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Traditional Archery

FROM SIX CONTINENTS



The Charles E. Grayson Collection

TEXT BY *Charles E. Grayson, Mary French, and Michael J. O'Brien*

PHOTOGRAPHS BY *Daniel S. Glover*

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UNIVERSITY OF MISSOURI PRESS
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PHOTOGRAPHS BY *Daniel S. Glover*

Grayson, Charles E., 1910-

Traditional archery from six continents : the Charles E. Grayson Collection / text by Charles E. Grayson, Mary French, and Michael J. O'Brien ; photographs by Daniel S. Glover.

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Summary: "An overview of one of the largest and most comprehensive collections of European and non-European archery-related materials in the world. This book presents color photos and descriptions of some 300 items - including bows, arrows, quivers, and thumb rings- that represent traditional archery techniques, practices, and customs from around the world"— Provided by publisher.

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Preface

The University of Missouri Museum of Anthropology has the good fortune to be the home of the Charles E. Grayson Archery Collection, one of the largest and most comprehensive assemblages of archery-related material in the world. I first heard about Dr. Grayson's remarkable collection from Ted Hamilton, a Missouri avocational archaeologist and archery historian, who mentioned that Grayson was looking for a public home for the materials and who urged me to acquire the collection for the Museum of Anthropology. A visit to Grayson's home in Oregon to see the collection convinced me of its importance, for it not only documents the evolution of archery equipment from prehistoric times through the modern period, but also stands as a monument to one man's dedication to understanding archery technology and preserving its history.

Grayson has amassed this collection over the course of a lifetime (and a long one, at that; as I write this he is only a few months shy of his ninety-sixth birthday). Born in 1910 on a farm in Iowa, Grayson was the eighth in a family of nine children. His fascination with archery began when his family relocated to Riverside, California, when he was nine. A neighbor there, who was friends with many prominent archers such as Art Young, Saxton Pope, and "Chief" Compton, encouraged Grayson's interest in the subject. Grayson made his first bow from a lemonwood stave that he won selling tickets to a movie about Young's trek across Alaska.

Grayson's interest in archery continued as he attended Pomona College, where he helped to establish archery as an institutional sport. After graduating, he studied physics at the University of California, Berkeley, but eventually changed his interest to medicine. He graduated from Stanford School of Medicine in 1942 and became a radiologist.

In private practice in Sacramento, Grayson again took up archery. He became skilled in making various types of bows and got involved with local, regional, and national archery associations. He won many medals in competition, at one time holding the amateur record for the 65-lb class in flight shooting. Hunting expeditions and professional travel provided him with opportunities to collect archery-related materials in areas such as

Mexico, British Columbia, Alaska, and Africa. Friends and fellow archery enthusiasts also assisted him in developing the collection by acquiring or tracking down items around the world. In 1960, Grayson and his wife, Ada, built a house in Oregon, where they retired in 1972. There he added a building to house his vast collection. He began donating his materials to the university's Museum of Anthropology in the early 1990s, and the collection continues to grow as new materials are incorporated.

This volume constitutes the first major publication of items from the collection, which currently contains more than five thousand pieces of archery equipment and memorabilia from various cultures and time periods. The present work focuses on the traditional archery equipment that constitutes the bulk of the collection. Dating to within the last half millennium, these bows, arrows, and associated paraphernalia were made by traditional craftspeople for use in hunting, warfare, sport, trade, or other activities.

Illustrations and descriptions of about three hundred pieces are presented here. The materials are organized into sections by region. Each section is preceded by a short introductory essay that places the items into historical, cultural, and technological perspective. Items are identified by the museum's catalog number and described by method of construction, material, and dimensions. To the extent possible, cultural and temporal attributions have been assigned. Although some of the items were collected from the original makers or users, the majority of the materials were acquired second- or thirdhand from collectors or dealers. Assignments of time period and culture of origin are therefore based primarily on expert analysis, comparative materials, and bibliographic research.

This book presents items of cultural and technological significance, as well as of great beauty, and will appeal, I hope, to archery enthusiasts, material culturalists, and the general public alike.

Michael J. O'Brien, Director
Museum of Anthropology
University of Missouri–Columbia

Acknowledgments

The creation of the Charles E. Grayson Archery Collection has been a lifetime's work, and countless individuals have contributed to its development and care throughout the years. We thank in particular curators Thomas Holland and Molly O'Donnell, who were the first to organize the collection at the Museum of Anthropology, in the process establishing the groundwork for the authors to build on in researching and selecting items for this book; curatorial assistants Charmagne Thompson, Becca Wilford-Hammett, Christina Pomianek, and Tara Hein for their help in gathering the information used to create the object descriptions used here; and Cliff White for his advice about photographing the objects. We also acknowledge the support and assistance of the late Beverly O'Brien, who as director of development in the College of Arts and Science at the University of Missouri convinced Grayson that the university was the appropriate home for his collection.

Archery historians Edward McEwen, Bede Dwyer, and Stephen Selby generously offered information and opinions about many of the objects in the collection and provided translations of Turkish, Persian, and Chinese inscriptions. The outstanding online collection databases of several museums, especially those of the American Museum of Natural History, the Peabody Museum at Harvard University, and the Canadian Museum of Civilization, are acknowledged for providing major sources of comparative material for much of the tribal and minority equipment.

As in the past, the staff of the University of Missouri Press was extremely encouraging throughout the writing and production phases, which made the entire process a most pleasant experience. We thank the press's director and editor-in-chief, Beverly Jarrett, for her interest in the project from the beginning, and our editor, Susan King, not only for keeping our style consistent, but also for correcting numerous mistakes.

Finally, Grayson thanks Elsa Wooley for typing his terrible scribble and worse dictation, and Dave Brown, who drives him around the country and assists him in various other matters during his self-declared "declining years."



Traditional Archery

FROM SIX CONTINENTS



1 ▶▶▶▶

A Brief Overview of Traditional Archery

Used by virtually all cultures and often ranked as one of the most important inventions in history, the bow was a major hunting tool and weapon of warfare around the world from prehistoric times until the introduction of firearms. As the first projectile weapon capable of storing energy, the bow was a more powerful and effective device than earlier hand-thrown and missile weapons and became vital to combat and subsistence activities. The importance of the bow and arrow, chronicled in numerous written and oral histories, artistic representations, literature, and folklore, is reflected in the many archery traditions and practices that have continued through to modern times.

Exactly when and where the bow and arrow was first developed, and the means by which it was introduced throughout the world, is unclear. Scenes of archers with bows and arrows are common in prehistoric rock-art sites in Africa and Europe, but dating these types of finds is difficult. Early archaeological evidence is equally ambiguous. Because archery equipment consists of perishable materials, often little or none of it appears in the archaeological record except for arrow points. Small projectile points found at Old World Upper Paleolithic sites may be the earliest evidence of bow-and-arrow technology (Clark 1963: 59–61; Hong 1992: 9), but their function is indefinite; they could have served as tips for either arrows or darts (McEwen et al. 1991: 76)

The first direct evidence of prehistoric archery comes from Mesolithic bog sites in Europe. Wooden arrow shafts found at Stellmoor, Germany, date around the ninth millennium B.C. and have shallow, rectangular nocks for fitting with a bowstring (McEwen et al. 1991: 76); wood fragments also discovered at the site may be remnants of bows of the same age (Rausing 1997: 33). The earliest specimens clearly identified as bows have been recovered from Holmegaard, Denmark. Dating around 6,000 B.C., the Holmegaard bows are single staves of elm and range in length from 150 to 180 centimeters.

Artistic representations and early texts establish the importance of the bow in the ancient Mediterranean world and early dynastic China. Huns, Mongols, and other nomadic groups from the Eurasian steppes used the bow and arrow on horseback to dominate large

parts of Asia and Europe for hundreds of years beginning about the first century. The crossbow and English longbow were widely used throughout much of Europe from the Middle Ages until the introduction of firearms. Among historic peoples in Africa, Asia, the Americas, and among some Oceanic groups, the bow and arrow enjoyed widespread use as a hunting and combat weapon, and it has remained in use among many tribal peoples through the modern period.

Although use of the bow and arrow for military and hunting activities declined after the introduction of firearms, archery has survived, or been revived, as an art and sport in many countries. Recreational archery has a long history. Sport archery was practiced by athletes of ancient Greece and Egypt and was popular among the horse archers of the Middle East from the medieval period and later. In East Asia, competitive archery developed as a martial art and ritual practice that supported social order and spirituality. Archery tournaments were a feature of European festivals and celebrations by the Middle Ages, and many organizations were created to promote archery activities. During the nineteenth and twentieth centuries, the Western traditions of recreational archery evolved into the modern sport of archery that is practiced worldwide today (Klopsteg 2004).

Archery Terminology

Bows

Consisting of a stave of wood or other elastic material, a *bow* is essentially a two-armed spring spanned and held under tension by a string. The side of the bow facing away from the archer when he or she is shooting is called the *back*, and the side facing toward the archer is the *belly*. The middle of the bow is the *grip*, or *handle*, and the sections, or arms, on each side of the grip are the *limbs*. The ends of the limbs are called *tips*, and the notches for the string are *nocks*. The bowstring, often made of sinew or plant fibers, is generally looped on the ends to fit the nocks.

