

. A TREATISE

ON TURKISH AND OTHER ORIENTAL BOWS

OF MEDIAEVAL AND LATER TIMES

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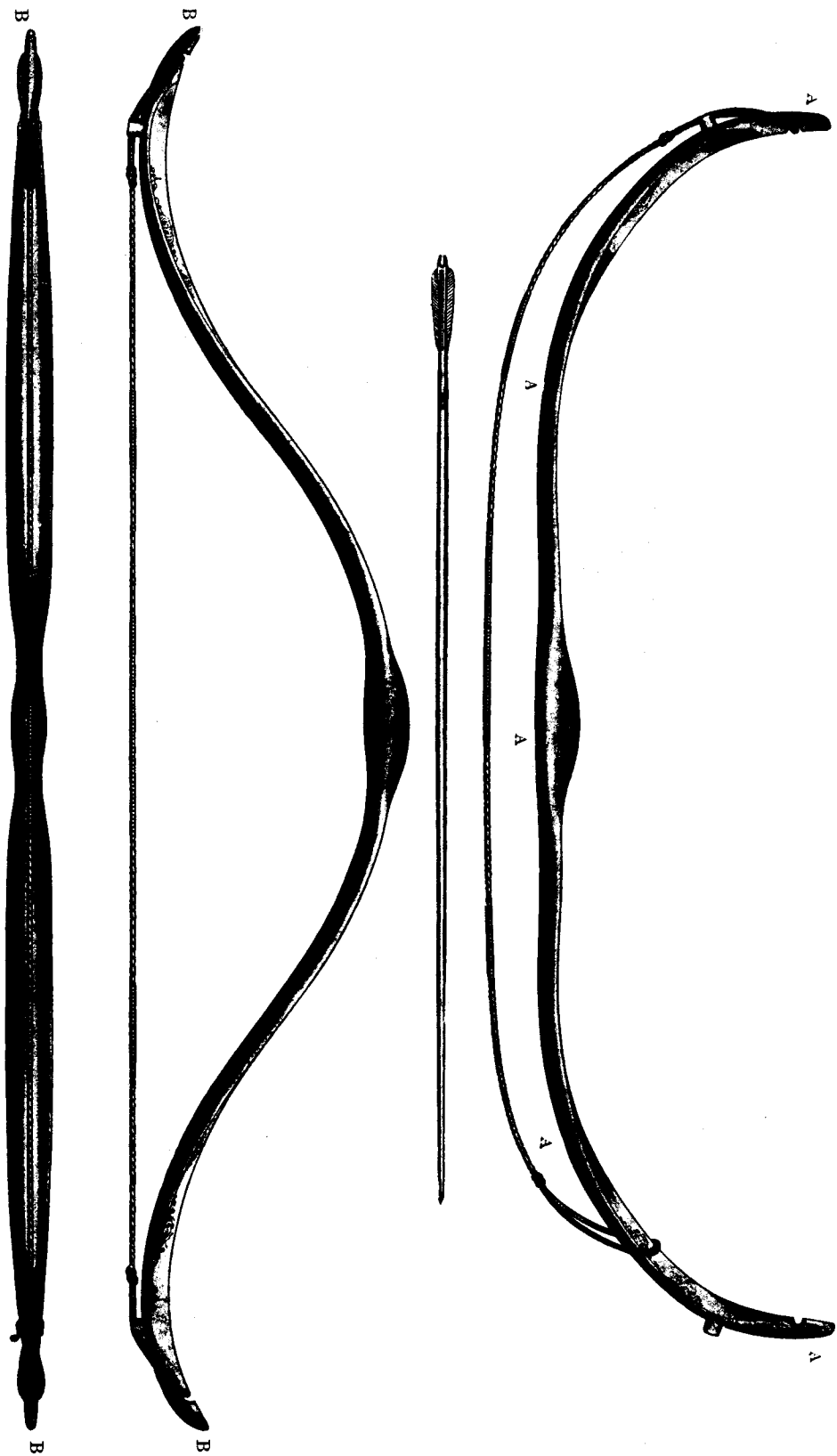


FIG. 1.—TURKISH REFLEX COMPOSITE BOW UNSTRUNG AND STRUNG, AND ITS FLIGHT ARROW.

THE TURKISH BOW—CONSTRUCTION AND DIMENSIONS

LENGTH of bow, measured, before it is strung, from end to end along its outer curve with a tape, 3 ft. 9 in. (AAAAA fig. 1, opposite page.)

Span of bow, measured between its ends when strung, 3 ft. 2 in. (BB fig. 1.)

Length of bow-string, 2 ft. 11 in.

Greatest width of each arm of bow, $1\frac{1}{8}$ in.

Thickness of each arm, at a distance of 6 in. from the centre of the handle of the bow, $\frac{1}{2}$ in.¹

Circumference of each arm, at a distance of 6 in. from the centre of the handle of the bow, 3 in.

(The arms of the Persian, Indian, and Chinese composite bows have a width of from $1\frac{1}{2}$ to 2 in.; and though the span of these bows, when strung, is from 4 to 5 ft. and more, they do not shoot a light arrow nearly so far as the shorter, narrower, and in proportion far stronger and more elastic Turkish ones.)

The strength of the bow, or the weight that would be required on the centre of the bow-string to pull it down from the bow to the full length of the arrow, is 118 lbs. (This is without taking into account the additional two or three inches the point of the arrow should be drawn within the bow along the horn groove.)

Weight of bow, avoirdupois, $12\frac{1}{2}$ oz.

Though I have carefully examined over fifty of these small Turkish bows, I have never seen one that exceeded $1\frac{1}{4}$ in. in width at its widest part, or if measured with a tape along its outer curve, when unstrung (AAAAA, fig. 1), was over 3 ft. 10 in. in length. Bows that are 4 or 5 in. longer than the dimensions here given are invariably of Persian or Indian manufacture, and are very inferior in the elasticity that is requisite for long-distance shooting, though in decoration and construction they often closely resemble Turkish bows.

¹ In the very powerful bows, such as the one shown in Fig. 15, p. 21, the thickness at these parts is from $\frac{3}{8}$ to $\frac{1}{2}$ in.

The bow is chiefly constructed of very flexible horn and sinew. These materials were softened by heat and water and then longitudinally glued to a slight lath of wood, varying from $\frac{1}{8}$ to $\frac{1}{4}$ in. in thickness (except where it formed the handle of the bow), and from $\frac{1}{2}$ to 1 in. in width.

This strip of wood formed the core or mould of the bow, and extended at each of its ends for 3 in. beyond the strips of horn and sinew that were fixed on its opposite sides, and which slightly overlapped it. (Fig. 2, p. 5.) The projecting ends of the wooden strip were enlarged so as to form the solid extremities of the bow in which the nocks for the bow-string were cut. (CC fig. 3, p. 6.)

The two curved horn strips, which in part comprised the arms of the bow (on its inside face when it was bent), were cut from the horn of a buffalo or an antelope, and average about $\frac{1}{4}$ in. in thickness.

The thicker ends of these pieces meet at the middle of the handle of the bow and their tapered ends extend to within 3 in. of its wooden points. (EE fig. 3, p. 6.)

