



Mamluk archery manual

Writings on Archery from the Islamic and Western Worlds by Mr. Malcolm Wright* Table of contents 1. Introduction 2. The Corpus 3. Historical Overview 4. A Short Introduction 7. Appendix 8. Bibliography 9. Further reading 10. References *** 1. Introduction 10. References *** 1. Introduction 2. The Corpus 3. Historical Overview 4. A Short Introduction 10. References *** 1. Introduction 2. The Corpus 3. Historical Overview 4. A Short Introduction 2. The Corpus 3. Historical Overview 4. A Short Introduction 2. The Corpus 3. Historical Overview 4. A Short Introduction 10. References *** 1. Introduction 2. The Corpus 3. Historical Overview 4. A Short Introduction 2. The Corpus 3. Historical Overview 4. A Short Introduction 2. The Corpus 3. Historical Overview 4. A Short Introduction 2. The Corpus 3. Historical Overview 4. A Short Introduction 2. The Corpus 3. Historical Overview 4. A Short Introduction 2. The Corpus 3. Historical Overview 4. A Short Introduction 2. The Corpus 3. Historical Overview 4. A Short Introduction 2. The Corpus 3. Historical Overview 4. A Short Introduction 2. The Corpus 3. Historical Overview 4. A Short Introduction 2. The Corpus 3. Historical Overview 4. A Short Introduction 2. The Corpus 3. Historical Overview 4. A Short Introduction 5. Introduction 4. A Short Introduction 5. Introduction 4. A Short Introduction 5. Introduction 5.



The book had to be easily available. The book had to be comprehensive; that is, it had to cover archery techniques in some detail. Having selected the material, we need to test it to qualify it's "usability". In any modern manual we would expect to see certain characteristics.



These might be defined as: The material is comprehensive and organised in a logical sequence. Access to a specific subject must be easy. Complex procedures are broken down into a series of steps.



Illustrations are available to make the text clearer. 2. The Corpus Figure 2: Miniature showing an Ottoman horse archer, one of the most feared warriors of the middle ages. Note the archer's skill at shooting behind him while riding a horse. (Source) On the basis of this set of criteria, the first selection suggested itself. It was a book written around 1368 by Taybugha Al-Ashrafi Al-Baklamishi Al-Yunani. In the translated form, the book is known today as Saracen Archerybut its original title in Arabic is entitled Kitab Ghunyat at-Tullab fi Ma'rifat Rami an-Nushshab, whilst the English translation is The Complete Manual of Archery for Cadets. An Arabic manuscript copy of this book is held in the British Library (Manuscript Additional 23489), but the version used in this article is the translation and commentary compiled by John Latham et al. and published in 1970 by The Holland Press (London). We know very little about the original author, except that he wrote his book in the 14th coriginal author, except that he wrote his book in the 14th coriginal title in Arabic so for the Manual of Archery for Cadets. An Arabic manuscript copy of this set of criteria, the first selection suggested itself. It was a book written around 1368 by Taybugha Al-Ashrafi Al-Bakamishi Al-Yunani. In the translated form, the book is known today as Saracen Archerybut its original title in Arabic set (London). We know very little about the version used in the arother so original title in Arabic set (London). We know very little about the version used in the British Library (Manuscript Additional 23489), but the version used in freedom and then employed in the Mamluk armies Media as soldiers. Once he burght on the so of the Mongol invasions of Syria, beat were formidable opponents. During was congelsed, were formidable opponents. During the Mongol invasions of Syria, beat corigin, which suggests that the author might have come from what is now central Turkey. However his name, Al-Yunani, "The Greek", also suggests that the might have bee

Its title is Kitab fi bayan fadhl al-qaws wa-'l-sahm wa-awsafihima. The name of the author is unknown, but he is thought to be a North African from Morocco. The version we used is a translation by Nabih Amin Faris and Robert Potter Elmer of the original manuscript held in Princeton Library (Garrett Collection MS 97, 353 pp.) and published by Princeton University Press in 1945. It covers much the same ground as Saracen Archery but there are some substantial differences.