Drawing the bow, or pulling the arrow back in the bowstring, places the back under tensile stress and the belly under compressive forces (McEwen et al. 1991). Energy accumulates in the bow limbs and is transferred to the arrow when it is released, providing for the velocity of the arrow in flight. The ability of a bow to project an arrow is based on the amount of muscle energy created when the bow is drawn and on how well the bow transfers that energy to the arrow.

Bows occur in a variety of shapes and dimensions, ranging from simple wood staves with an attached string to specimens of complex construction and engineering. Differences in bows over space and time result from a variety of factors, including the tools and materials available for constructing the bow, the environment in which it is used, and the purpose for which it is made.

Fundamentally, variations in bow design represent modifications to create the most powerful bow within the limitations of the available materials. The combination of a bow's *weight* (the force in pounds exerted to draw the string back to a specified distance) and *draw length* (how far back the string can be pulled) are two important factors affecting bow performance. The greater the draw weight and length, the more energy created. The shape, length, and flexibility of the bow's limbs and tips; limb thickness; and mass placement are additional design factors affecting bow performance (Baker 1992).

Bows generally are classified into two main types based on material and methods of construction. *Self bows* are made of a single material, usually wood (Figure 1.1). This is the oldest and simplest bow type, and it has the widest geographic distribution. Wooden self bows often have long limbs to increase draw length, reduce breakage, and provide more mass for storing muscle energy. *Composite bows* are constructed with several materials. The classic form is the Asiatic composite bow (Figure 1.2), consisting of a wood core with sinew glued to the back (the tension side) and horn applied to the belly (the compression side). This combination of flexible materials allows for short, powerful limbs capable of transferring energy more efficiently than those of other bow types. Variant examples of composite bows include reinforced bows, which are self bows with a sinew lining applied to the back; Eskimo bows with complicated sinew cord-and-cable systems bound (rather than glued) to a core of various materials; and Japanese bows consisting of multiple laminated layers of wood and bamboo.

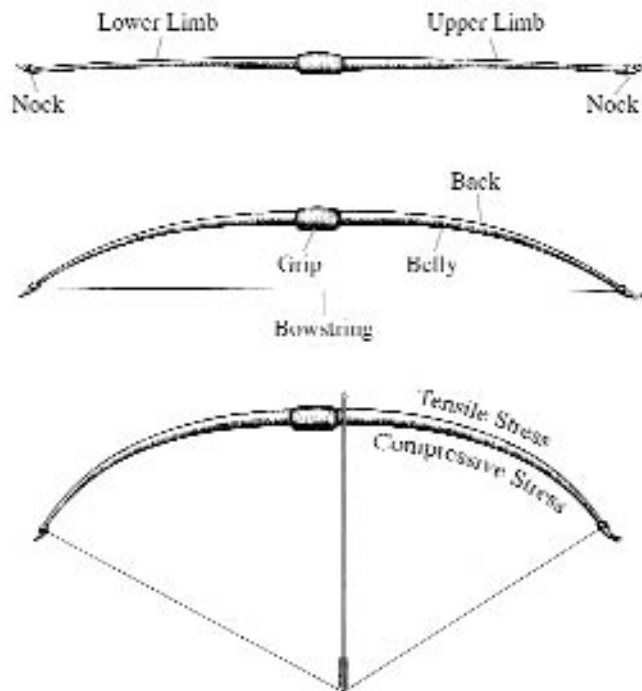


Figure 1.1.
The self bow.
After Hank Iken

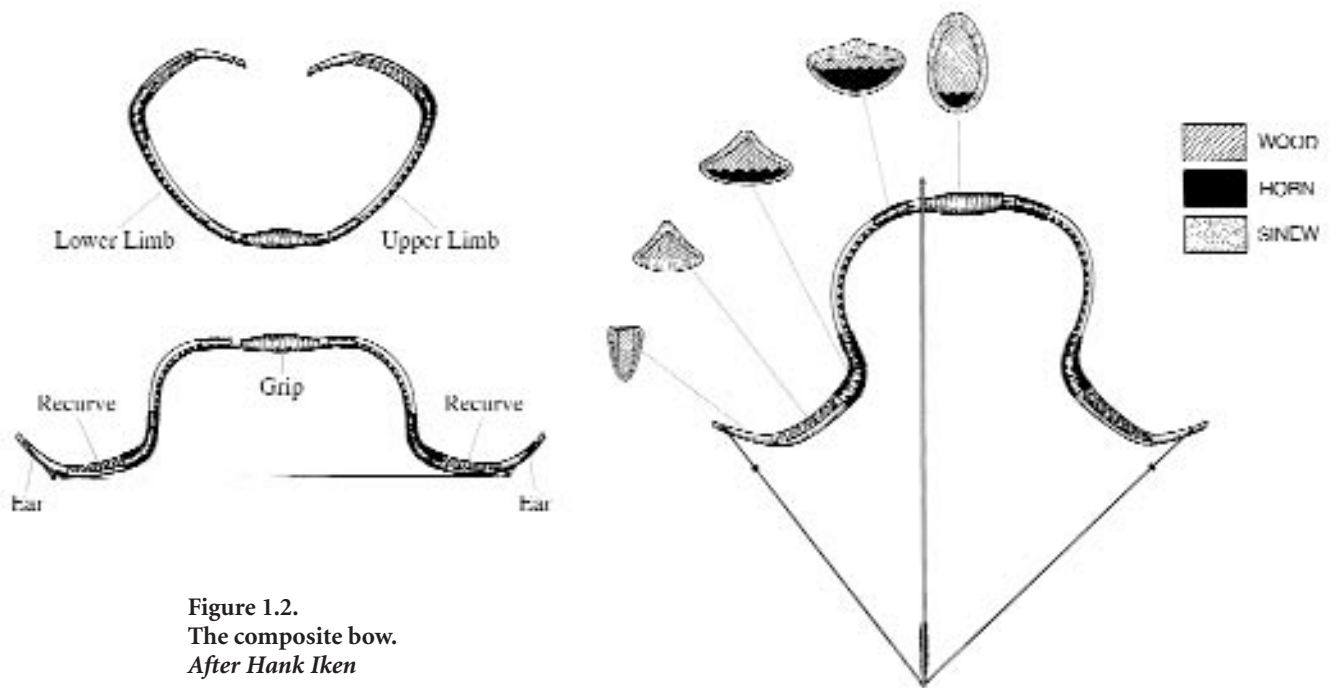


Figure 1.2.
The composite bow.
After Hank Iken

Bows exhibit a variety of *profiles* (Figure 1.3):

- *Straight*—relatively straight limbs and tips.
- *Deflexed*—a curved or angular bend constructed into the bow limbs, inclined toward the belly. Deflexed bows may have straight tips, static recurved tips, or working recurved tips.
- *Reflexed*—a curved or angular bend constructed into the bow limbs, inclined toward the back. Reflexed bows may have straight tips, static recurved tips, or working recurved tips.
- *Decurved*—tips that are inclined toward the belly.
- *Recurved*—tips that are inclined toward the back. A *working recurve* bends or uncoils when it is drawn; a *static recurve*, as the name implies, does not unbend when drawn.

Note that the profiles refer to the straightness or curvature of a bow when it is constructed as opposed to the curvature that a bow takes on after it is used or after it has begun to “follow the string.” For example, bows originally built with straight limbs and tips may become curved over time as a result of the bending of the tips when the bow is strung and/or drawn.

A bow’s profile is a function of the shape and mechanics of the bow limbs and tips and is as important as material classification when considering bow design and develop-