The sinew that represents the back of the bow is from the great neck tendon of an ox or stag. This was probably shredded longitudinally, and, after being soaked in elastic glue, compressed into a long flat strip about $\frac{1}{4}$ in. thick, which was first moulded in a pliable state to the wooden core and then glued to it. It thus formed the back of the bow when it was bent. (DDD fig. 3, p. 6.)

The bark of the cherry-tree, or thin leather or skin, was next glued over the sinew to preserve it from injury and damp. The horn parts, or inner face of the bow when it was strung, were not covered with bark or skin, a feature of the Turkish bow that, together with its small size, distinguishes it from the bows of India and other Oriental countries.¹

In the best Turkish bows this outer coating of bark, leather, or skin, was lacquered a brilliant crimson and elaborately decorated with gold tracery, the date of the bow being always placed at one of its ends and the name of its maker at the other.

The horn and sinew (the materials which really form the bow and give it its power and elasticity) may be likened to a tube, the small centre of which is filled with wood. (Sections, fig. 2, opposite page.)

¹ Though the horn strips which form the belly, or inner surface when it is strung, of a Chinese or a Tartar bow, are neither covered nor decorated, the great size of these weapons easily distinguishes them from those of Turkish manufacture. (Fig. 13, p. 16.)

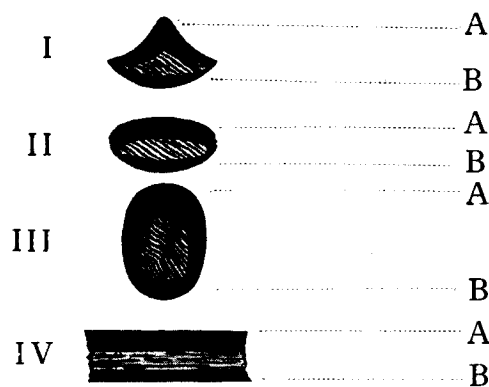


FIG. 2.—SECTIONS OF A TURKISH BOW.
Half full size.

I. Section of bow at 6 in. from one of its ends.

II. Section of bow at half-way between the centre of its handle and one of its ends.

III. Section of bow at the centre of its handle, which is here thickly covered with sinew.

IV. Longitudinal section of bow at half-way between the centre of its handle and one of its ends.

Light shading, AAAA. The compressed sinew forming the back of the bow when it is strung.

Dark shading, BBBB. The horn forming the inner surface of the bow when it is strung.

Lined centres. The thin lath of wood to which the horn and sinew parts of the bow are moulded and fixed.

The thin wooden lath, in places only $\frac{1}{8}$ in. thick, bestowed no strength on the bow, as it was merely its heart or core to which the two curved strips of horn and the long band of sinew were glued. (Fig. 3, p. 6.)

As it would have been very difficult and tedious to shape so fragile a lath in one length to suit the outline of the finished bow, this lath was always made in three pieces, which were fitted together at their joints and then secured with glue. (Fig. 3.)

The middle piece formed the core of the handle of the bow and the other pieces the core of its limbs. (Fig. 3.)

The extremities of the two outer pieces of the wooden core were enlarged to form the strong projecting points of the bow in which the nocks for the bow-string were cut. (CC fig. 3.)

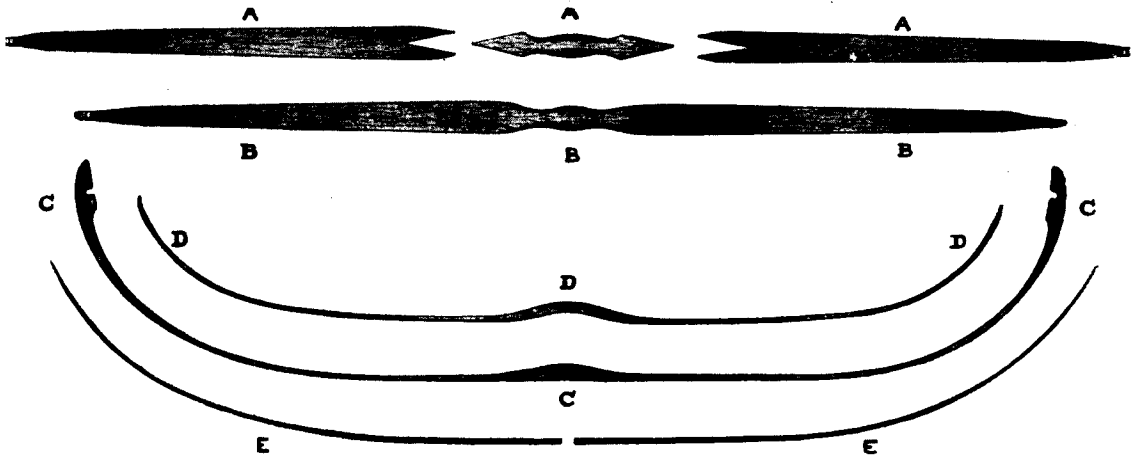


FIG. 3.—LONGITUDINAL PLANS OF THE PARTS OF A TURKISH BOW.

AAA. The three pieces of thin wood that formed the core of the bow. Surface view. (The two outer lengths of the core were steamed into a curve as shown in CCC.)

BBB. The pieces glued together. Surface view.

CCC. The pieces glued together. Side view.

DDD. The strip of sinew that was glued to the core, and which formed the back or outer surface of the bow when it was reversed and strung.

EE. The two strips of naturally curved horn that were glued to the core, and which formed the belly or inner surface of the bow when it was reversed and strung.

THE BOW-STRING

THE main part of the bow-string was composed of a skein of about sixty lengths of strong silk and was ingeniously knotted at each of its ends to a separate loop, formed of hard and closely twisted sinew. A loop and its knot is shown in fig. 4, opposite page.

These loops could not fray or cut, as would occur if they were made of silk, and they fit into the nocks of the bow. The loops rest, when the bow is strung, upon small ivory bridges (fig. 1, p. 2) which are hollowed out to receive them, and which, in this way, assist to retain the bow-string in its place. Though these little bridges are not always present on Turkish bows, they are invariably

to be found on those of Persian, Indian or Chinese construction, their greater length requiring the assistance of bridges to keep their bow-strings in a correct position.

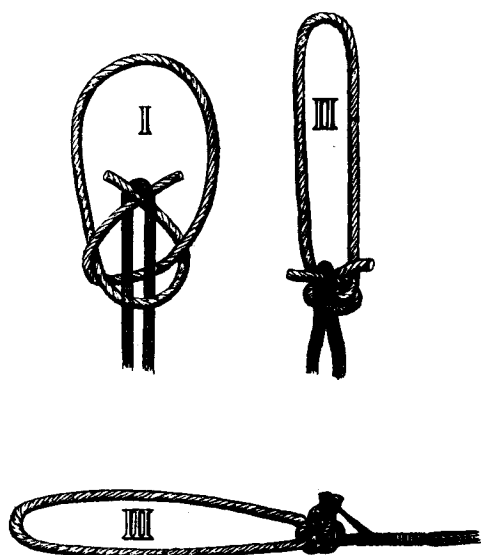


FIG. 4.—ONE OF THE LOOPS OF HARD AND CLOSELY TWISTED SINEW WHICH ARE KNOTTED TO EACH END OF THE MIDDLE PART OR SKEIN OF A TURKISH BOW-STRING.