When it comes to Western manuals of archery, perhaps the most famous is Toxophiluswhich was written in England in 1545 by Roger Ascham. The version used is the 1868 reprint edited by Edward Arber. Ascham was a scholar during the last years of the reign of Henry VIII and he wrote Toxophilus primarily as a present for the king, and for which he was rewarded with a pension. It courses all the archery techniques but in a more discursive manner. The bulk of the book takes the form of a Platonic dialogue between Philologus and Toxophilus and is written in "Middle English". Ascham is more generally known for his sook The schoolmaster, though his name is still remembered in British archery critical and rachery equipment is known as an "Ascham". The fulk of the book takes the form of a Platonic dialogue between Philologus and Toxophilus written by Horace Ford is death and published in English". Ascham is more generally known for his sook The schoolmaster, though his name is still remembered in British archery critical and the price of Archery, written by Horace Ford is death and published in English". Ascham is more generally known for his sook The schoolmaster, though his and is still remembered in British archery critical and the sooks and the archery equipment is known as an "Ascham". The earliest and the sooks we must be aware that they come from two different cultures and concentrate only on how the facts and techniques are presended to the degree of detail that the books go into [3] In addition, as a Western trained archery equipment is known as an "Ascham". The term of "Islamic Archery" would also apply to the Islamic sources. However most of the techniques that are described in the Near East, Far East, India and the way that some native North Archery" would also apply to the schools depicted in this mystical scene from an 18th-century manuscript detailing the life of a Persian prince. Source: Charles E. Grayson, Mary French, Michael J. O'Brien, Traditional archery epride of cultural, scientific and artistic expa



The Prophet said "The hand of man has wielded no weapon which was not excelled by the bow."[4] In Islamic archery practice, the area between the shooting line and the target was considered to be holy ground. Another demands that the archery was a strip of Paradise.[5] However Faris and Elmer in Arab Archery practice of the prophet, which regards the target. They say "Although a mystical significance is assigned to this act of walking barefooted when he is picking upon a snake; not on a serpent, but on a hidden arrow that is technically called a snake beccause it thas missed the target and has buried itse on a serpent, but on a hidden arrow that is technically called a snake beccause it the snat that the archer may find his search to be unsuccessful; unless he finally restricts. To avoid this latter catastrophe the shad that the bow is a more for a snaked arrow-perhaps crossing and recrossing it many times-and even the solute this concealment can be, and the snate in the grass could be felt, but not breaker, tell sand bay of religious observance did not arrow that is technically called a snake beccause it has must insert to be now? (fig 1 messence, a bake or hook to scratch up the ground or should happen to tread upon the snate in the grass crossing and recrossing it many times-and even that the ow is a more for a snakel and to bay bey or the same time in the sand that the bow is a device that stores energy and then releases it in the snate in the grass could be felt, but not kinetic energy. The first real evidence is a could be or force gradually and tore the source as a could be or forms. The same device the source as a could be or forms. The same device the store as every bey or sate as a could be device the store as every and then releases it in the snate store to a severe the same dimet and probably crunch it. To avoid this latter energy in the bow as potential energy and then seles as the snake in the grass could be felt, but not free seles energy in the bow as potential energy and then seles entire energy



Sapwood takes tension while heartwood takes compression. Figure 5: Composite Bow The other type of bow is the composite bow. These are made from different types of material, where each is chosen for their compression or tension capabilities. They were also generally recurved. Self bows take the form of an arc when strung. On a recurve bow, the top and bottom parts of the bow are curved in opposition to the main body of the bow.

This allows for extra compression and tension to be available in the bow, and therefore a recurved bow can store more energy for its length than a non recurved bow. Generally, composite bows are shorter than self bows and are therefore easier to use on horseback. Many eastern bows are composite and specifically designed for horsemen. Traditional bows were made from organic materials and unless they were preserved, by being put into a tomb for example, then they rarely survive into the archaeological record; therefore it is difficult to say exactly when the first composite bows were made. However, we do know that some of the bows in the tomb of Tutankamun were of the composite type, which means that they were in existence around by 1300-1200 B.C.E. Many of the bows used in the Middle and Far East were possibly based on the Scythian bow, which itself dates back to around 700 B.C.E. To use a bow and shoot correctly takes training and physical strength. To produce a man who can fulfil the duty of an archer in battle takes hundreds of hours of training and practice. In cultures where the bow was an important weapon, archery training schools became very important. In England, it was compulsory for certain classes of people to train every week at archery.

State controlled prices were set for bows so that everyone could afford one. Henry VIII required "under penalty of default of 12d per month – all subjects under 60, not lame, decrepit, or maimed, or having an other lawful Impediment; the Clergy and Judges & c excepted: to use shooting in the long bow. Parents were to provide every boy from 7 to 17 years, with a bow and two arrows: after 17 he was to find himself a bow and four arrows. Every Bower for every Ewe bow he made was to 'at the lest ij Bowes of Elme Wiche or other Wode of mean price' under penalty of Imprisonment for 8 days.