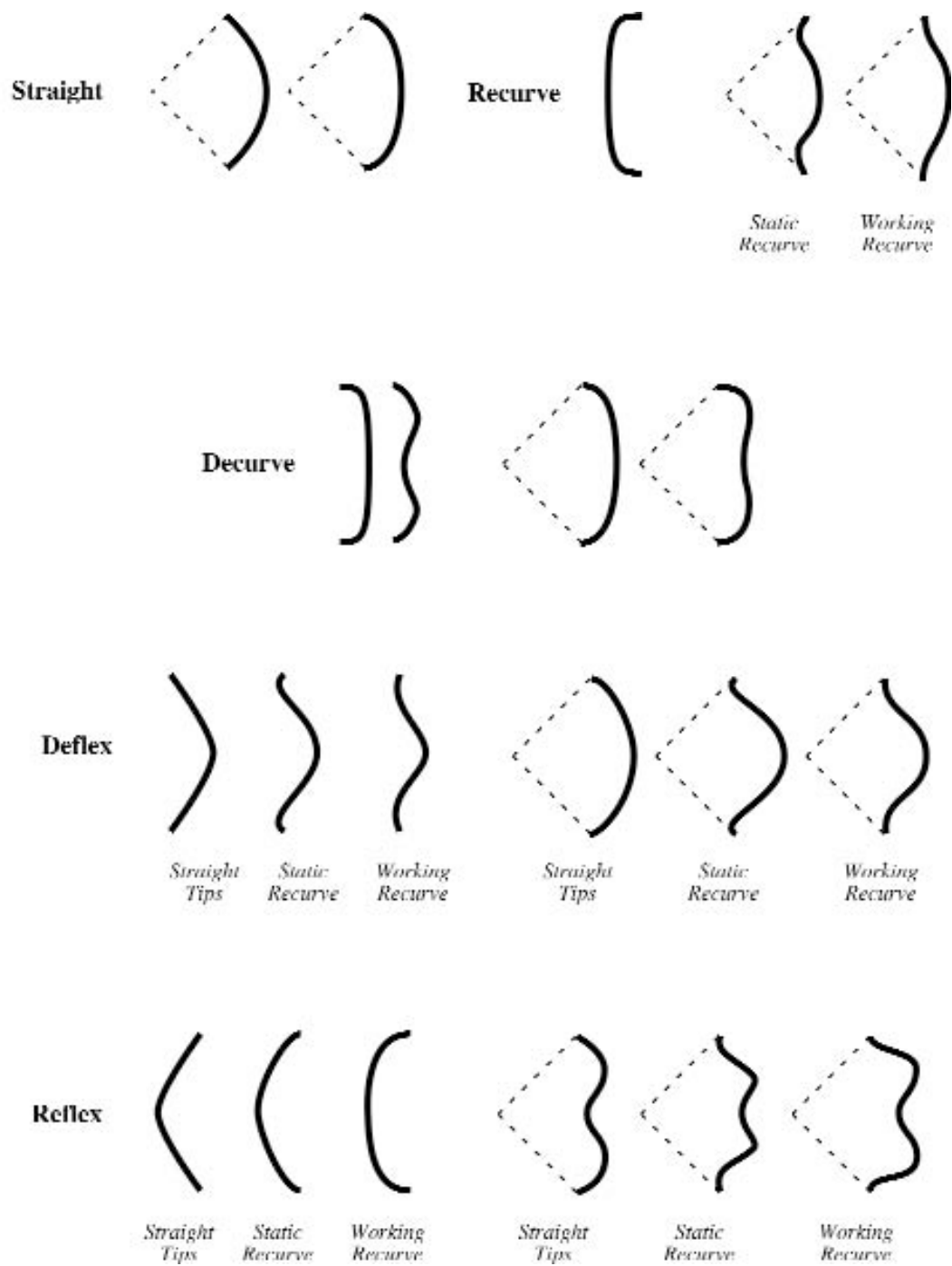


Figure 1.3. Bow profiles.

ment. Each profile represents adjustments bowyers can make to create the most efficient bow based on material and function. For example, deflexed limbs are a low-strain design commonly found in bows made of brittle or weak wood (Baker 1994: 62–63). Reflexed limbs allow for greater draw length and energy storage, but they also increase the stress placed on the bow and can be unstable. Reflex is a common design for sinew-backed and composite bows that have the flexibility required to accommodate the strain of this form (Bergman and McEwen 1997: 146).

ARROWS

An *arrow* is the projectile shot from a bow, generally consisting of a slender body, a pointed head, and feathers at the end (Figure 1.4). Arrows can be distinguished from darts, which are launched from a dart thrower (also known as a spear-thrower or atlatl), by the slot at the tail end (the *nock*) that can be fitted to a bowstring. In contrast, darts usually have a small depression, or cup, at the end to fit the spur of a dart thrower.



Figure 1.4. The parts of an arrow. *Courtesy Antiquity Publications, Ltd.*

Arrows occur in a wide variety of forms, generally based on the raw materials available to the makers and the function for which the arrows will be used. The *shaft*, or body of the arrow, is commonly made of light wood or reed that has been straightened through a process of heating and bending; a supplementary *foreshaft* that holds the point may also be present. The foreshaft often is made of a harder material than the shaft itself. The *nock*, or notch for the string, may be cut into the tail end of the shaft (a *self nock*) or made of a separate material and attached or inserted into the shaft. *Fletching*, if present, usually consists of two or more feathers placed at the nock end to help stabilize the arrow during flight. Other materials, such as parchment or leaves, are not uncommon. Fletching is described as *tangential* when complete feathers are placed flat against the shaft and secured with some type of binding and as *radial* when the feathers are split or stripped from the quill and attached more or less perpendicularly to the shaft. Fletching is usually attached to the shaft with glue or with sinew or plant-fiber wrappings; it also may be placed in a slit in the shaft or sewn on with thread, which is passed through small holes in the shaft. Sets of arrows sometimes are decorated with matching patterns, or *cresting*, as a means of showing ownership.

The *head*, or arrow point, can occur in a wide variety of forms (Figure 1.5). It may consist simply of the tapered end of the shaft (a *self point*) or be made of a separate material such as stone, metal, bone, or wood. Heads usually attach to the shaft or foreshaft by means of either a *tang* that fits into the shaft or a *socket* that fits over it. Some of the most common point forms include the following:

- *Broadhead*—usually a triangular or leaf-shaped blade with a cutting edge that causes profuse bleeding.
- *Needle- or rodlike*—a narrow blade used to create puncture wounds.
- *Barbed*—a point with basal or side projections that prevent its extraction from a wound.
- *Pile*—a bullet-shaped head that is commonly used on target arrows.
- *Blunt*—a knobbed or flattened head used to kill or stun birds or other small game; they are often used in forested areas because they do not become imbedded in trees.
- *Bodkin*—a spikelike point typically used for piercing armor.
- *Whistling*—a hollow, bulbous head with one or more holes that emits a whistling sound when shot; it is usually used for signaling purposes or to control the activities of prey.

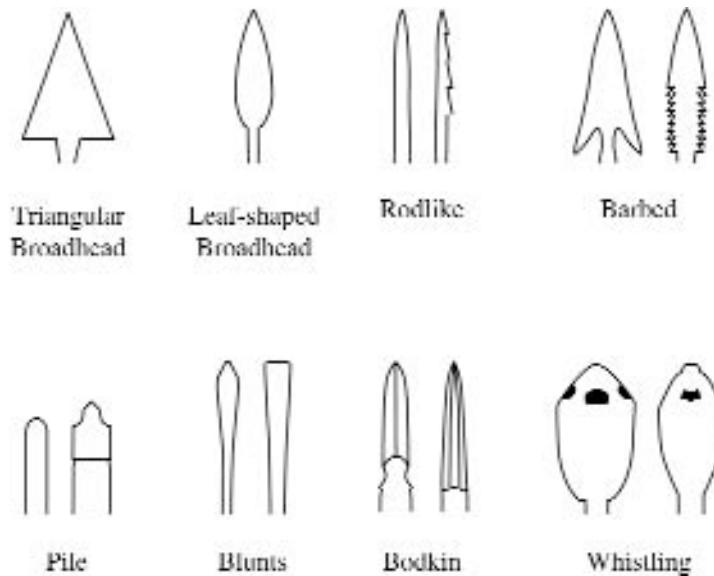


Figure 1.5.
Arrowhead forms.

QUIVERS

Most archers carry their arrows in a *quiver*. Common examples include simple bags made of animal skin; tubular containers of wood, basketry, or hide; and wooden frames covered with leather or cloth.

OTHER EQUIPMENT

Bows, arrows, and quivers constitute the basic archery tackle for traditional hunting, sport, or military archers around the world. Depending on factors such as the type of archery, shooting techniques, and cultural traditions, a number of other accessories may be used. *Bow cases*, made in the same manner as quivers, are used in some areas for carrying or storing bows. Examples are common on the Eurasian steppes and in North America among the Plains Indians. *Bracers*, or wrist guards, protect the wrist from the slap of the bow string. A variety of plates, cuffs, and pads have been used throughout the world to protect the arm. Other types of protective gear include *gloves*, *finger tabs*, and *thumb rings* that prevent abrasion when drawing and releasing an arrow.

DRAW-AND-RELEASE TECHNIQUES

Around the world many different forms have been developed for handling the bow and arrow. Details such as how the bow is strung, the manner in which it is held during shooting, and how the arrow is drawn vary a great deal depending on cultural tradition, the type of archery, and the equipment being used. The manner in which arrows are pulled and let loose, known as *draw and release* (Figure 1.6), has been studied in detail (Morse 1885, 1922; Kroeber 1927) and provides examples of the relationship between archery techniques and equipment. The simplest method for drawing the arrow—the *primary*, or *pinch, draw*—involves grasping the end of the arrow between the end of the straightened thumb and the first and second joints of the bent forefinger. The arrows used with this technique are generally knobbed at the nock end or have a roughened surface to assist in pinching the arrow. The primary draw is used in many areas of the world, usually with light or weak bows.

A similar technique, known as the *secondary draw*, involves grasping the arrow in the same manner as the primary form and simultaneously applying the second and third fingers to the bowstring to assist in the draw. In contrast to the primary draw, this technique allows the archer to use a stronger bow. It is a relatively rare form, documented primarily among a number of Native American groups.