Scale : Half full size.

I. A loop and its knot as first formed on one end of the skein of the bow-string.

II. The loop drawn up, but not tightened.

III. The loop drawn up tight and its loose ends secured.

As shown in III, the projecting ends of the length of sinew which forms the loop are cut off to within a third of an inch of the knot. They are singed at their extremities, so as to form small burrs which prevent the short length of strong silk, which lashes them together, from slipping off.

The ends of this last small lashing are placed beneath the wrapping of silk to be seen on the skein near the knot in III.

In this way the knot of the loop is rigidly secured against any chance of drawing when the bow is in use.

(The bow-strings of all Oriental bows, with the exception of the Tartar and Chinese, were made as above described.)

THE ARROW

LENGTH of arrow, $25\frac{1}{2}$ in. to $25\frac{3}{4}$ in.

Weight of arrow, avoirdupois, 7 drs., or equal to the weight of two shillings and a sixpence.

The balance of the arrow is at 12 in. from the end of its nock.

Shape of arrow, 'barrelled,' and much tapered from its balancing-point to its ends : its sharp ivory point being only $\frac{1}{8}$ in. in diameter (where it is fitted to the shaft) and $\frac{1}{4}$ in. in length.

The part of the shaft to which the feathers are attached is $\frac{3}{16}$ in. in diameter, and the centre of the shaft $\frac{5}{16}$ in.

Though I have carefully measured and weighed about two hundred eighteenth-century Turkish flight arrows, I have scarce found a half-dozen that were $\frac{1}{8}$ in. more or less than from $25\frac{1}{2}$ in. to $25\frac{3}{4}$ in. in length, or that varied by even as little as $\frac{1}{2}$ dr. from 7 dr. in weight. In regard to their balancing-point these arrows are equally exact, as this part is invariably from $11\frac{1}{2}$ in. to $12\frac{1}{2}$ in. from the nock.

It is evident that the old Turkish flight arrow was made to a standard pattern that experience showed was the best for long-distance shooting.

The light and elegantly shaped wooden nock of an old Turkish arrow (fig. 5) is quite unlike the clumsy horn nock of the modern European one.

The latter cannot withstand the recoil of the Turkish bow and soon splits apart, though in the thousands of times I have discharged Turkish arrows I have never known one to split at the nock.

It will be noticed that the shape of the Turkish nock—with its narrow entrance that springs apart to admit the bow-string and then closes again—

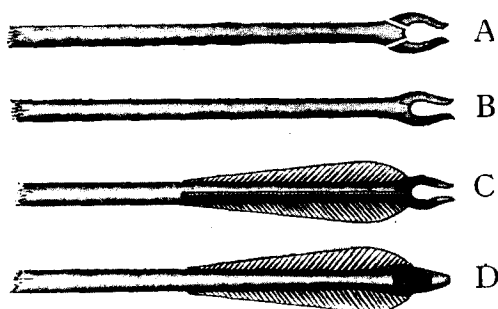


FIG. 5.—THE CONSTRUCTION OF THE NOCK OF A TURKISH ARROW.

Scale : Half full size.

enabled an archer, even on horse-back, to carry an arrow ready for use on the string of his bow.

A. The butt end of the arrow, with the projecting wooden halves of the nock shaped and ready to be glued to the shaft.

B. The halves of the nock glued to the shaft.

C, D. The feathers glued to the shaft.

The feathers (3) of a Turkish flight arrow, though stiff, are as thin as paper, and are $2\frac{1}{2}$ in. long and $\frac{1}{4}$ in. high near the nock. They were often made of parchment.¹

The dark band of shading to be seen round the nock in C and D is a wrapping of fine thread-like sinew. This sinew, after being soaked in hot glue, was wound to a thickness of about $\frac{1}{32}$ in. all over the nock and it thus held the halves of the latter securely to the shaft.

When dry, the wrapping of sinew was cut out where it crossed the opening for the bow-string. It nevertheless gave a great increase of strength to the thin projecting halves of the nock, as it covered them on their outer surfaces

¹ Parchment feathering increases the range of a flight arrow by at least thirty yards. The reason of this is, that parchment is so thin and smooth that it offers very slight frictional resistance to the air, whilst at the same time it is much harder, as well as much more unyielding, than feather.

with a sheathing that was very tough and elastic, and as smooth as glass to the touch. This wrapping was, of course, applied before the feathers were glued on.

So careful were the Turks in the construction of these arrows, that even the halves of their nocks were made from wood with a natural curve to suit the finished outline. It is possible, of course, they would not otherwise have withstood the violent shock of the released bow-string. It may be said that every inch in length of a Turkish bow or arrow was named in a manner that could be recognised or referred to. In a general way the parts of an arrow were known as follows :—

The enlarged centre	The stomach.
From the centre to the point	The trowser.
From the centre to the nock	The neck.

THE METHOD OF STRINGING A TURKISH, PERSIAN OR INDIAN BOW

IN these days no person I have ever heard of can string a strong Turkish bow—diminutive as this weapon is—without much personal assistance, or else by mechanical means, yet formerly the Turkish archer unaided could do so with ease.

This he achieved by a combination of leg and manual power. (Figs. 6 and 7, p. 10.)

With the longer reflex bows, the Chinese for instance, this operation is comparatively easy, as the hand can reach one end of the bow and draw it inwards for the loop of the bow-string to be slipped into the nock.

The Turkish bow, being so short, necessitates a great effort of strength on the part of the archer to bend it between his legs and, at the same time, stoop down to fit the bow-string. From constant practice, the Turk of former days knew exactly how and when to apply the muscular force of leg and arm necessary to string his bow—a performance that no modern archer could accomplish with a bow of any strength.

Leg and manual force combined is the only possible method of stringing a strong reflex bow, unless mechanical power is utilised : it was the hereditary custom of the Orientals. In the operation, there is always the risk of twisting the limbs of the bow, from a lack of the great strength of wrist required to hold them straight during the stringing. If the limbs of the bow are given

the slightest lateral twist as they are being bent, the horn parts are certain to splinter, and the bow is then useless and damaged beyond repair.¹

The difficulty of reversing and stringing a very stiff bow with such a reflex curve that its ends nearly meet before it is bent may be imagined.

De Busbecq tells us that some of the Turkish bows were so strong that if a coin was placed under the bow-string at one end of the bow, as it was being strung, no one but a trained archer could bend the bow sufficiently to set free the coin so that it fell to the ground.



FIG. 6.

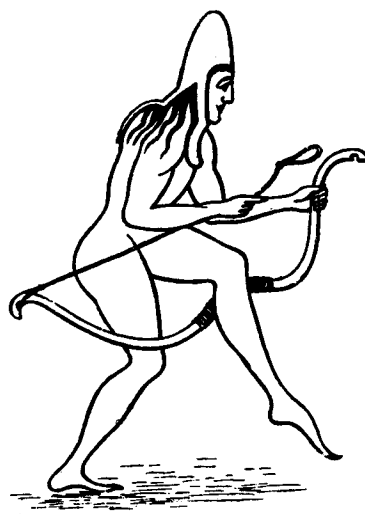


FIG. 7

Fig. 6 shows an Oriental reflex bow being gradually reversed preparatory to fitting on its bow-string.