Butts were to be provided in every town. Aliens were not to shoot with the long bow without licence".[8] Thus for every good bow he makes, a bowyer had to make a number of cheaper bows for practice. And this was true in the beginning of Henry's reign (1511-12), even though at that time the bow was beginning to be supplanted by firearms. The last battle fought in England using bows was in 1513. However, even as late as 1541 Henry brought out "An Acte for Mayntanance of Artyllarie and debarringe of unlauful Games."[9] As part of this act, no bowyer should sell a Yew Bow to anyone between 8 and 14 years for more than 12d. In Islamic tradition, archery training was part of the duties of a Muslim. "The Prophet himself, furthermore, was an archer and possessed three bows. The terms in which he urged his community to practise riding and archery – preferably the latter – amount to a standing order, and archery is a... religious obligation incumbent, nor upon each individual, but upon the community by representation."[10] As a result of these measures, there was always a large body of trained men available to armies as archers. Their accuracy may not have been to "Robin Hood" standards, but a trained archer was incredibly strong, capable of loosing many shafts during a battle.

Skeletons of archers retrieved from the "Mary Rose" show significant distortions to the shoulders, arms and back. An English war bow at the time of Agincourt would need a pull of around 120 pounds for the full draw. That is equivalent to holding sixty bags of sugar on the first three fingers of the right hand and pulling it up to shoulder height, time and time again. It took at least ten years to develop the muscles and the technique to go with it. And that is why England, with its intensive training starting at the age of eight, could supply so many fully trained archers. The use of the "arrow storm", where each side would put as many arrows in the air in the shortest possible time, was common to most armies. An Egyptian Mamluk was said to be able to loose three arrows in a second and a half. There are reports of a Mamluk who was able to put fifteen arrows in the air at the same time! A highly trained English archer would be expected to be able to loose twenty arrows a minute. However, these rates of fire would soon exhaust both the supplies of arrows and the archers, so it is unlikely to continue for long periods of time. The basic design of both bows and arrows are fairly simple and there have been no major changes over thousands of years. There were many small improvements, but it was not until the 1960's, with the invention of the "Compound Bow", that the first major change to the design of the bow arrived. A modern archer, even with no knowledge of archaeology, would be able to look at the archery equipment in the shortest possibility of a continuous sequence of actions, with the possibility of a short periods of shorting an arrow Any treatise on archery, ancient or modern, breaks down the act of shooting an arrow into several discrete stages. However, in practice the five stages described below are part of a continuous sequence of actions, with the possibility of a very short pause at one point.

The five stages are: Stance: It is crucial that the archer takes the correct stance before lifting the bow. Nocking: The act of taking an arrow and placing in on the bow and string. Draw: Pulling back the string and preparing to aim. Aiming: Ensuring the arrow hits the mark. Loose: The act of releasing the string. 5. Detailed Analysis of the Corpus We will see what each of the four books

mentioned above say about each of the five stages just defined.[11] We will treat each of the activities separately, but we must remember that they are part of a continuous stream of activity

5.1 Stance The archer's stance is crucial. The stance selected determines most of what follows. There are three basic stances. The first is the oblique, where the advanced shoulder is pointing straight at the target. The second is where the advanced shoulder is pointing straight at the target. The second is where the advanced shoulder is pointing straight at the target. The second is where the advanced shoulder is pointing straight at the target. The second is where the advanced shoulder is pointing straight at the target. The second is where the advanced shoulder is pointing straight at the target face on and the third is somewhere between the two. Taybugha describes the three basic stances and one for people wearing armour. He describes explicitly where the feet are to be placed and how the weight of the archer should be distributed. It is apparent that Taybugha has his own ideas of the right way to go about things. After describing the official stance for a man in armour, he said: "In this position, the archer has his Achilles' tendons meeting, but parts his feet in front. He stands in this way because he is wearing armour. It is a difficult thing to do, [and I do not care for it], but I record it here in accordance with the practice of our masters. My own view is that the archer should put a space between his legs almost big enough to allow another man to pass between. In this way, he can stand more firmly and can get up, stand, and dodge more rapidly"[12].

The book Arab Archery also describes the three basic stances and one that involves turning the back on the target while the archer draws and then pivots at the hip towards the target as he releases. The author does not give any preference for any particular stance but does seem to favour the oblique stance, which incidentally is the stance adopted by modern archers as it allows the full use of the back and shoulders in the draw. He also gives details of three sitting as shall be both comely to the eye and profitable to his use, setting his countenance and all the other parts of his body after such a behaviour and port that both all his strength may be employed to his own most advantage and his shoot made and handled to other men's pleasure and delight."[13] This could suggest the oblique stance.