With the *tertiary draw* the tips of the second and third fingers pull the string while the arrow is held between the tips of the thumb and the forefinger. The forefinger in this case is held straighter than in the primary and secondary draw forms, with the tip of the fore-

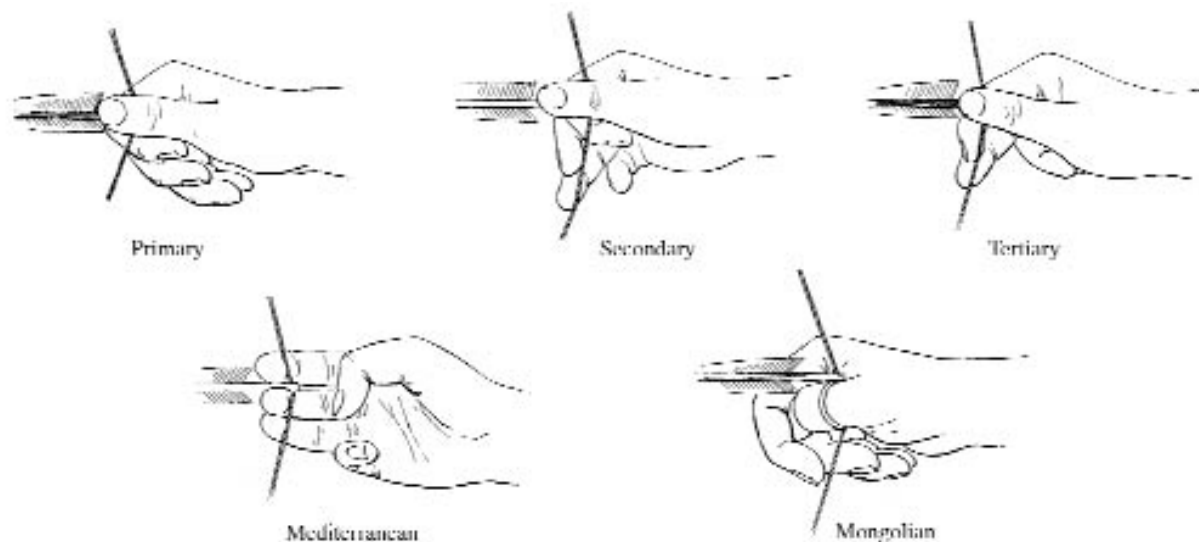


Figure 1.6. Draw-and-release techniques. After Morse 1922

finger assisting in pulling the string. The palm tends to turn upward in this technique, frequently resulting in a diagonal or horizontal position of the bow. A form of wide but scattered distribution, the tertiary draw is used by several tribes of North and South America, and there have been isolated reports of this technique being used in Asia, Africa, and Oceania.

The *Mediterranean*, or *three-finger draw*, familiar to many modern archers, is distinctive in that the thumb is not used. Considered the most powerful and efficient draw form, this technique consists of drawing the string with the tips of the first, second, and third fingers while the arrow rests between the index and middle fingers. A protective glove or fingertip wrapping often is worn to prevent abrasion of the fingers by the string. This form has widespread usage in Europe, southern Asia, the Arctic, and among several tribes of the American Southwest.

Distinct from all the other draw forms, the *Mongolian*, or *thumb-lock*, technique draws the bowstring with the thumb. The forefinger is bent over the tip of the thumb to aid in holding the string, but it does not touch the string. The arrow rests in the hollow between the thumb and forefinger. This method is often associated with the composite bow and is common throughout much of Asia. The Mongolian release necessitates the use of a *thumb guard*, usually in the form of a cylindrical or lipped ring, to protect from abrasion and assist in holding the string.

► ► ► ► The Asiatic Composite Bow

The Asiatic composite bow (Figure 1.2), the most advanced bow form in terms of construction and performance, utilizes a combination of materials and complex limb design to overcome the limitations of simpler bow types. The sinew backing increases tensile strength, which allows for greater flexibility and improves speed and power of recoil, and the horn belly provides greater compression strength and increases the resistance to breakage or distortion. Additionally, these bows typically have both recurved tips and reflexed limbs, which provide for greater draw length and energy storage.

The principles of composite-bow design appear to have originated independently among several cultures of Central Asia and the Middle East during the third millennium B.C. (McEwen et al. 1991). In the ancient world, composite bows occurred in a variety of shapes and sizes: an angular composite bow, forming a shallow triangle when strung and a semicircle when drawn, was a dominant form in Mesopotamia, dynastic Egypt, and Assyria; a “Cupid’s bow” form, with a set-back handle and curved limbs, was made famous by the Scythians and adopted by many other cultures, including the ancient Greeks; and composite bows with long, stiff ears set at a sharply angled recurve were commonly used by later groups in Central Asia, such as the Huns, who subsequently introduced it into the Roman world. From medieval times until the modern period, the composite bow was a dominant missile weapon throughout Asia as well as portions of Eastern Europe. Traditional Asiatic composite bows range from short bows capable of propelling light arrows at high speeds over long distances to longer, more massive bows designed to shoot heavier arrows at short ranges to maximize penetrative power.

Despite differences in shapes and sizes, Asiatic

composite bows follow a fairly uniform, but complex, construction process that can take many months to complete and that requires specialized skills (Bergman and McEwen 1997). The wooden core provides the supporting skeleton to which the horn belly and sinew backing are glued. Wood that is flexible and absorbs glue well, such as maple, cornus, mulberry, or poplar, is employed for the core; in some areas, bamboo is used for the limb sections. The core is typically made of several pieces—a central section for the grip, thin limb sections, and tips at the ends of varying lengths and thicknesses—spliced and glued together. The horn, commonly of water buffalo, long-horned cattle, or ibex, is glued to the belly side of each limb in one or more strips; at this stage of production, the bow is bound in a reflexed form by tying a cord between the nocks. Usually, a gap develops where the horn strips meet at the center and is filled with hardwood, bone, or ivory.

Layers of sinew are glued to the back of the bow, and the reflex is deepened by tightening the cord between the nocks so that it forms a complete oval; the bow is then left to dry for several months before final shaping and finishing. Finishing steps include complete or partial wrapping of the bow with sinew for reinforcement and adjusting the limbs to ensure that they work properly. On some bows, string bridges or pads are placed on the belly where the ears join the knee to provide a support for the bowstring; the ends of the bow might be reinforced with wedges of horn inserted into the tips or sinew wrapping below the nocks. Finally, strips of bark or thin leather are applied to the sinew backing and varnished to provide waterproofing; on some bows the horn belly is covered as well. The finished surface often is embellished with painted designs or other forms of decoration.

2 ▶▶▶▶

East Asia

East Asia is home to several distinct but related traditions that share a focus on archery as both a martial art and a means of personal and spiritual development. Beginning in ancient times the bow played a major role in military activities throughout the region and was used in religious ceremonies, court rituals, and contests of skill. By historic times, distinctive types of archery equipment and customs had developed in China, Korea, and Japan.

In early dynastic China, archery held an important place in warfare and imperial ritual and was a compulsory subject in schools that trained the Chinese nobility. Later, Confucian scholars developed archery ceremonies designed to symbolize Confucian virtue (Selby 1998a). Cavalry and infantry archery were integrated into the Chinese military-service examination system during the Tang Dynasty (A.D. 618–907), and the use of the bow and arrow remained significant until the end of the Qing Dynasty (1644–1911).

The traditional Chinese bow was a type of reflexed composite bow, made with a bamboo core, horn belly, sinew backing (usually covered with birch bark), and wooden tips and handle. Much larger than most Asiatic composites, these bows had long, sharply angled recurved tips and large string bridges on the shoulders. They were often decorated with shagreen (stingray or shark skin) and painted, inlaid, or appliqué symbols representing wealth, longevity, and good fortune (Selby 2003: 34–35). Introduced by the Manchu, who established the Qing Dynasty, these bows were capable of propelling heavy arrows with great force, and although not well suited for use on horseback, they were durable both for battle and for hunting (Figure 2.1). They became the standard bow of China as well as of Manchu-dominated Mongolia and Tibet.

The heavy arrows used with these bows were made of wood with fletchings of eagle or vulture feathers. Tanged iron heads were inserted into the shafts, and the shafts were reinforced with wrappings of sinew and bark. Arrows were carried in short, open quivers of strong leather or cloth that consisted of a main compartment with a hinged section on the back that contained two or three pockets for special arrows. Bow cases were of open design, with a wide mouth and a narrow, open bottom.



Figure 2.1. A Qing archer, ca. 1900, with typical Manchu equipment.
Courtesy Museum of American China Trade

Korea's adoption of the Chinese military-service examination system during the Choson period (1392–1910) provided a focus on archery skills that contributed to the development of archery as a practical martial art in Korea. The Choson period also saw the creation of a personal dimension in Korean archery, which was viewed as a means of developing Confucian values of social order and morality (Kim 2003). Civilian shooting ranges were established after the Japanese Hideyoshi Invasion of the late sixteenth century, and archery clubs were created as a mechanism for maintaining the traditions of Korean martial and ritual archery.

Traditional Korean bows were made of the same types of materials as Chinese bows. However, Korean bows were smaller and had short recurved ears, and they were noted for their long draw length and profound reflex (McEwen 1973), which was concentrated just above and below the grip. Although they were extremely powerful, these bows were also very unstable and had to be perfectly balanced before use. Heavier bows used in hunting and warfare were often constructed of wood and sinew.