Fig. 7 shows a similar bow when reversed sufficiently to fit its bow-string.

Though this illustration is from an ancient Greek vase, it will be noticed that in it the power of the leg and arm is applied in precisely the same way as in the more modern example given.

¹ The only safe method for a modern archer to adopt in order to string a powerful reflex bow is to use strong upright pegs, the size of tent pegs, inserted in smooth ground or in holes in a board, the bow resting during the process flat along the ground or board. Insert one peg against the inner face of the handle of the bow and then pull the ends of the bow back by degrees, placing a peg behind each of its ends as you do so to retain them in their acquired positions. The outer pegs can be shifted towards you as the bow is gradually bent, first at its one end and then at its other one. Finally, when the bow is fully bent the bow-string can be fitted across it from nock to nock and the pegs removed. To unstring the bow, grasp its extremities and, with the palms of the hands uppermost, bend it slightly across the knee, at the same time shifting with the thumb one of the loops of the bow-string out of its nock.

THE thin horn groove which the Turk wore on the thumb of his left hand when flight-shooting is shown in fig. 8.

This ingenious contrivance enabled the archer to draw the point of his arrow from 2 to 3 in. within the inner surface of his bent bow. He was thus able to shoot a short and light arrow, that would fly much farther than the considerably longer and heavier one he would have had to use if he had shot in the ordinary manner without the grooved horn.

The groove in the horn guides the arrow in safety past the side of the bow, when the bow-string is released by the archer.

The Turk, in fact, shot a short and light arrow from a very powerful bow, which he bent to the same extent as if he used an arrow 3 in. longer, with its proportionately increased size, weight, and frictional surface to retard its flight.

In the former case it will easily be understood that a much longer range could be achieved than in the latter.

Of this increase in length of flight conferred by the use of the grooved horn, the following experiment is conclusive evidence.

I lately shot from a Turkish bow twelve arrows, each arrow being three-quarters of an ounce in weight and $28\frac{1}{2}$ in. in length.

These twelve arrows were individually drawn to the head and the distance they reached averaged 275 yards.

I then reduced the same arrows to a length of $25\frac{1}{2}$ in. each, and to a weight of half an ounce each.

They were now shot from the same bow, over the same range and under the same conditions of weather, but their points were drawn $2\frac{1}{2}$ in. within the bow along a grooved horn. The distance they then travelled averaged 360 yards.

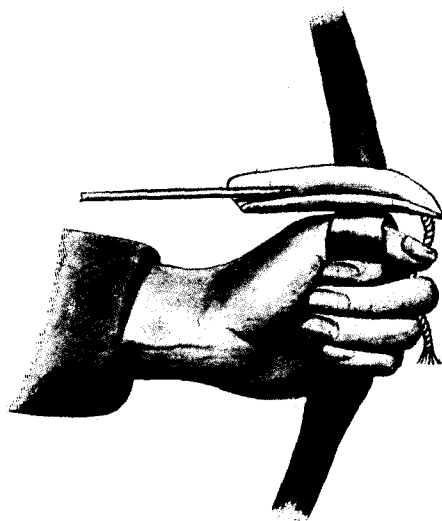


FIG. 8.—THE HORN GROOVE.

The bow is shown fully bent and ready for release, the point of the arrow being drawn back for a couple of inches inside the bow.

The Turk, as was the custom of Orientals, shot his arrow from the right-hand side of his bow, as shown in fig. 8, p. 11.¹

The bow is here represented as fully bent, the point of the arrow being drawn back along the groove of the horn for a couple of inches within the bow.

The horn is attached to the thumb by a small leathern collar.

A short plaited cord of soft silk is suspended from the fore-end of the horn and is gripped between the fingers of the archer as he holds the bow.

This cord enables the archer to keep the horn in a level position on his hand. It is fixed to a small strip of leather which is glued beneath the horn.

The horn is usually of tortoiseshell, very highly polished. It is from 5 to 6 in. long, 1 in. wide, $\frac{1}{4}$ in. deep inside and $\frac{1}{16}$ in. thick.

It is slightly sloped from its centre of length to each of its ends, so that when the arrow is projected it touches the hard and smooth surface of the horn very lightly, and with, therefore, the least possible friction to retard its flight.

As the horn groove is only one-sixteenth of an inch thick, the arrow, as it is drawn back or shot forward, may be said to fit close against the side of the bow.

THE THUMB-RING.

THE Turk pulled his bow-string with a ring of ivory, or of other hard material, fitted on his right thumb. (Fig 9, p. 13.) Its manipulation is shown on p. 14.

It might be supposed that the strain of the bow-string on the ivory ring would cause the edges of the latter to injure the flesh and sinews of the thumb; this is not, however, the case in the least.

I find I can bend a strong bow much easier, and draw it a great deal farther, with the Turkish thumb-ring than I can with the ordinary European finger-grip.

The release to the bow-string which is bestowed by the small and smooth point [in Turkish "lip"] of the thumb-ring, is as quick and clean as the snap of a gunlock when a trigger is pulled, and very different in feeling and effect from the comparatively slow and dragging action that occurs when the release takes place in the European way from the leather-covered tips of three fingers.

¹ To discharge the arrow from the left-hand side of the bow, as is the custom in all European archery, the leather ring and the grooved horn will have to be fitted to the first joint of the forefinger.

The range of a flight arrow when shot from a bow by means of a thumb-ring is always much beyond that of an arrow shot with the three fingers in the usual manner.

With the thumb-ring the feathers of an arrow can be placed close to its nock, as the usual space of about $1\frac{1}{2}$ in. need not be left on the shaft at the butt-end lest the fingers holding the bow-string should crush the feathers of the arrow—a precaution that is necessary in all European archery.

There is no doubt that the closer to the nock the feathers of an arrow can be fixed, the farther and steadier it will travel.

The handle of an English bow, or of any other bow that is loosed with the fingers, is placed below its centre so that the arrow can be fitted to the middle of the bow-string, a point which is just above the hand of the archer as he grasps the bow.

A bow held below its centre can never be pulled really true, the limb below the handle being shorter than the one above it.

In a Turkish bow the handle is in its exact centre of length, and the projecting point, or lip, of the thumb-ring engages the bow-string close to its centre.

For these reasons the bow is equally strained, each of its limbs doing its proper share of work in driving the arrow, an advantage that is very noticeable in flight-shooting, and would probably also be at the target. In the method of loosing used in modern times the bow-string lies across the three middle fingers, its outline, where the arrow is nocked on the string, taking the form of two angles connected by a straight line $2\frac{1}{2}$ to 3 in. in length.

With the thumb-ring the bow-string is drawn back to one sharp angle close to the apex of which the nock of the arrow is fitted, so that every part of the string is utilised in driving the arrow. (Fig. 12, p. 14.)

The ease with which a strong bow can be drawn with the thumb-ring, and the entire absence of any unpleasant strain on the thumb, is remarkable. This proves how effective the Oriental style of loosing a bow-string was, compared with the one practised by European archers.

The ring was usually of ivory, its edges being round and smooth where they came in contact with the skin of the thumb.

A covering of soft leather was sometimes glued all over the sloping outer surface of the projecting lip of the ring.

