S FOOT.



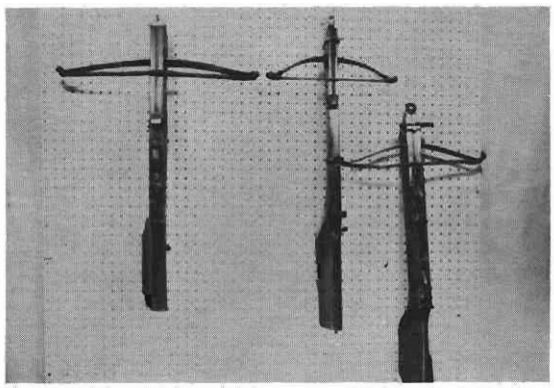
(1) INLAYED SPORTING BOW WITH WOODEN GOAT'S FOOT COCKING DEVISE. (2) SPANISH CROSS BOW HIGHLY INLAYED WITH SILVER. COCKED WITH SMALL CRANQUIM AND HOOK FOR BOW STRING.



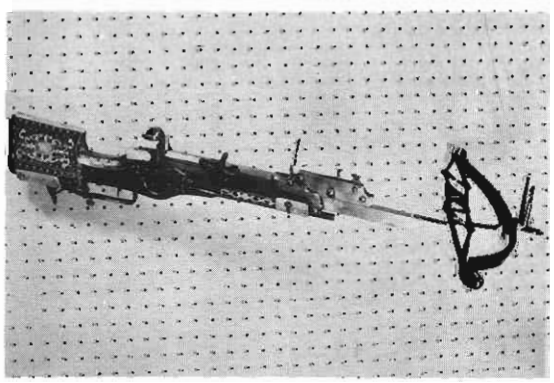
19th CENTURY BELGIUM TARGET CROSS BOWS WITH FORWARD STEEL GOAT'S FOOT COCKING DEVICES (1) EARLY 19TH CENTURY BOW WITH LONG BUTT THAT GOES OVER SHOULDER. (2) LATER 19th CENTURY BOW WITH GUN STOCK BUTT.



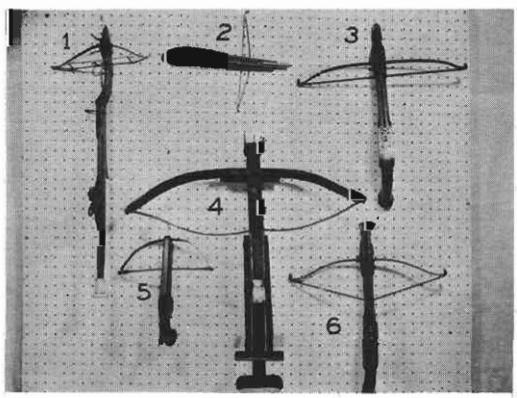
17th and 18th CENTURY STONE BOW AND PRODDS. (1) LATE 18th CENTURY ENGLISH BULLET SHOOTING BOW, GUN SHAPED BUTT WITH BUILT IN COCKING LEVER, DOUBLE BOW STRING WITH POCKET TO HOLD STONE OR LEAD BULLET. (2) 17th CENTURY SPORTING BOW, BUTT INLAYED WITH IVORY, BUILT IN GOAT'S FOOT OR LEVER. (3) 17th CENTURY STONE BOW, LIGHT STEEL BOW, COCKED BY HAND, USED ON LARGE BIRDS. (4) SMALL 17th CENTURY SPORTING PRODD, SOLID WOOD BUTT WITHOUT INLAYS.



MEDIEVAL TARGET SHOOTING CROSS BOWS WITH VERY LIGHT STEEL BOWS COCKED BY WOODEN GOAT'S FOOT, SHOOTING MINIATURE QUARRELS AT 50 YARDS RANGE.



NORBERG HUNTING PRODD, VERY ARTISTICALLY INLAID, COMBINATION WHEEL LOCK AND ARGUBUS WITH BUILT IN GOAT'S FOOT.



19th CENTURY CROSS BOWS AND CROSS BOW PISTOLS; (1) ENGLISH TARGET SHOOTING BOW COCKED BY MANUAL POWER. (2) VERY SMALL TARGET CROSS BOW PISTOL. (3) AUSTRIAN CONTRINER CROSS BOW PISTOL, ADJUSTABLE SIGHTS. (4) CHINESE REPEATING CROSS BOW. BUCKSKIN BOW STRING COCKED BY PULLING BACK LEVER AND RELEASING BOW STRING AUTOMATICALLY. MAGAZINE HOLDS 12 ARROWS, DISCHARGES 2 AT TIME. STILL BEING USED IN REMOTE AREAS BY CHINESE SOLDIERS. (5) SMALL CROWW BOW PISTOL COCKED MANUALLY AND DISCHARGES SMALL LEAD BULLET THROUGH BRASS TUBE-LIKE BARREL. (6) AUSTRIAN CONTRINER CROSS BOW PISTOL, TWISTED LEATHER BOW STRING, DISCHARGING MECHANISM COCKEDED BY SMALL STEEL LATCH ON THE BOWSTRING.

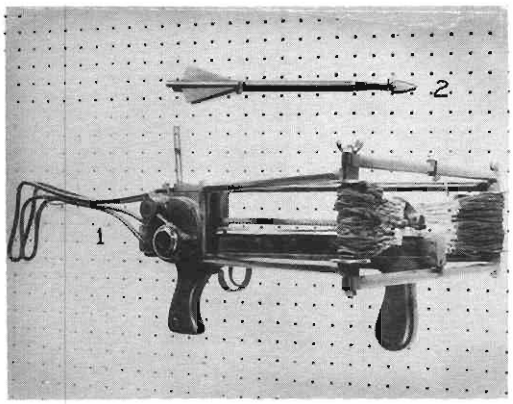
men, ladies, foresters and keepers as a means of obtaining game birds, pigeons, hares and rabbits. They were improved in strength and accuracy and between 1810 and 1820 was brought to great perfection. It was known as the bullet cross bow.