In traditional Korean archery, the arrows typically were made of bamboo with fletchings of pheasant-wing feathers. Iron heads were characteristic during this period, whereas arrows used in modern traditional archery are usually tipped with blunt target heads of machined brass. Several kinds of specialty arrows, such as signal arrows, fire arrows, and training arrows, were also common in the Choson period and earlier. Arrow cases were usually cylindrical and made of paper, bamboo, or wood, and bow covers consisted of a simple cloth tube that was tied around an archer's waist when shooting and twisted to hold arrows. More elaborate quivers and bow cases of leather and cloth were also used, particularly as part of military ceremonial attire.

Early Japanese archery was strongly influenced by the ceremonial archery of the Chinese aristocracy. This influence combined with Shinto and Zen Buddhist philosophies to develop into a form of archery that is distinctly Japanese. The rise of the samurai during the feudal period (1185–1867) led to the development of formalized archery schools and to a class of legendary warrior archers that endured for centuries.

The bows used in traditional Japanese archery, known as *yumi*, were extremely long, had asymmetrical limbs, and were of laminate construction (Figure 2.2). Single strips of bamboo formed the belly and the back. The lamination between the two bamboo layers consisted of small sections of bamboo bonded with fish glue and held together with strips of mulberry wood on the outer edges of the bamboo core. Japanese bows averaged about 220 centimeters in length, and the grips were placed about two-thirds of the way down from the upper tip. The limbs of the bow were warped using a bending block to create permanent reversed curves. The finished bow was usually lacquered and wrapped with rattan. These long bows were efficient and were used in both foot and horseback archery.

Japanese arrows had bamboo shafts; fletchings of hawk, eagle, crane, or copper pheasant tail feathers; steel heads in a great variety of forms; and bindings of silk thread or floss



Figure 2.2. The layers of the Japanese yumi—bamboo inner core, mulberry wood on the borders of inner core, and bamboo back and belly.



Figure 2.3. Archer Dong-sup Park practices at Horim Jung, a traditional Korean archery club in Kyongju, South Korea, in 1995.
Courtesy Thomas Durvernay

covered with lacquer. Quivers occurred in a variety of styles, including open frames with a rack or cords to hold the arrows in place and closed cases with a covered opening on one side or end. They often were of fine lacquerwork and frequently were ornamented with one or more *mon*, or crests.

The transition to modern firearms in East Asia during the early twentieth century resulted in significant changes in the role that archery played in everyday life. In China the demise of the great legacy of archery was exacerbated by midcentury political and social upheavals, so that today but a single traditional bow shop is still in operation. Rather than

making bows used in traditional Chinese archery, it manufactures bows primarily for Mongolian and Tibetan archery (Selby 2000a: 386).

In Korea, archery was given new direction by King Kojong as a way to support physical activity while retaining the cultural emphasis on ritual and courtesy. Today, there are more than three hundred traditional archery clubs in Korea (Figure 2.3). The philosophy and training of traditional archery have been transferred to modern Olympic-style archery, at which Korean athletes have gained international recognition in recent years (Duvernay 1996a; Kim 2003). Japan, too, saw a shift toward sport archery with the development of *kyudo* (“the way of the bow”), the modern form of traditional Japanese archery that combines elements of the old warrior and ceremonial styles with an emphasis on personal development through grace, dignity, and tranquility (Onuma 1993). *Kyudo* remains a popular martial art practiced by thousands of people around the world (Figure 2.4).



Figure 2.4. Archers at a *kyudo* ceremony in Japan in 2004. They ritually bare their left arms when shooting to keep their long kimono sleeves out of the way and as a display of strength and masculinity. Courtesy Peter Usbeck/Alamy

1. Cat. No. 1998–0162

Composite Bow

China, nineteenth to early twentieth century

A Qing-period hunting/military bow (Needham et al. 1994: 102–3; Selby 2000a: plate 8). Belly of white horn; birch bark covers the sinew backing and shagreen covers the ears. Large bone shoulder pads and cork grip. White horn is known to have been used on finer, more expensive bows (Tan 1981: 195).

167.1 cm long, 4.0 cm wide at midlimb, and 1.5 cm thick at midlimb.

2. Cat. No. 1994–0883

Composite Bow

China, early twentieth century

A lightweight target bow with antler shoulder pads, birch-bark covering on the back, and shagreen on each side of the cork grip. The ears are wrapped with white shagreen and inlaid with green shagreen characters that read, “Made during the Guangxu period, year Guimao (1903)” and “Supreme Commander Jing of the Plain Yellow Banner.” During the Qing Dynasty, the Chinese army was organized into eight divisions, or “banners”; the plain yellow banner was the first in the eight-division sequence (H. Li, personal communication, August 25, 2005). Burned into each bow tip are characters representing the phrase “Ever Victorious” (D. Ni, personal communication, September 15, 2005). 178.0 cm long, 3.0 cm wide at midlimb, and 1.5 cm thick at midlimb.

3. Cat. Nos. 1994–0665 and 1994–0880

Composite Bows

China, nineteenth and early twentieth centuries

Two military strength-testing bows (Ho and Bronson 2004: figure 118; Selby 2000a: plate 3). These heavy bows with thick, twisted-gut stings were made in graduated draw lengths. During the Qing period, they were used to train and test military candidates—who were asked to bring the bow to full draw without an arrow. These bows were constructed in the same manner as standard bows but with broader limbs and more massive ears (Selby 2000a: 352). Both examples have large wooden tips and string bridges, birch bark covering the backs, and cork grips. **Cat. No. 1994–0880** (*shown strung*) is 173.1 cm long, 5.5 cm wide at midlimb, and 2.4 cm thick at midlimb. The back is covered with red-lacquered birch bark. **Cat. No. 1994–0665** (*detail*) is 177.2 long, 5.1 cm wide at midlimb, and 2.1 cm thick at midlimb. It has red-and-black painted yin-and-yang symbols on the birch-bark covering.

1. Qing-period composite hunting/military bow (Cat. No. 1998-0162).



2. Lightweight target bow (Cat. No. 1994–0883).



3. Two military strength-testing bows (Cat. Nos. 1994–0665 and 1994–0880).



4. Cat. No. 1994–0877

Composite Bow

China, nineteenth and early twentieth centuries

A special type of Chinese composite bow, sometimes referred to as a “monkey bow.” This type of bow is smaller than the Manchu-style bow, with short ears and no string bridges on the shoulders (Rohrer 1942: 28; Tan 1981: 197). These bows often are hinged at the center to make them collapsible and are frequently used for shooting pellets. This example has a metal hinge at the center of the leather-covered grip and decorative appliques on the birch-bark-covered back. The short tip is cut out on two sides to hold the string loop; the cutout area is covered with shagreen. On the front of the tip is a “monkey face” painted in black and red. The string is of bamboo with a center section of plant fiber connected to a cotton pocket for holding pellets. The bow is 125.3 cm long, 3.5 cm wide at midlimb, and 1.0 cm thick at midlimb; the string is 114.3 cm long.

5. Cat. No. 1994–0668

Composite Bow

China/Mongolia, twentieth century

A bow made in the 1950s by Yang Wentong of Ju Yuan Hao bowmakers of Beijing, the only traditional bow shop still in operation in China (Selby 2000a: 386). This bow, used in a Mongolian archery festival in the 1960s, is of basic Manchu-type construction and has colorful painted decorations and snakeskin on the back. 168.9 cm long, 3.5 cm wide at midlimb, and 1.3 cm thick at midlimb.

6. Cat. Nos. 1991–0873, 1998–0108, and 1995–0656

Composite Bows

Korea, nineteenth and late twentieth centuries

Cat. No. 1991–0873 (*top*) is a heavy hunting or military bow (Kim et al. 1994: figures 11–14) made of wood with sinew backing. Birch-bark covering on back; leather wrapped above and below the black cloth grip; cloth-covered shoulder pads; and green leather lining in nocks. (Bow is 147.5 cm long, 5.1 cm wide at midlimb, and 1.8 cm thick at midlimb.) **Cat. No. 1998–0108** (*middle*) is a regulation target bow used in modern traditional Korean archery. Made of bamboo with mulberry-wood ears; sinew backing; and horn belly. Tips covered with green leather; leather shoulder pads wrapped in red cloth; and grip covered with fringed gray cloth, with nylon monofilament wrapping on either side. (Bow is 130.0 cm long, 3.1 cm wide at midlimb, and 1.1 cm thick at midlimb.) **Cat. No. 1995–0656** (*bottom*) is a *sunō* bow, for use on a crossbow (Kim et al. 1994: figure 15). Limbs wrapped with sinew and covered with black lacquer; wood tips; and notched handle to fit into the stock. Leather lines the nocks. (Bow is 104.5 cm long, 4.4 cm wide at midlimb, and 2.1 cm thick at midlimb.)