The leather assisted the archer to hold the ring firmly with his forefinger, so that it could not slip under the strain of pulling back the bow-string. The

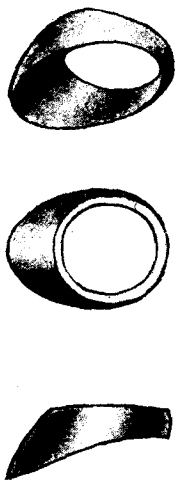


FIG. 9.—THE TURKISH THUMB-RING.
(Scale, half full size.)

projecting lip of the ring bestowed the leverage which enabled the archer to draw the bow-string of a powerful bow.

Thumb-rings of silver or of agate were often permanently worn by Turkish archers of position, both for ornament and for use.

These rings were finely polished and frequently inlaid with gold.

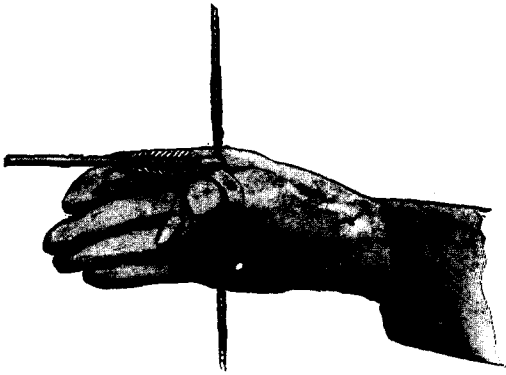


FIG. 10.

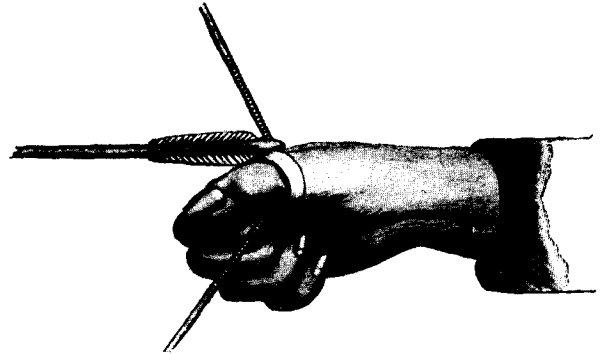


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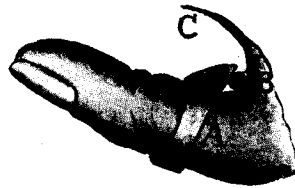


FIG. 11.

THE TURKISH THUMB-RING AND ITS MANIPULATION.

Fig. 10. The position of the hand when the arrow is first fitted to the bow-string, the latter being hitched behind the lip of the thumb-ring. The nock of the arrow should be close against the lip of the ring, and hence within about an eighth of an inch of the angle formed in the bow-string when it is fully drawn, as shown in fig. 12.

Fig. 11. View of the thumb, with the ring, A, in position preparatory to closing the forefinger and thumb.

[B. Section of the bowstring as hitched behind the projecting lip of the ring.

C. The base of the forefinger, or the part of it which presses tightly over the sloping surface of the lip of the ring, in front of the bow-string, when the bow is being bent.]

Fig. 12. The base of the forefinger pressed against the ring, the hand closed, and the bow-string and arrow being drawn back by the thumb-ring.

It should be noted that no part of the hand is utilised in holding the ring and in drawing the bow-string, except the thumb and the base of the forefinger.

When the pressure of the forefinger is taken off the ring (by separating this finger and the thumb) the bow-string instantly pulls the lip of the ring slightly forward, and at the same moment slips off it with a sharp 'click.'

The archers of other Oriental nations besides the Turks employed thumb-rings of various shapes and dimensions to suit the construction of their bows, bow-strings and arrows. All thumb-rings were, however, more or less similar, and were all used in the manner I have described.

It is, indeed, impossible to shoot an arrow by means of a thumb-ring except as I have shown, and as a very short practical trial will prove.

If the ring is applied in any other way it either flies off the hand when the bow-string is released; the thumb is injured; or the bow-string escapes from its hold when only partially drawn.



In one of the Turkish manuals on Archery translated by Baron Purgstall (p. 22), many illustrations are given of the construction of the Turkish composite bow, but, unfortunately, minor details are omitted, though doubtless they were common knowledge when the Ottoman author wrote.

Without these details the correct formation of the bow cannot be ascertained. The chief omissions are (1) The composition of the very strong and elastic glue with which the parts of the bow were so securely joined, (2) The treatment of the flexible sinew which formed the back of the bow—whether, for instance, it was glued on in short shredded lengths or was attached in one solid strip.

All we know is that the sinew was taken from the *Ligamentum Colli* of an ox or stag, a very powerful and elastic tendon which contracts or expands as the animal raises or lowers its head to feed or drink.

When the sinew which comprises the back, or outside when it is strung, of a Turkish bow—however old it be—is dissolved in hot water, it disintegrates into hundreds of short pieces of from 2 to 3 in. long and about $\frac{1}{8}$ in. in diameter, each as ductile as indiarubber and almost unbreakable by hand.

The component parts of a Turkish bow, consisting of a thin strip of horn, one of wood and another of sinew (fig. 3, p. 6), are so pliable when separated that they can almost be coiled round the fingers, though if the same pieces are glued together they form a bow of unrivalled strength and elasticity.