Competition at the target with small bolt shooting cross bows have for several centuries been common recreation in parts of the continent, North Germany and Belgium. Different types of cross bows, stone bows and prods with different types of cocking apparatuses were used. This sport is popular in some places on the continent.

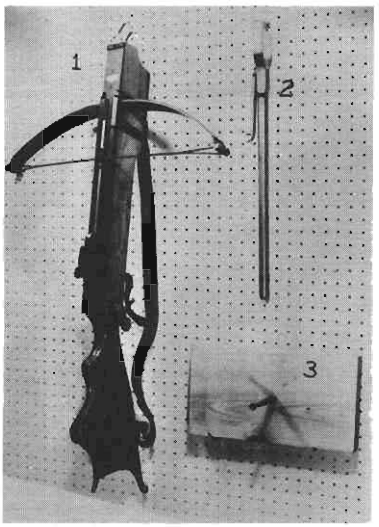
Just as the "shoots" in this country are dominated with special target guns, individually made, so are the cross bows now being used in those meets - the cross bows are individually made.

As a military weapon the Cross Bow is being revived from time to time. In the Second World War the English Commandos used a Cross Bow strung by a mass of rubber bands that was cocked by a crank like cranequin. A steel pointed aluminum arrow with fins was used. This arrow was propelled with such strength that it could easily pierce a two inch board. It had a range of better than 1000 feet. It could be folded for easy transportation.

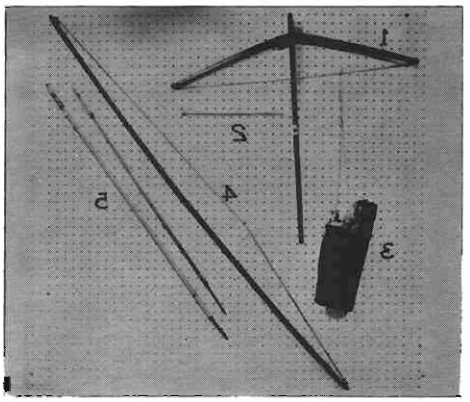
It is my understanding that a type of Cross Bow is also used in Viet Nam, this bow I have not seen.



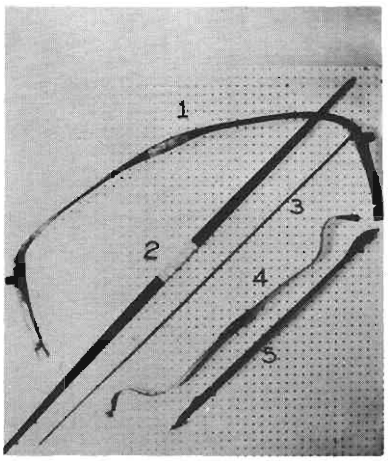
(1) ENGLISH CROSS BOW USED BY THE COMMANDOS IN WORLD WAR II. (2) ALUMINUM ARROW USED HAVING STEEL SPEAR HEAD AND 3 FINS.



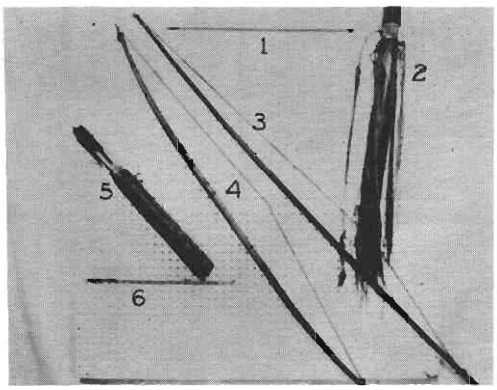
(1) MODERN SWISS TARGET CROSS BOW. STEEL BOW WITH TWISTED STEEL WIRE BOWSTRING. (2) STEEL GOATS FOOT USED TO COCK ABOVE BOW. (3) TWO INCH PLANK SHOWING BOLT PENETRATION OF 1-3/4" WHEN SHOT FROM SWISS BOW.



(1) AFRICAN WOODEN CROSS BOW USED TO SHOOT POISONED ARROWS. (2) POISON ARROW OF WOOD WITH 2 SMALL FINS. (3) QUIVER WITH COMPARTMENT FOR ARROWS, ANOTHER FOR POISON. (4) AFRICAN WOODEN BOW. (5) ARROW USED WITH BOW, WOOD WITH POINTED STEEL HEAD AND FEATHERED FINS.



(1) TURKISH REFLEX BOW, INLAID WOOD WITH TURKISH FIGURES AND DARK HORN ENDS. (2) 15th CENTURY ENGLISH LONG BOW. (3) WOODEN LONG ARROW. (4) TURKISH REFLEX BOW OF STEEL ARTISTICALLY INLAID AND ENGRAVED. (5) SHORT WOODEN ARROW WITH FEATHER FIN.



(1) LONG WOODEN ARROW WITH IRREGULAR SPEAR-LIKE HEAD AND FEATHER FINS. (2) AFRICAN QUIVER. (3) LONG AFRICAN BOW. (4) SHORT AFRICAN BOW. (5) AFRICAN QUIVER. (6) SHORT WOODEN ARROW WITH IRREGULAR SPEAR-LIKE HEAD AND FEATHER FINS.

(Photos by Dr. Jack Strassman)