Ford in Theory and Practice of Archery again seems to favour the oblique stance, although he accepts that there is room for some variety according to personal preference. However he does bring another element into the discussion. "That an archer's general position may be a good one it must possess three qualities – firmness, elasticity and grace".[14] However, he is most precise on the possibilities that the archer can select from in terms of stance. 5.1.1 The Practicalities Figure 6: Standard (Oblique) Stance As can be seen from Figure 6, a modern archer stands with his shoulders lined up so that they point at the target and the feet roughly at right angles to the line of the shoulders. Taybugha's method is roughly the same, but the left foot will be pointed at the target and the right foot will be placed so that the heel of the left foot will point at the instep of the right. However, this stance means that the chest has now naturally moved about 45 degrees so that the shoulders in line with the target, and therefore to get the shoulders in line with the target the body has to be twisted back by roughly 45 degrees. This introduces a slight element of strain in the body.

The modern stance is probably the more stable, whereas Taybugha's stance is more flexible and allows movement in any direction. Most modern archers don't expect to have someone shooting back at them, so stability is preferred to the ability to move quickly in any direction.

In any case, Al Yunani's description is very clear and it is easy to take up the position he describes. 5.2. Nocking For Taybugha nocking – the putting of the knock of the arrow. "In other words, at no time do you look at the nocking operation, but rather keep your eyes fixed all the while on the mark at which you are about to shoot, that is to say the enemy's position... Your sight must be trained constantly upon this mark without leaving it, even for a single instant, for if an archer takes his attention away from his foe, the latter will do him some injury and perhaps even kill him."[15] Bearing in mind that this is a crucial operation that must be done exactly, Taybugha goes into some detail, as to how it is to be carried out and warns the young archer that only much practise and constant training will enable him to do this. The author of Arab Archery is again fairly precise about the methodology involved, but points out that this operation must be done with the eyes firmly on the target. However, this is now due to the fact that this is the method used by all schools of archery at that time rather than the fact that someone might try to kill you. Ascham does not spend a lot of time on nocking: "To nock well is the easiest point of all, and there is no clunning, but only diligent heed giving, to set his shaft neither too high nor too low..."[16] Ford hardly mentions nocking at all! 5.2.1 The Practicalities Knocking is one of the simplest operations, but still a crucial one. If the arrow is not sitting firmly on the arrow in position. The other hand then runs back along the bow, where the fingers of the bow hand are used to hold the arrow in position. The other hand then runs back along the body (stele) of the arrow, back along the head and then placed on the bow, where the fingers of the bow hand are used to hold the arrow in position. The other hand then runs back along the body (stele) of the arrow, the arrow, the sole of the arrow in position. The other hand then runs back along the body (stele) of the a