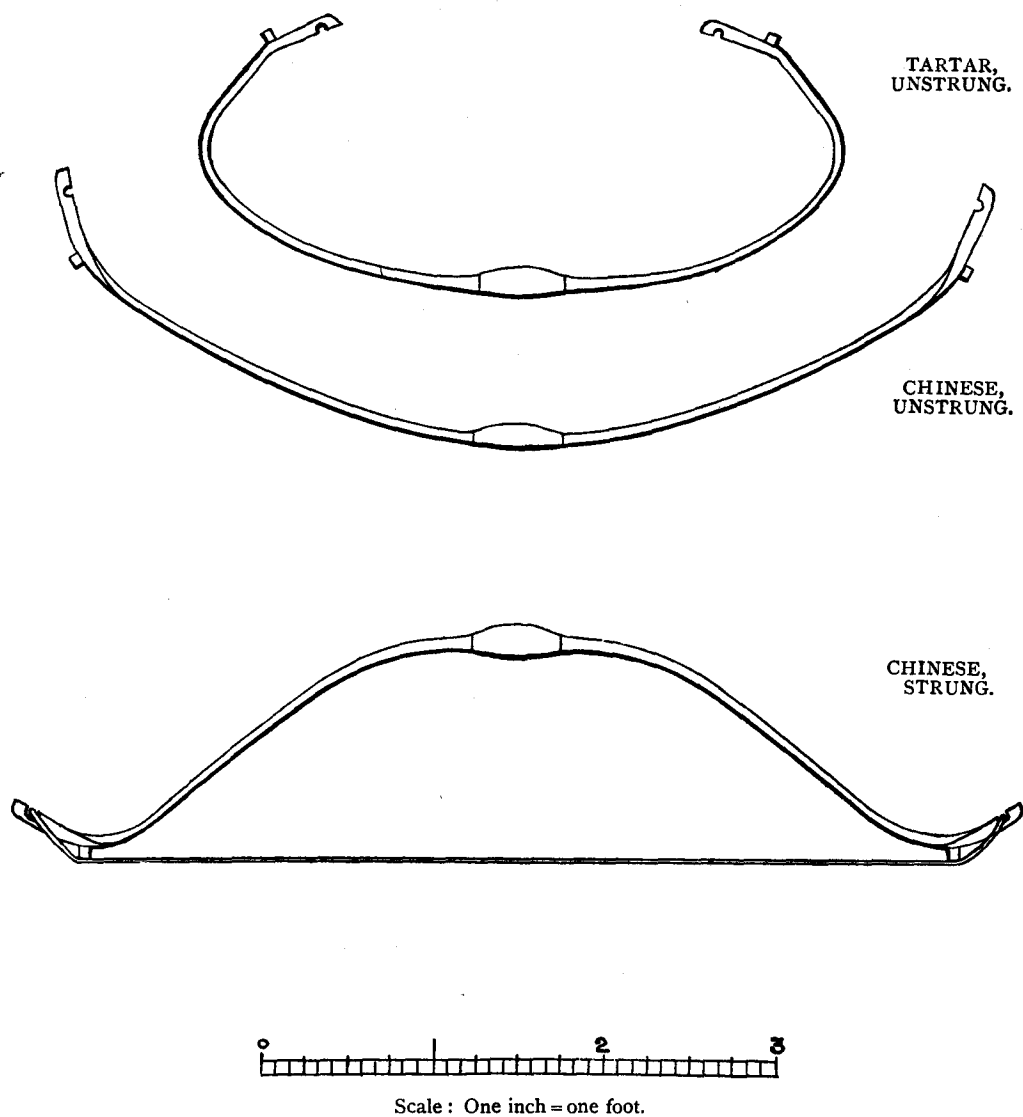
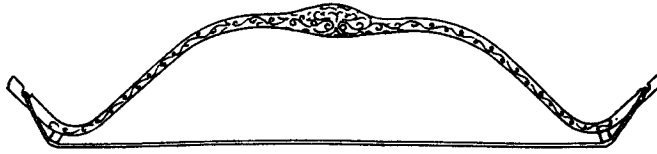


FIG. 13.

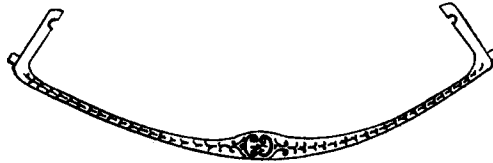
FIGS. 13, 14. THE COMPARATIVE DIMENSIONS OF REFLEX COMPOSITE BOWS OF VARIOUS NATIONS.—The structure of all these bows is similar in that they are composed of sinew, wood and horn, *i.e.* sinew on the back of the bow,



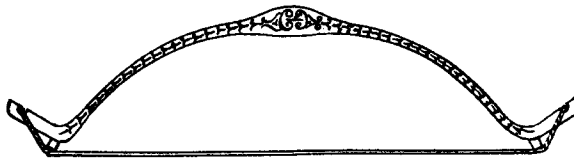
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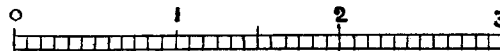
INDIAN,
STRUNG.



TURKISH,
UNSTRUNG.



TURKISH,
STRUNG.



Scale : One inch = one foot.

FIG. 14.

naturally curved horn on its inner face, and a thin core of wood between the horn and sinew.

Though the range of the Turkish bow—whether with a fighting or with a war arrow—far exceeds that of the other bows depicted, yet the Persian and Indian weapons are capable of shooting to a long distance, certainly much farther than any European longbow.

The great Chinese or Tartar bow requires a very long arrow, which from its length is, of necessity, a heavy one with a thick shaft. It cannot be propelled, as a result, farther than from 250 to 260 yards. One distinctive feature of Chinese, Tartar, Persian or Indian bows is the formation of their bow-strings. These are invariably from $\frac{1}{4}$ to $\frac{5}{16}$ in. in thickness, and are always closely wrapped round, from end to end, with soft cord or coloured silk of about the substance of worsted.

The Turkish bow-string is $\frac{1}{8}$ in. thick, and is merely served round with fine silk for 3 in. at its centre of length, with three or four shorter lashings at intermediate points.

THE LENGTHS OF THE ARROWS FORMERLY USED IN WARFARE WITH THE BOWS
GIVEN IN FIGS. 13 AND 14.

Chinese or Tartar bow	.	.	.	.	3 ft.
Persian	.	.	.	.	2 ft. 8 in.
Indian	.	.	.	.	2 ft. 6 in.
Turkish ¹	.	.	.	.	2 ft. 4½ in.

¹ The long Turkish war arrow was drawn to the head as in an ordinary bow. The grooved horn was only used with the short and light flight-arrow.

THE RANGE OF THE TURKISH BOW



THE AUTHOR SHOOTING WITH
A TURKISH BOW.¹

IN 1795 Mahmoud Effendi, Secretary to the Turkish Ambassador in London, shot a $25\frac{1}{2}$ - in. flight arrow 480 yards. The bow he used is similar to the one shown in fig. 1, p. 2, and is now preserved in the Hall of the Royal Toxophilite Society, Regent's Park.

Mahmoud Effendi accomplished this feat—which was carefully verified at the time—in the presence of a number of well-known members of the Toxophilite Society of the day, including Mr. T. Waring, the author of a work on Archery.

Joseph Strutt, the historian, was also a spectator, and describes the incident in his book entitled 'The Sports and Pastimes of the People of England.'

It is beyond question that in the seventeenth and eighteenth centuries, with bows precisely similar to the one shown in Fig. 1, but of much greater power, flight arrows were shot from 600 to 800 yards by certain famous Turkish archers.

The achievements of these celebrated bowmen were engraved on marble

¹ There are many country residences in England at which the author has made very long shots with a bow and arrow, and where trees have been planted to mark the distances. Among others; Glynllivon Park, Carnarvon; Broomhead Hall, Sheffield; Onslow Hall, Shrewsbury; Norton Priory, Runcorn; The Hendre, Monmouth, and Harpton Court, New Radnor, may be named.

columns erected at the ancient archery ground near Constantinople, and these records are still in existence.¹

The only trustworthy evidence of unusual ranges attained with the English longbow is as follows :

1798.	Mr. Troward	.	.	.	.	340 yards.
1856.	Mr. Horace Ford	.	.	.	.	308 „
1881.	Mr. C. J. Longman	.	.	.	.	286 „
1891.	Mr. L. W. Maxon	.	.	.	.	290 „
1897.	Major Joseph Straker	.	.	.	.	310 „

It is not probable that the English bowmen of mediæval days were able to shoot the arrows they used in warfare farther than from 230 to 250 yards. Nor is it likely that they could send flight arrows to longer ranges than those given above, as heavy yew bows, strong as they may have been, were unsuitable for the purpose.² It was from their great elasticity, as much as from their strength, that composite bows derived their wonderful power.

When, too, the composite bow was strung, its bow-string was much more taut than was that of any European bow, as the latter was merely bent out of a straight line, whilst the former was bent from a sharp reflex curve, which it was always striving to resume when in use.

Though many nations formerly used composite bows of horn and sinew, no people attained such dexterity in their manipulation, or constructed them of such marvellous power and efficiency, and at the same time so small, elegant and light, as did the Turks.