4. Chinese composite “monkey bow” (Cat. No. 1994–0877).



5. Chinese/Mongolian bow made by Yang Wentong of Ju Yuan
Hao bowmakers (Cat. No. 1994–0668).



6. Three types of Korean composite bows (Cat. Nos. 1991–0873, 1998–0108, and 1995–0656).



7. Cat. Nos. 1994–0815, 1994–0821, and 1992–0228

Bows

Japan, eighteenth to twentieth century

Three examples of Japanese *yumi*, displaying typical asymmetric design, reflexed limbs, recurved tips, and rectangular cross section (Neya 1938: 1–4, 146–47; Onuma 1993: 37–47). The sides of the tips are cut back to form shoulders and to create a modified pegnock for the bowstring. **Cat. No. 1994–0815** (*top*) has numerous bands of rattan and is covered with clear lacquer; the grip is wrapped in printed leather. (Bow is 194.5 cm long, 2.8 cm wide at midlimb, and 1.8 cm thick at midlimb.) **Cat. No. 1994–0821** (*middle*), a family heirloom of Dr. George Akamatsu, is wrapped with silk ribbon and covered with black lacquer, with several bands of red lacquered rattan. (Bow is 223.3 cm long, 2.9 cm wide at midlimb, and 1.8 cm thick at midlimb.) **Cat. No. 1992–0228** is black lacquered, with an inscription in red on the belly that translates as “Tenpo Ju [1839], Mimsaka [province?], Harutani [maker]” (G. Vitt, personal communication, n.d.). (Bow is 220.5 cm long, 2.6 cm wide at midlimb, and 1.6 cm thick at midlimb.)



7. Three examples of Japanese *yumi*
(Cat. Nos. 1994–0815, 1994–0821, and 1992–0228).

8. Cat. Nos. 1995–0781 and 1995–0758

Crossbows

China, nineteenth and early twentieth centuries

Crossbows were ubiquitous in China from the Qin Dynasty (221–206 B.C.) through the Qing Dynasty, and some forms remained in use into the modern period (Needham et al. 1994: 135–46; Selby 2000a: 153–78). **Cat. No. 1995–0781** (*top*) is an example of a form of pellet crossbow known as *nu-kung*, which was used for stunning birds (Forke 1986; Selby 1998b). It has a wood stock, metal front sight, wood rear sight, and antler trigger; metal rivets on the side of the stock hold the trigger mechanism in place. The composite bow has a double string of gut with a central pocket for pellets and a loop to hook onto the trigger. There are leather pads on the bow where string contacts the belly. (Bow is 71.1 cm long.) **Cat. No. 1995–0758** (*bottom*) is an example of a Chinese repeating crossbow, or *chu-ko-nu* (Vitt 1995). The chu-ko-nu, equipped with a magazine to hold bolts or, as in this case, pellets, was used in China well into the twentieth century (Needham et al. 1994: 157–63; Selby 2003: 62–63). This bow has a wood stock and magazine and a sinew wrapping that holds the pieces together. The bow section is made of two pieces of bamboo with thick rawhide string that fits into a slot in the magazine. A lever system drops pellets in front of the string. (Bow is 58.3 cm long.)

9. Cat. No. 1998–0141

Arrows

China, nineteenth century

Two arrows with straight birch shafts and flared self nocks; radial three-feather fletchings (vulture feathers), which are glued on; and tanged, flat, six-cornered steel heads, with slight ridge down center (Rohrer 1943: figure 14, number 3). Cherry-bark wrappings over sinew reinforcements on the shafts behind the heads. Arrows are 105.0 cm long and 1.1 cm in diameter; heads are 11.5 cm long.

10. Cat. No. 1998–0175

Arrows

China, nineteenth and early twentieth centuries

Four arrows with straight wood shafts, flaring slightly toward straight self nocks, and radial three-feather fletchings (eagle feathers), which are glued on. From fletchings to nocks, the shafts are wrapped with shagreen and marked with black painted numbers. The iron heads are in pyramidal form and are sharply pointed with massive bases that turn into the tang (Rohrer 1943: figure 14, number 6; Stone 1961: figure 92, number 8). The shafts are wrapped with sinew behind the heads and covered with remnants of black-paper wrapping. Arrows are 91.2 cm long and 0.8 cm in diameter; heads are 3.1 cm long.

8. Two Chinese crossbows (Cat. Nos. 1995-0781 and 1995-0758).



9. Two Chinese arrows (Cat. No. 1998–0141).



10. Four Chinese arrows (Cat. No. 1998–0175).



11. Cat. No. 1991–0894

Bow Case and Quiver

China, eighteenth and nineteenth centuries

Qing military officers were divided into seven ranks; each rank was distinguished by uniform and equipment. This bow case and quiver set is part of the ceremonial gear of an Imperial Guard officer of the first rank (Laufer 1914: 286–87; Stone 1961: figure 174, numbers 7–8). Both case and quiver are made of leather and red velvet with gilded bronze mounts. The quiver has a separate hinged section on the back with three pockets, green felt lining, and three upright shou (longevity) symbols on the front. Chinese longevity symbols such as these appear in many forms (Beer 1999: 160.) Bow case is 53.5 cm long and 33.0 cm wide at the top. Quiver is 27.2 cm long and 16.8 cm wide.



**11. Bow case and quiver
from ceremonial gear of
an Imperial Guard officer
(Cat. No. 1991–0894).**

12. Cat. No. 1994–1168

Bow Case

China, nineteenth century

Qing Imperial Guard bow case in a stylized fish form (Selby 2000b; Stone 1961: figure 174, number 9). Made of brown leather and trimmed with black leather and silk embroidery; bronze mounts include a dragon's head at top and a round button surrounded by five stylized bats at center. The two small “eyes” are of blue glass. The five-bat motif represents the “five blessings” of long life, health, wealth, virtue, and a natural death (Beer 1999: 361). Bow case is 56.1 cm long and 33.4 cm wide at top.



**12. Qing Imperial Guard bow case
in the form of a stylized fish
(Cat. No. 1994–1168).**

ARROWS

Korea, fourteenth to twentieth centuries

Examples of some of the types of arrows used during the Choson period (Kim et al. 1994: figures 78–91). The silk-wrapped arrow on the far right is an authentic training arrow; the remainder are reproduction Choson-period arrows made by Korean master fletcher Young-gi Yoo.

From left to right:

13. Cat. No. 2000–0230

Reproduction *se jun* message arrow for sending imperial orders. 96.2 cm long and 0.8 cm in diameter.

14. Cat. No. 2000–0234

Reproduction *jang jun*, a standard battle arrow. 80.4 cm long and 0.8 cm in diameter.

15. Cat. No. 2002–26–005

Reproduction *wha jun* flame arrow used to set fires. 92.5 cm long and 1.0 cm in diameter.

16. Cat. No. 2000–0233

Reproduction *pyeon jeon*, a short arrow that would be launched from an arrow guide. 36.5 cm long and 0.7 cm in diameter.

17. Cat. No. 2002–26–010

Reproduction *bahk du* blunt arrow used in military training and examinations. 64.0 cm long and 0.8 cm in diameter.

18. Cat. No. 2000–0227

Training arrow with maroon silk wrapping and iron point, ca. sixteenth century. 91.1 cm long and 0.9 cm in diameter.

Choson-period Korean arrows

(Cat. Nos. 2000–0230, 2000–0234, 2002–26–005, 2000–0233, 2002–26–010, and 2000–0227).



19. Cat. No. 1991–0871

Ceremonial Archery Set

Korea, eighteenth and nineteenth centuries

This type of equipment is typical of the ceremonial attire of military officials during the late Choson period (Boots 1934: plate 11; Kim et al. 1994: figures 96–104). The matching bow case and quiver set, known as *dong-gae*, are the open type that would have traditionally been used in horseback archery. They are made of black patent leather with gilded metal mounts, cloth trim, and red-felt lining. The bow case holds a miniature bow of wood or bamboo with a thin layer of sinew and birch-bark covering on the back and black paint on the belly to simulate horn. The quiver carries sixteen decorative arrows, a bamboo arrow guide, and three short arrows for use in the guide. The arrows have bamboo shafts; ivory nocks; iron bodkin heads (reinforced with painted sinew); three-feather fletchings (eagle feathers); cresting of red, gold, and black paint, with leather appliqué around and between the feathers; and stained decoration on the shafts. Bow case is 33.5 cm long and 17.5 cm wide; quiver is 12.3 cm long and 12.0 cm wide. Long arrows are 72.3 cm long and 0.6 cm in diameter; short arrows are 40 cm long and 0.5 cm in diameter. Bow is 59.8 cm long and 2.4 cm wide at midlimb.

20. Cat. No. 1995–0756

Quiver and Target Arrows

Korea, nineteenth and twentieth centuries

Target-archery equipment of the late Choson period, including a quiver and six arrows. Closed quivers, or *jun tong*, are a common traditional form and are still made and used today (Kim et al. 1994: figures 115–19; Duvernay 1996b). This example is made of bamboo with a carved leaf pattern and calligraphy. It has a lenticular cross section, with hardwood inserts at each end on the narrow edge. The base is also of hardwood, with a brass or aluminum mount tacked on the bottom. The cap is a bamboo plug with a hardwood top and has a similar metal fitting with a ring and silk cord attachment. Hardwood pieces on one side of the quiver carry metal rings to attach to the carrying cord. The quiver is 94.7 cm long, 6.5 cm wide, and 4.1 cm thick.