This is substantially different from the modern technique, but it is possible to get used to it very quickly. Figures 7a-d: Knocking 5.3. Draw Taybugha relates that another master, Al-Tabari, said that there are ten points to effective shooting of which nine relate to the draw. So it can be seen how important the draw is. Before the draw is be positioned on the string. There are many different ways that this can be done, but there are essentially two main positions, with one other variant. In the West, the main method is the Mediterranean Draw, where the index finger, the middle finger. It tends to twist the string slightly in the opposite direction to the hand that is on the string. This means that with this draw, a right handed archer will have the arrow on the left hand ed archer on the string will force the arrow into the bow. The Mongolian Draw uses the thumb as the digit that pulls back the string. The thumb is locked into position using mainly the index finger, though the other fingers may also be used if the archer wishes. This draw causes the string to twist in the opposite direction to the Mediterranean draw and therefore the arrow will be placed on the opposite direction to the Mediterranean draw and therefore the arrow will be placed on the opposite direction to the Mediterranean draw and therefore the arrow will be placed on the opposite side of the thumb, a thumb ring, or sometimes a cylinder, is used. Figure 8: Mediterranean Draw; Figure 9: Mongol Draw In traditional archery the draw, aiming and release can all be part of one continuous sequence. This is partly due to the draw weight of a traditional bows, especially "self" bows. Holding the draw for a long time could damage the bows. In modern archery, using compound bows and modern recurve bows, the draw can be held for as long as the archer takes. If the archer takes the oblique stance, where the shoulder of the arm holding the bow is pointed directly the target, it is possible to use the whole strength of the back and shoulders as well as the arm in drawing back the string. In this case, the draw point – the point where the archer will bring his drawing hand to rest – will possibly be to part of the mouth. If other stances are taken the draw point as the arm in drawing back the string. ear or possibly the chest, and therefore the muscles involved will be different and there is probably more dependence on the arms and shoulders. It is crucial, however, that the end of the draw should be done, and in general it is not much different from the way that a modern archer will draw. He emphasises that consistency in the draw is crucial and that the draw is crucial and that the draw should always be of the same length and to the same point. He recommends drawing to the ear lobe, whereas most modern archers today will draw to a part of the mouth so that the arrow lies under the aiming eye. The author of Arab Archery tends to agree with Taybugha but also has fifteen different combinations of draw. He also makes the point that the draw is dependent on the length of the arrow. He recommends an archer taking an arrow and drawing it to the point that is then the length of the arrows that he should use. When discussing drawing, Ascham starts by going off on a tangent and referring to the drawing is neither sure nor yet comely. Therefore to draw easily and uniformly, that is for to say not wagging your hand, now upwards, now downward, but always after one fashion, until you come to the rig or shouldering of the head is best both for profit and seemliness. Holding must not be long, for it both puts a bow in jeopardy and also mars a mans shoot, it must be so little that it may be perceived better in a mans mind then it is done, than seen with a mans eye when it is doing."[17] In other words, if must be so little that it may be perceived better in a mans mind then it is done, than seen with a mans eye when it is doing."[17] In other words, if must be so little that it may be perceived better in a mans mind then it is done, than seen with a mans eye when it is doing."[17] In other words, if must be so little that it may be perceived better in a mans mind then it is done, than seen with a mans eye when it is doing."[17] In other words, if must be so little that it may be perceived better in a mans mind then it is doing."[17] In other words, if must be so little that it may be perceived better in a mans mind then it is doing."[17] In other words, if must be so little that it may be perceived better in a mans mind then it is doing."[17] In other words, if must be so little that it may be perceived better in a mans mind then it is doing."[17] In other words, if must be so little that it may be perceived better in a mans mind then it is doing."[17] In other words, if must be so little that it may be perceived better in a mans mind then it is doing."[17] In other words, if must be so little that it may be perceived better in a mans mind then it is doing."[17] In other words, if must be so little that it may be perceived better in a mans mind then it is doing."[17] In other words, if must be so little that it may be perceived better in a mans mind then it is doing."[17] In other words, if must be so little that it may be perceived better in a mans mind then it is doing."[17] In other words, if must be so little that it may be perceived better in a mans mind then it is doing."[17] In other words, if must be so little that it m anyone else notices the pause then you have held for too long! Ford goes into a great deal of detail on the draw, starting with selecting the correct length of arrow. He goes on to analyse the details of the body involved. However, it is fairly obvious that he is talking about an archer who takes the oblique stance only. He describes three methods of drawing and loosing: "There seem to be three successful methods of drawing, namely, first, to draw the arrow within an inch or a little more of 'home,' aiming then, and loosing after the completion of the draw; and thirdly, the method of combining the operations of a little more of 'home,' aiming then, and loosing after the completion of the draw; and thirdly, the method of combining the operations of a little more of 'home,' aiming then, and loosing after the completion of the draw; and thirdly, the method of combining the operations of a little more of 'home,' aiming then, and loosing after the completion of the draw; and thirdly, the method of combining the operations of a little more of 'home,' aiming then, and loosing after the completion of the draw; and thirdly, the method of combining the operations of a little more of 'home,' aiming then, and loosing after the completion of the draw; and thirdly, the method of combining the operations of the draw; and thirdly, the method of combining the operations of the draw; and thirdly, the method of combining the operations of the draw; and thirdly, the method of combining the operations of the draw; and thirdly, the method of combining the operations of the draw; and th drawing and aiming so continuously that the loose is the uninterrupted completion of the draw."[18] 5.3.1 The Practicalities The Eastern archer pulls back the string using only his thumb which is holding the string. The archer pulls back the string so that the fleshy part of the thumb is holding the string. thumb is then locked into position using the index finger. The loose is carried out by relaxing the index finger and thus allowing the thumb to fall back and release, or a thumb ring, for the Eastern release. One variation on this is to use the other fingers to lock the thumb in place as well as the index. Another major difference, as we saw previously, is that the placement of the arrow will be placed on the string is pulled back the arrow is on the same string is pulled back the arrow and draw the string is pulled back the arrow are saw previously, is that the placement of the arrow are saw previously. side of the bow as the archer's right eye. In this case, the arrow will rest on the top knuckle of the hand.