It should not be supposed, however, that because these bows were so diminutive in size, they were mere playthings for shooting a flight arrow to an immense range. They were powerful weapons of warfare, and, as I have proved in practice, those of only moderate power are capable of sending an iron-shod arrow weighing 5s., or one ounce, to a distance of 280 yards. Bows that could shoot a flight arrow 600 yards, and more, would certainly be able to drive an ounce arrow 360 to 400 yards—or much farther than was possible with the old English longbow and its war shaft.

I have obtained with much difficulty during the last few years about a score of composite bows of Turkish manufacture from various parts of the Ottoman Empire. Not more than three or four of these have, however, proved serviceable, owing to their age, as no bows of the kind have been made for over a hundred years, the art of their construction being long since neglected and lost.

¹ See *The Crossbow*, pp. 28, 29.

² In *King Henry IV.*, Second Part, Act III., Scene 2, Shakespeare makes Shallow exclaim of Double that the latter could shoot a flight arrow from 280 to 290 yards. In the time of Shakespeare (1564–1616) it was, therefore, considered a notable feat to send an arrow to this distance.

With the bow depicted in Fig. 1, I shot six arrows in succession to ranges exceeding 350 yards, the longest flights being 360, 365 and 367 yards. This public record was established July 7th, 1905, at an archery meeting held at Le Touquet, near Etaples in France. The ground selected for the trial was perfectly level; there was no wind, and the distances were accurately measured by several well-known members of the Royal Toxophilite Society who were present.

With the same bow I have, in private practice, thrice exceeded 415 yards, and on one occasion reached 421 yards.¹

Though this bow is a powerful one for a modern archer to draw, it is a mere plaything compared with other Turkish bows of the same length, but of far greater strength, which I possess.

Some of the latter are so curved in their unstrung state that their ends nearly meet, and are so stiff, when strung, that I cannot draw them to more than

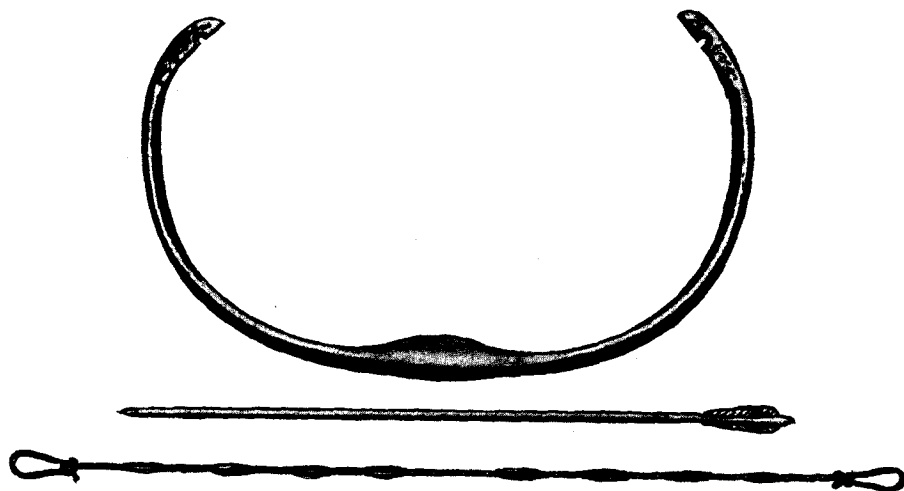


FIG. 15. SKETCH OF A VERY POWERFUL TURKISH BOW WITH ITS ARROW AND BOW-STRING.

half the length of a $25\frac{1}{2}$ -in. arrow. Fig. 15 shows a bow of this kind in my collection.

Such bows as these require a pull of 150 to 160 lbs. to bend them to their full extent, which quite accounts for the marvellous, but well authenticated, distances attained in flight-shooting by the muscular Turkish bowmen of bygone days.

Though 367 yards is a short range in comparison with that which the best Turkish archers were formerly capable of obtaining, it is, so far as known, much

¹ I presented this bow, and some of the arrows I used at Le Touquet, to the members of the Royal Toxophilite Society. These are now preserved in the club house of the Society in Regent's Park, the fine hall of which contains an unrivalled collection of archery implements and curiosities.

in excess of the distance any arrow has been shot from a bow since the oft-quoted feat of Mahmoud Effendi in 1795, p. 19.

Full corroboration of the wonderful flight-shooting of the Turks may be found in some treatises on Ottoman archery which have been translated into German by Baron Hammer-Purgstall (Vienna, 1851).

In his directions concerning the selection of suitable bows and arrows for the sport, one of the Turkish authors quoted by Purgstall writes: 'The thinnest



TURKISH CAVALRY SOLDIERS WITH THEIR BOWS.

From an illuminated Turkish MS. in the Sloane Collection, B.M., dated 1621, No. 5258. These reproductions plainly show how small was the size of the bow formerly used in warfare by Turkish soldiers.

and longest flying arrow has white swan feathers shaped like leaves,¹ and this arrow, with a good shot, carries from 1,000 to 1,200 paces.'

The orthodox length of a pace is thirty inches, and thus even 1,000 paces, or the lesser range mentioned, would exceed 800 English yards.

Augier Ghislen de Busbecq (1522-1592), a Belgian author and diplomatist, describes the Turkish archery he witnessed when ambassador to the court of Solyman, and the well-nigh incredible distances to which he saw arrows propelled.

¹ *Anglice*, Balloon feathers.

Full information to the same effect, with excellent diagrams, may be found in a Latin MS. on Turkish archery by J. Covell, D.D., Chaplain to the Embassy at Constantinople 1670-1676.¹

Another treatise (in Turkish) entitled 'An Account of some famous Archery Matches at Bagdad (1638-1740), dedicated to the Governor of that city by the author, M. Rizai,² may also be consulted, as it gives the exact ranges of the longest-flying arrows.

It should be remembered that many years ago flight-shooting was a very popular recreation of the Turks, that every able-bodied man was a practised archer, and that every male child was trained to use a bow from the earliest possible age.

The origin of Turkish and other highly finished composite bows, and the approximate date when they were first used in sport and warfare, it is now impossible to determine. Bows that are undoubtedly of this kind and which are of excellent shape and design, are depicted on some of the most ancient pottery existent, and are also referred to in some of the oldest writings we possess.

For a full account of Ottoman archery and the extraordinary feats of Turkish bowmen, see pp. 27, 28, 29, 30, *The Crossbow*.

¹ MSS., B.M., 22911, folio 386.

² Sloane MSS., B.M., 26329, folio 59.

warfare, or even for target-shooting, as it would break to pieces on striking any material that was more resistant than sand or soil.

‘London 1795.

‘Dear Brother,—I have just been to see the secretary of the Turkish Ambassador shooting with Waring¹ and other famous English bowmen. There was a great crowd, as you may suppose, to see them. The Turk, regardless of the many persons standing round him and to the amazement and terror of the Toxophilites, suddenly began firing his arrows up in all directions, but the astonishment of the company was increased by finding the arrows were not made to fly, but fell harmlessly within a few yards. These arrows the Turk called his “exercising arrows.” This was an idea that was quite new to the bowmen present, and they began to have more respect for the Turk and his bow. The Turk’s bow is made of antelopes’ horns and is short, and purposely made short for the convenience of being used in all directions on horseback.