The arrows have straight bamboo shafts and radial three-feather fletchings (pheasant feathers), which are glued on. Some have black writing between the feathers; a slightly bulbous wooden nock; and sinew wrapping, covered with paper or bark, between nock and fletching. Others have cherry-bark bands or black paper below the fletching. Attached to the ends of the shafts are heavier bamboo extensions; four of the arrows have a band of cherry bark on the shaft at the base of the extension. The steel heads are thin, square, and blunt; each has an iron collar around the base and a tang for insertion into the bamboo extension. Arrows are 85.2–88.0 cm long and 1.0 in diameter; head length is roughly 1.0 cm.

19. Choson-period ceremonial archery set (Cat. No. 1991-0871).



20. Target-archery equipment of the late Choson period (Cat. No. 1995–0756).



21. Cat. Nos. 1995–0584, 1995–0585, 1995–0934A, 1995–0343, 1995–0952, 1995–0953, 1995–0340, 1995–0341, 1995–0342, 1995–0338, 1995–0578, 1995–0582

Arrowheads

Japan, seventeenth to nineteenth centuries

Examples of the diversity of traditional Japanese arrowheads, known collectively as *yanone* or *yajiri* (Onuma 1993: 53). They range from simple designs used for hunting and warfare to highly decorative and very large specimens made as presentation pieces and shrine offerings. Common types include (*clockwise from top left*) narrow bodkin heads; broadhead forms that often contain pierced designs or other decoration; forked *karimata* heads; and barbed “flesh tearers” (Stone 1961: figure 862; Paterson and Elmy 1971).

22. Cat. No. 1994–0700

Arrows

Japan, eighteenth and nineteenth centuries

Set of ten military arrows. Shafts covered with black lacquer, with gold cresting between the eagle-feather fletchings. Bodkin heads. Arrows are 88.2 cm long and 0.8 cm in diameter; heads are 3.5 cm long.

23. Cat. No. 1994–0715

Arrow

Japan, nineteenth century

Presentation arrow with lacquered shaft and painted head of solid wood. The fletching comprises eagle and peacock wings and tail feathers from Reeves’s pheasants. On the arrow box is an inscription that describes each part of the arrow (S. Matsushita, personal communication, n.d.). Arrow is 91.5 cm long and 1.0 cm in diameter; head is 5.1 cm long and 2.6 cm in maximum diameter.

21. Traditional Japanese arrowheads (Cat. Nos. 1995-0584, 1995-0585, 1995-0934A, 1995-0343, 1995-0952, 1995-0953, 1995-0340, 1995-0341, 1995-0342, 1995-0338, 1995-0578, and 1995-0582).



22. Set of ten Japanese military arrows (Cat. No. 1994–0700).



23. Japanese presentation arrow (Cat. No. 1994–0715).



24. Cat. Nos. 1998–0127A, 1998–0126, and 1998–0123

Arrows

Japan, eighteenth and nineteenth centuries

Four finely made Japanese arrows of different styles. *Top to bottom:* **Cat. No. 1998–0127A** is a ceremonial arrow with a whistling section and a barbed *karimata* head. The fletching comprises two heron feathers and two copper pheasant feathers. The whistling section is made of carved wood and has bone inlays; it is held together with lacquered silk thread. Ivory ferrule and silk wrapping above the whistling section. (Arrow is 96.2 cm long and 0.9 cm in diameter; compound head is 12.0 cm long.) **Cat. No. 1998–0126** is used in *inuoumono*, a traditional form of sport archery that involves shooting at wild dogs in enclosures with blunted arrows (McEwen 2001a). The whistling head is made of deer antler and the fletching of golden eagle and copper pheasant feathers. The two eyes of a peacock feather and a leading edge of white wing feather wrapped around the shaft in a short spiral provide decoration. (Arrow is 89.5 cm long and 0.9 cm in diameter; head is 5.1 cm long.) **Cat. No. 1998–0123** contains two arrows with lacquered shafts and broadheads. One head is plain, with a signature near the base, and the other has a pierced cherry blossom and heart-shaped boar's-eye design. These arrows display a form of decoration common to high-quality Japanese arrows: painting of the natural nodes of the bamboo that continues up the shaft. (Arrows are 90.7 cm long and 0.9 cm in diameter; heads are 6.1 cm and 5.7 cm long.)

25. Cat. Nos. 1991–0883A, 1994–0718A, 1994–0861A, and 1994–0867

Quivers

Japan, eighteenth and nineteenth centuries

Three examples of the many types of traditional Japanese quivers (S. Matsushita, personal communication, n.d.; Robinson 1969: plate 27; Bottomley and Hopson 1996). *Left to right:* **Cat. No. 1991–0883A** is a type of closed quiver known as *utsubo*. Red lacquer on wood and boar hide, with gilt *takaha* (hawk feather) and *tomoe* (comma) *mon*; woven red leather strap at side; and knotted green rope at midsection. (Quiver is 96.5 cm long.) **Cat. No. 1994–0718A** is a cylindrical target-arrow case known as *yadzutsu*. Black lacquered bamboo, with a floral design created using gold foil, gold and silver lacquer, and abalone shell; metal rim; and lacquerwork cap decorated with a red, gold, and blue floral design and three *hiki* (horizontal bars) *mon* in red and black. (Quiver is 99.8 cm long and 8.2 cm in diameter.) **Cat. No. 1994–0861A** is a black lacquerwork *utsubo*. Gilt *aoi* (hollyhock) *mon* at top and bottom and red leather straps. The cord with carved ivory toggles attaches the cover to the body. (Quiver is 100.0 cm long and 11.2 cm wide at top.) **Cat. No. 1994–0867** is a type of open quiver known as *shiko*. Leather pocket painted black; gilt *kikyo* (Chinese bellflower) *mon*; and wood spine with red rattan wrapping. (Quiver is 78.5 cm long and 11.3 cm wide.)

24. Four finely made Japanese arrows
(Cat. Nos. 1998-0127A, 1998-0126, and 1998-0123).



25. Three types of traditional Japanese quivers
(Cat. Nos. 1991–0883A, 1994–0718A, 1994–0861A, 1994–0867).



26. Cat. No. 1991–0876

Archery Set

Japan, late eighteenth and early nineteenth centuries

Archery set including two bows, ten arrows, arrow case, and carrying rack. The bows are signed and are of the usual laminated construction with red lacquer, rattan wrapping, chamois grip, and hemplike string. The arrows are made of lacquered bamboo, with golden eagle-feather fletchings and bodkin heads. The carrying rack and arrow case are of lacquerwork in black, gold, and red, with abalone shell inlay that forms *hoshi* (star) *mon*. Set stands 224.0 cm high.

27. Cat. No. 1994–0652

Archery Set

Japan, late eighteenth and early nineteenth centuries

Small *rimankyu* archery set. These bow-and-arrow sets were traditionally carried in a nobleman's palanquin for personal protection while traveling (Robinson 1969: plate 27). The bow is made of baleen and is lacquered with a gold cloud and dragon motif. The set of eleven arrows includes ten with lacquered shafts; three-feather fletchings (eagle feathers); bulbous ivory nocks; and bodkin heads. The additional arrow is similar to the others, but it has a karimata head and four-feather fletching (two of eagle and two of copper pheasant). The rack holding the bow and arrows is also of baleen with decoration matching that of the bow; the leather covering on the base has a gilt aoi *mon* on the front. Set stands 56.5 cm high.



26. Japanese archery set (Cat. No. 1991–0876).

27. Small rimankyu archery set (Cat. No. 1994-0652).



Archers' Rings

China, seventeenth to early twentieth century

Different styles of archers' rings were used in China through the ages, but the most common was the cylindrical type that was popular during the Qing Dynasty. Made of a wide variety of materials, including horn, bone, stone, wood, metal, porcelain, and glass, these rings reached a high level of craftsmanship and ornamentation during the Qing period and were frequently worn by the aristocracy as symbols of power (Selby 2003). Qing-style rings, which were traditionally carried in small cylindrical cases that could be suspended from the waist, are still carved today for the collectors market.

Top group, left to right:

28. Cat. No. 2001–01–103

White glass with flowers in pink and blue. 3.0 cm high and 3.5 cm in diameter.

29. Cat. No. 2001–01–085

Jasper with orbicular pattern. 2.5 cm high and 2.8 cm in diameter.

30. Cat. No. 2001–01–032

Porcelain. White interior; exterior has elaborate floral pattern in dark blue, red, and gold on a light blue background. 2.3 cm high and 3.0 cm in diameter.

31. Cat. No. 1995–0303

Walrus ivory, dyed green. 2.3 cm high and 3.1 cm in diameter.

32. Cat. No. 1995–0311

White and orange Jadeite. 2.5 cm high and 3.0 cm in diameter.

Bottom group, left to right:

33. Cat. No. 1994–1119

Silver decorated with Chinese characters and floral designs. 2.7 cm high and 3.2 cm in diameter.