The eastern archer will hold the bow and pull back the string in the same way, but he will place the arrow on the right eve and the arrow are on different sides of the bow. This therefore requires a different aiming technique. Practically, the main problem is setting the ring in the correct position on the thumb. This means that the right eve and the arrow are on different sides of the bow. This therefore requires a different aiming technique. Practically, the main problem is setting the ring in the correct position on the thumb and getting used to the different way of pulling back the string. However, the techniques that Al-Yunani describes will be familiar to any modern archer. The main muscles used in the draw are in the shoulder back until the full draw is attained. The final drawing point is not in itself crucial, what is crucial is that the same drawing point is used every time. Taybugha says draw to the ear lobe, modern archers will draw to the mouth. The advantage of drawing to the mouth is that the ear of the eye, and thus simplifies the next stage – aiming. 5.4. Aiming Aiming is where science and art meet. There are two schools of thought on aiming, one is instinctive the other mechanical. As might be expected, the instinctive school is mostly derived from the East. Take, for example, this description of the draw and release using a technique described by Gao Ying in 1637: "As you draw the string back, you concentrate on a hole left by a previous shot: not on the whole yellow circle. If the target is an animal, concentrate on a single hair or feather, not on the breast. Between the time when you grade and your mind and limbs already know what you want to do. Concentrate on your shot. Concentrate on the fare of the shot being right. Wait for the feeling of the arrow head rewhead on your shot. Concentrate on the finger of the shot being right. Wait for the feeling of the arrow head rewhead on your shot. Concentrate on the finger of the shot being right. Wait for the feeling of the arrow head rewhead on

The release is not anticipated. It is like a dragonfly touching the surface of a pond or a ripe gourd falling off the vine."[20] Figure 10: Aiming The mechanical approach uses more precise techniques for ensuring the arrow arrives at its mark. The modern archer has a range of bow sights to make the job easier, but in the past archers did not have such aids available to them and aiming was a much more arcane activity. It involves the mechanics of vision and allowance for a physical phenomenon that was not recognised until the 20th century. Consider that at the full draw for a right handed Western archer, the arrow head is to the left hand side of the bow, whilst the nock end is on the string which is positioned at the centre of the width of the bow. The arrow is thus at a slight angle pointing to the left. As the string is released the arrow will point more and more to the left. The assumption would be that on release, the arrow would fly to the left every time. In practice, this is only the beginning of something that today is called "The Archer's paradox". When an arrow is fired, it undergoes enormous acceleration. This causes the arrow to bend. How much it bends depends partly on the stiffness of the shaft, usually referred to as the arrow a low.

Assuming a right handed archer, if the arrow has too little spine the arrow will veer to the left, because it is too stiff to bend much and will fly in the way that it is assumed to fly. If it has too much spine, the arrow will veer to the right. With the correct amount of spine, the arrow will go around the bow and will then travel on in a straight line toward the target. Modern high speed photography shows the arrow shaft deforming its shape to a series of "S" shaped bends after release. This continues for some meters until it has enough speed to start spinning and it then settles down and flies as one would expect. Figure 11: The Archers Paradox "The Archers Paradox" was first discovered in the early years of the 20th century, and thus medieval archers of both the East and the West were ignorant of this.

Aiming was still a problem. With practise, it could be instinctive and high accuracy could be achieved, but the analysis of why certain techniques work and others don't is much ments important hing. If a method is selected and used and practised enough, after a time aiming will become instinctive. Initially, it is not hitting the exact centre of the target that is important, but being able to hit the same area of the target that is important. The students would have been of a mixed variety of skills and capabilities, and therefore it would be easier to teach them a clear and methodical way of aiming that to get them to use the instinctive approach. At the end of the day, instinctive aiming is the result of experience, possibly gained using the more mechanical grave, as it would be with one eye only. [21] To deverties: "Using either one or both eyes mercies: "Using either one or both eyes, train your sight on a that is inport and the indiper one or both eyes. Train your sight on a lamp, and any diparity of vision which you experience will beccure will beccure will beccure will beccure sighting, presence of mixed variety to a start work and draw with the fame, all the time pulling on the bow. While so doing, you keep one eye closed and the other open, then open that is more tand, again, day and giarity of vision which you experience vision, access on a steady left hand, a firm hold on the grip, correct locking, alignment of both ares, correct sighting, presence of mixed, align and the other open, wall the time ator of the since were and the other open, when the rade the sole were as a the advect of a damp at a day and the access at the day is not the same was of the day. Instinctive and had had the day is not the same was at the difficult to downer. To an extent, the accural methods to start with. Arab Archery describes several was of a displaced between the sole were as a several was of a displaced between the opticin between the sole were as a several to the target that is preserved on that is preserved. The st

Therefore learning to shoot a bow with no sights is a bit like going back to archery school. However, Al-Yunani has much to say to help. Immediately, the archer has to make the choice of using a single eye or both eyes. Shutting one eye and sighting along the arrow is the easiest method, but Taybugha suggests that this is only done at the last moment before release to confirm the aim. However, the binocular method is much more difficult and relies on looking at two different things at the same time. There is another problem with the binocular approach, and that is that both eyes are not necessarily the same.