‘The Toxophilites wished to see the powers of the Turkish bow, and the Turk was asked to shoot one of his flight arrows. He shot four or five, and the best flight was very carefully measured at the time. It was 482 yards. The Toxophilites were astonished, I can tell you.

‘Waring said the furthest distance attained with an English flight arrow, of which he had ever heard, was 335 yards, and that Lord Aylesford had once shot one, with a slight wind in his favour, 330 yards. Waring told me that he himself, in all his life, had never been able to send a flight arrow above 283 yards.

‘The Turk was not satisfied with his performance, but declared that he and his bow were stiff and out of condition, and that with some practice he could shoot much further than he had just done.

‘He said, however, that he never was a first-class bowman even when in his best practice, but that the present Grand Seigneur was very fond of the exercise and a very strong man, there being only two men in the whole Turkish army who could shoot an arrow as far as he could.

‘The Turk said he had seen the Grand Seigneur send a flight arrow 800 yards.

‘I asked Waring to what he attributed the Turk’s great superiority over our English bowmen; whether to his bow or not. Waring replied he did not consider it was so much the result of the Turk’s bow, but rather of his strength and skill, combined with the short light arrows he used, and his method of shooting them along the grooved horn attached to his arm.

‘Neither Waring nor any of the Toxophilites present, (and many tried,) could bend the bow as the Turk did when he used it.

¹ T. Waring, author of a *Treatise on Archery*, 1st ed. 1814, last ed. 1832. Waring was an accomplished archer and a well-known manufacturer of bows and arrows.

'So much for the triumph of the Infidels and the humiliation of Christendom.

'Yours aff.,

'W. FRANKLAND.

'To Sir Thos. Frankland, Bt., M.P.

'Thirkleby Park.'

I found the following in a manuscript notebook of 1798 describing feats and incidents of archery, collected by the recipient of the above letter.

'Records of Turkish archery procured in 1797 from Constantinople by Sir Robert Ainslie, at the request of Sir Joseph Banks, and translated by Sir Robert Ainslie's interpreter.'

'The Turks still have detachments of archers in their armies, merely not to deviate from ancient custom, for, in Turkey, archery is now merely regarded as an amusing exercise that is to this day practised by all ranks of the people.

The Ottoman emperors, with their court, often enjoy the diversion of archery in public, and there is an extensive piece of ground allotted to that purpose.

This place is upon an eminence in the suburbs of the city of Constantinople, and commands an extensive view of the town and harbour. It is called Ok Meydan, or the Place of the Arrow. The ground mentioned is covered with marble pillars erected in honour of those archers who have succeeded in shooting arrows to any remarkable distance. Each pillar is inscribed with the name of the person whose dexterity it records, together with some complimentary verses to him, and the exact range which he attained with his flight arrow.

The Ottoman emperors, from ancient times, have been always supposed to live by their manual labour, and in consequence of this supposition they have each learnt some art or profession, most of them having preferred the art of making bows and arrows.

The present emperor was bound apprentice to the trade of archery, and at the time he was received as a master in this trade, he gave on different occasions very splendid public entertainments at the Ok Meydan, where the State tents were pitched for him and his court.

The Tartar bows are preferable to those manufactured in Turkey, as the former are the larger and stronger, though there is now an extensive factory for implements of archery in Constantinople, called Ok Zilar, or the place of the Arrow-makers.

The Turkish bow is formed of a very strong elastic wood. One side of the bow is covered with a composition made chiefly of buffalo horn melted down; this is smoothed with a file to a proper shape, and forms the concave side of the bow when it is bent.

The convex side is plain wood, painted, varnished and richly gilt. The bow is only bent when it is about to be used, and then it is bent with much caution, the heat of fire being always first employed to make it flexible.

The Turkish bow will penetrate, with an ordinary arrow, a half-inch plank at over 100 yards, the head and shaft of the arrow passing for three or four inches through the wood.

Translations of the inscriptions on some of the marble columns at the Ok Meydan (Place of the Arrow), which were erected in honour of those who have excelled in archery.

1. Ak Siraly Mustapha Aga shot two arrows both of which travelled to a distance of 625 yards.
 2. Omer Aga shot an arrow to a distance of 628 ..
 3. Seid Muhammed Effendy, son-in-law of Sherbetzy Zade 630 ..
 4. Sultan Murad 685 ..
 5. Hagy Muhammed Aga shot an arrow 729 ..
 6. Muhammed Ashur Effendy shot an arrow which fixed in the ground at 759 ..
 7. Ahmed Aga, a gentleman of the Seraglio under Sultan Suleiman the Legislator, shot an arrow 760 ..
 8. Pashaw Oglee Mehmed shot an arrow 762 ..
 9. The present Grand Admiral Husseir Pashaw shot an arrow which drove into the ground at 764 ..
 10. Pilad Aga, Treasurer to Hallib Pashaw 805 ..
 11. Hallib Aga 810 ..
 12. The reigning Emperor Sultan Selim shot an arrow which drove into the ground at a distance of 838 ..
- The Sultan shot a second arrow to near the same distance.'

In the translation of the above from the Turkish language, the feet and inches are also given for each shot, but these I have omitted as unnecessary.

In the manuscript, the interpreter remarks that the measurements of the distances on the marble columns at Ok Meydan are in pikes, the pike being a Turkish measure of a little over two feet, easily convertible into English yards, feet and inches.

It will be observed that the longest flight recorded on the columns selected for quotation is 838 yards, and the shortest, 625 yards. Though these distances are almost too extraordinary to be true, they corroborate in some measure the statement made in 1795 by the secretary, of the Turkish ambassador, p. 27.

If they are correct, they can only be accounted for by the use of a light short arrow, a very powerful bow, great strength and skill, and, above all else, by the horn appendage which the Turkish archer attached to his left arm, and without which he could not shoot so short an arrow from his bow.¹

If a very light flight arrow of reed or bamboo could in some way be arranged to receive the impulse of the thick string of a crossbow with a powerful steel bow, I have little doubt it could be propelled half a mile.

I have fitted (as a separate piece) a large hollow hornnock over the butt of the ordinary flight arrow of the longbow, so that the loose nock rested against the string of the crossbow. In this way I have obtained several flights of from 500 yards to 515 yards. In the case of a short and very light fighting arrow, however, the recoil of the steel bow shivers it to pieces as it leaves the stock of the crossbow.

¹ Even if we accept only the shortest range recorded on the columns as correct—*i.e.* 625 yards—it is an extraordinary distance for any arrow to be propelled, and much exceeds, as far as we know, what has ever been done by an English bowman with a longbow. It is, however, beyond question that the secretary to the Turkish Ambassador did shoot an arrow 482 yards (the arrow and bow being even now preserved in the Toxophilite Society's rooms), though he declared at the time of the occurrence that he was not proficient in the art of sending a flight arrow to what he considered a great distance. We may from this safely assume that a range of 143 yards further than the Turkish secretary attained with his bow, or a total flight of 625 yards, was quite possible in the case of a more powerful and skilled Turkish archer than he was.

See Chapter L. for a description of long distance arrow-throwing by hand.