There is a good chance that one eye is predominant and that has an effect on the binocular approach. I am left handed and have always assumed that my left eye was predominant. When shooting, I would always close my right eye is actually the predominant one. This could explain why I am basically a lousy shot! But this does give me a problem with using some of the techniques that Taybugha describes. The only way round it will be some intensive practise; working from the techniques that Taybugha and the author of others books describe. I hope to report on this in a later article. 5.5. Loose The loose is the culmination of the whole sequence. It is the last point at which a shot can go wrong. Essentially, it is the act of releasing the string. This must be done cleanly and quickly. Some experts recommend that on release, the bow hand pushes the target; however if this is done it must be done carefully. Figure 12: Loose For the Eastern archer, the loose consists of two actions carried out as a swift sequence. Firstly release the forefinger, or fingers, that are locking the thumb around the string followed by the release of the thumb from the string. The loose by straightening the fingers that are holding back the string. The loose can also become part of the draw, as some archers favour the method whereby the string is drawn back most of the distance, there is a short pause and then the draw is completed with the loose taking place immediately on completion of the draw.

Taybugha describes three separate methods of loosing. As far as the hold and loose is concerned, he says: "What the archer does to achieve this result is to draw until only a small portion of the arrow remains, and then, holding briefly for the count of one, he snatches the remaining portion of the arrow and looses with a snap of the fingers from the inside of the string. At the loose, that the part of thear row which is remained at the hold should have been grabbed back, as it were, with such rapidity as to be imperceptible to the bystanders, leaving them with the impression that the archer failed to bring the whole of the arrow to full does develop the technique together with an analysis of the equipment used that might have an effect on the loose. He describes in detail the way that the hand is relaxed to the string, and the way that the hand is relaxed to the string, and the way that the hand is relaxed to the string. The divident does develop the technique together with an analysis of the equipment used that might have an effect on the loose. He describes in detail the way that the hand is relaxed to the string, and the way that the hand is relaxed to the string, and the way that the hand is relaxed to the string, and the way that the hand is relaxed to the string, and the way that the hand is relaxed to the string, and the way that the hand is relaxed to the string. The divident wright "Back to the stand continuous loose. The chief contrast to this is the dead loose, which in strong hands is very useful. This consists of the equipment useful to the string. The divident wright "Back to the Table to degenerate into the creeping loose, which need not be further referred to except for the purpose of again urging its avoidance. Wrights "Back to the Table to degenerate into the creeping loose, which need not be further referred to except for the purpose of again urging its avoidance. Is any further wright as is the case in the dead loose. The chief contrast 5.5. Loose, ... Another loose. Meed loose, in that the

Historically, there is five hundred years separating the earliest, Saracen Archery from the latest Theory and Practice of Archery. It would have been nice to have a 14th-century Western manuscript on archery, but it is unlikely that one was ever written; or if one ever was, that it exists today. Therefore, Taybugha's book is easily the earliest usable manual on Archery. However, to be useful, a manual does not only have to have the correct content but specific content has to be found easily and quickly. Luckily, a copy of the original manuscript of the book known as Saracen Archery is kept in the British Library in London (MSS Add. 23489). Dr. Okasha El Daly, an expert on medieval Arabic manuscripts who had written his doctorate to prove the theory that medieval Arab scholars were well on the way to cracking the secret of ancient Egyptian Hieroglyphic writing. He agreed to look at the manuscript. Earlier on, we defined some characteristics that a manual should have. If we look at them again ,and also look at the manuscript, we will be interesting to compare these against the original to see if the chapter headings were the same. The manuscript did contain chapter headings, and of the five chapters two were exactly the same. However, it is quite usual for translators to combine chapters together under general headings, which appears to be the case in this manuscript. The language used in the manuscripts is clear and in normal every day speech. The body takes the form of a poem with explanations supplied later.

The idea of putting manuals in the form of a poem is actually very logical. Poetry is easy to memorize and learn. So many Muslim scholars, even scientists dealing with mathematical and medical subjects, choose this format to make it easier for students/readers to study and memorize the text. Is access to a specific subject easy? It would have been nice if the manuscript contained a list of chapter headings, but this is not the case. Neither are any forms of cross reference or indices, but this is common in medieval manuscripts. It is also worth pointing out that the most modern book we have discussed, Theory and Practice of Archery, also does not include any form of cross reference or index. In addition chapter headings are written in red to make them stand out. In the manual, there is a formula given for calculating the weight of a bow string for a specific bow. Dr. El Daly found the reference fairly easily.

He writes: "It was easy to find this verse in On⁻ 1358, fo⁻ 44a). It is only one line followed by detailed explanation titled "weight of the string". This verse is: "It was easy to find this verse in On⁻ 1358, fo⁻ 44a). It is only one line followed by detailed explanation titled "weight of the string". This verse is: "It was easy to find this verse in On⁻ 1358, fo⁻ 44a). It is only one line followed by detailed explanation titled "weight of the string". This verse is: "It was easy to find this verse in On⁻ 1358, fo⁻ 44a). It is only one line followed by detailed explanation titled "weight of the string". This verse is: "It was easy to find this verse in One-tenth of one-tenth of the weight of the bow". Are complex procedures are broken down into a series of steps? Saracen Archery reproducts that access to information in the original is involved in, for example, stringing a bow. Are illustrations shat may appear are possibly more decorative than illustrative. It is easy to see, therefore, that access to information in the original is quite easy and, although the translation includes a list of chapter headings, it is as easy as for an Arabic scholar to have and the document, including going directly to specific sections as it is for a modern reader, using the English translation, to do the same. 7. We way around the document, including going directly to specific sections as its for a modern reader, using the English translation, to do the same. 7. They are difficult to get hold of or, in some cases, known but lost. As mentioned before the reiter are obviously many other books written between 900 CE and the 20th century. However, it would not have been possible to use all of them unless the intention had been to write a book rather than an article. Some writers are not mentioned before the charter and the one tenth of the weight of the string". The verse is strengthy available. The book had to re the vertex and the the election on the source matring are difficult to get hold of or, in some caseal,

clarity that is expected of a manual. It seems that English writers were more interested in rehashing the story of Robin Hood or other archery themed stories rather than detailing the practicalities of archery. In this group we get: The Art of Archerie by Gervase Markham (1634). An Essay on Archery by Walter Michael Moseley (1792). Anecdotes of Archery by Thomas Hastings (1831). The English Bowman by T. Roberts (1801). A Treatise on Archery by Thomas Hastings (1831). The British Archer Thomas Hastings (1831). This book could have been included, as it is pretty comprehensive; however in many ways it is too close to Horace A. Ford's book, both in contents and time. The Archers Guide by Old Toxophilite (1833). The Book of Archery by Maurice Thompson and H. Will (1879). The Witchery of Archery by Maurice Thompson (1879). Badminton Library of Sports: Archery by C.J. Longman and Col. H. Walrond (1894). Additional Notes on Arrow Release by Edward S. Morse (1922). Hunting with the Bow and Arrow by Saxton Pope (1923). The Flat Bow by W.

Ben Hunt and John J. Metx (1936). These books are, in their own way, marvellous pieces of work, and would make an interesting object of study. Additional Notes on Arrow Release covers only the act of the loose but in great detail. It may be that Edward S. Morse was the first person to use the term "Mediterranean Release". Hunting with the Bow and Arrow includes a fascinating story of the last Yana Indian in America, and the book looks at his equipment and the way that he hunted, thus giving us a brief window into the distant past. However, the intention was to find the earliest useful books on archery and it is not until the reissue of the Horace A. Ford book Archery, its theory and practice that we get a book that is sufficiently informative for a beginner, or a skilled archer, to get much from. 8.

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[13.] Ascham 1545: 147. [14.] Ford 1887:86. [15.] Taybugha 1368:48 [16.] Ascham 1545:148. [17.] Ascham 1545:148. [17.] Ascham 1545: 148. [17.] Ascham 1545: 147. [14.] Ford 1887:86. [15.] Taybugha 1368:48 [16.] Ascham 1545: 148. [17.] Ascham 1545:

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[24.] Ford 1887: 113. [25.] Taybugha 1368: 64 [26.] Horace: 125. ~ End ~ Back to the Table of Contents * Mr. Malcolm Wright is an expert in Computing. He is now retired and lives in Spain. Besides being fond of archery, in practice and theory, he holds a Certificate and Diploma in Egyptology (both Merits) issued by Birkbeck College, University College in London. We are grateful to him for his willingness to permit us the publication of this article. 47 productIncreased priceDecreasing Pric