34. Cat. No. 2001–01–080

Wood with silver lining; shou symbols in brass and small seed pearls. 3.0 cm high and 3.5 cm in diameter.

35. Cat. No. 2001–01–101

Silver with gold wash or plating; shou symbols with floral border and blue and green enamel. 2.7 cm high and 3.2 cm in diameter.

36. Cat. No. 2001–01–092

Ivory with silver lining; carved zoomorphic figures and geometric designs; turquoise insert. 3.0 cm high and 2.9 cm in diameter.

37. Cat. No. 2001–01–058

Cloisonné with bat and cloud motifs in shades of blue and red. 2.8 cm high and 3.2 cm in diameter.

Chinese archers' rings (Top group: Cat. Nos. 2001-01-103, 1995-0303, 2001-01-085, 1995-0311, and 2001-01-032. Bottom group: Cat. Nos. 2001-01-101, 1994-1119, 2001-01-092, 2001-01-080, and 2001-01-058).



38. Cat. Nos. 2001–01–002, 2001–01–004, 2001–01–005, and 2001–01–021

Ring Cases

China, seventeenth to early twentieth century

Top to bottom: Silk and paper decorated with an appliqué floral design; tasseled silk cords (8.7 cm long and 4.2 cm in diameter); Wood with carved geometric designs; red silk string and blue glass bead (3.6 cm long and 4.3 cm in diameter); Ivory with carved flowers and fruit; purple cord of braided silk strands (3.1 cm long and 4.2 cm in diameter); and Jade decorated with gold inlay inscription and plant motif; ceramic slide on silk cord (2.9 cm long and 3.9 cm in diameter).

**39. Cat. Nos. 1995–0313, 1995–0786, 1995–0757C, 1994–1164,
2002–26–068, 1995–0624, 1995–0776, 1995–0777**

Archery Accessories

Korea, nineteenth and twentieth centuries

An assortment of traditional Korean archers' rings and other archery accessories. Traditional Korean thumb rings are commonly made of sheep horn and are found in two main types: lipped and pronged. The lipped rings are relatively thin and generally have a flattened lip. One of the examples here (*far right*) is attached to a cloth sleeve protector. The pronged rings are used in a different manner than the lipped rings. Instead of looping the thumb around the string, the prong goes across the string and is locked in place with the flexed forefinger (Elott 1962: 19). Rings are 3.5–6.0 cm long and have an inner diameter of 1.7–2.3 cm.

The additional accessories include a green silk sleeve protector (100.3 cm long) and a red silk archer's bag with attached arrow-cleaning cloth of silk on a coarse linen mat. There is also a blue bow cover of linen and silk (140 cm long and 7.0 cm wide). Bow covers are tied around an archer's waist when shooting and twisted to hold a group of arrows. The contents of the bag include a piece of waxed woven matting (for waxing bowstrings), a leather thumb stall, and an archer's thumb ring of tortoise shell.

40. Cat. Nos. 1991–0884 and 1991–0880.

Bowstring Case and Bowstring Reel with Rosin Case

Japan, eighteenth to twentieth century

Bowstring case (*top*) of pigskin and lacquerwork with dragon motif on top and floral designs on side. Case is 7.6 cm high and 20.2 cm in diameter. Bowstring reel (*bottom*) of woven rattan; felt-covered leather band with attached thong that holds rosin case of carved horn (shaped like a whistling arrow-head). Reel is 14.0 cm in diameter; rosin case is 5.5 cm long.

38. Chinese ring cases (Cat. Nos. 2001-01-002, 2001-01-004, 2001-01-005, and 2001-01-021).



39. Traditional Korean archers' rings and other archery accessories (Cat. Nos. 1995-0313, 1995-0786, 1995-0757C, 1994-1164, 2002-26-068, 1995-0624, 1995-0776, and 1995-0777).



40. Japanese bowstring case and bowstring reel with rosin case (Cat. Nos. 1991-0884 and Cat. No. 1991-0880).



41. Cat. No. 1992–0104

Painting

China, nineteenth century

A small painting showing archery equipment worn by a Chinese officer. Gouache on rice (pith) paper. These types of paintings were mass produced in port cities such as Canton and Shanghai for the export market. Made specifically for foreign customers, they often depicted scenes of Chinese trades and everyday life (Clunas 1984). Images of the Qing Imperial Guard, like this one, were especially popular with tourists (S. Selby, personal communication, October 5, 2006). 21.5 cm high and 16.8 cm wide.

42. Cat. No. 1992–0100

Print

France, eighteenth century

A hand-colored copperplate engraving from “The Conquests of the Emperor Qianlong” series, which brilliantly depicts scenes of Chinese military archery (Pirazzoli-T’Serstevens 1969). In 1765, Qianlong, who ruled China from 1735 to 1796, commissioned a series of sixteen engravings to celebrate his conquest of various ethnic groups in the Xinjiang region of northwestern China between 1755 and 1759. The drawings were made by Western artists at the Qianlong court and sent to France for engraving. Two hundred sets of prints were made in France and shipped back to Beijing for distribution to officials and members of the nobility. This print documents a battle that occurred between the Manchu army and Tatar warriors in 1759. Drawn by Joannes Damascenus; engraved by Augustin de St. Aubin in 1770. 55.7 cm high and 92.5 cm wide.

43. Cat. No. 1992–0076

Painting

Japan, seventeenth to nineteenth century

A Tokugawa-period (1603–1867) watercolor depicting Japanese target archers. 23.1 cm high and 16.5 cm wide.



41. Painting showing archery equipment worn by a Chinese officer (Cat. No. 1992-0104).



42. Hand-colored copperplate engraving from “The Conquests of Emperor Qianlong” series (Cat. No. 1992–0100).



43. A Tokugawa-period watercolor depicting Japanese target archers (Cat. No. 1992-0076).

44. Cat. No. 1995–0391

Scroll

Japan, nineteenth century

Details from a painted scroll portraying a battle scene with samurai archers on horseback. 200.6 cm long and 63.5 cm wide.

45. Cat. No. 1995–0393

Scroll

Japan, seventeenth to nineteenth century

Details from a long Japanese scroll depicting scenes of Korean target archery. Roughly 10 m long and 34.7 cm wide.

46. Cat. No. 1995–0384

Figurine

Japan, nineteenth century

A figurine made of carved walrus ivory and teak depicting a Japanese fletcher “sighting” an arrow (examining it for straightness). At his feet is a brazier for heating arrow shafts; behind him is a rack of arrows. The fletcher’s robe is inlaid with abalone shell. 15.2 cm high and 21.5 cm wide.

47. Cat. No. 2001–01–120

Figurine

Japan, nineteenth century

A carved-ivory figurine showing a Japanese archer stringing his bow. On his back is a quiver of arrows. 20.3 cm high and 25.4 cm wide.



44. Details from a Japanese painted scroll (Cat. No. 1995-0391).



45. Details from a long Japanese scroll depicting scenes of Korean target archery (Cat. No. 1995–0393).



46. Japanese figurine of carved walrus ivory and teak (Cat. No. 1995-0384).



47. Japanese carved-ivory figurine (Cat. No. 2001-01-120).

3 ▶▶▶▶

The Islamic Crescent

From medieval times through the nineteenth century, archers of the Islamic crescent, which stretches from Turkey eastward to India, were renowned for both their exceptional skills and their superior weapons. As a necessary means of advancing the spread of Islam, weapons traditionally held a religious association in Muslim cultures. The bow and arrow, which are extolled in many sayings of the Prophet Muhammad, occupied a special place above all others (Yücel 1970, 1997). Training in archery was seen as a religious duty and a sign of status, and the craftsmanship of archery equipment was highly esteemed. The legacy of Islamic archery is exemplified by the archery traditions and equipment of Ottoman Turkey (1453–1922), of Iran during the Safavid-Qajar periods (1502–1925), and of the Indian subcontinent throughout the Mughal era (1526–1857), which blended Islamic and Hindu cultural elements. Although these three Islamic powers were distinct, they shared a common heritage and experienced considerable cultural exchange.

The bows used by Islamic archers were among the finest of the Asiatic composites (Figure 3.1). Made with a wood core, sinew backing, and horn belly, they were often fairly short and strongly reflexed. Ideally suited to horseback archery, the bow design emphasized speed of cast and distance of shot using relatively light arrows. The recurved ends were smoothly rounded (as in Persian and Turkish bows) or sharply angled (as in Mughal bows), and the ears were generally wedge-shaped on the belly to provide support for the long bowstring loop. The sinew backing was covered with thin bark or leather and varnished to make it waterproof. On Persian and Mughal bows the horn belly was covered as well. Painted decoration was common and typically quite elaborate.

Archers in the region used arrows constructed of wood or reed and that had bulbous nocks, low fletchings, and an assortment of tanged metal heads. The nocks were often colored inside the notches, and shafts were decorated with paint, metallic foil, or other materials. Flat, open quivers made of leather or cloth were worn by horse archers on a waist belt. Cylindrical and boxlike cases were also used for arrow storage. Archers' rings were asymmetrical and lipped and were manufactured from leather, metal, bone, ivory, horn, or semiprecious stones. The more ornate examples were worn as adornment or as marks of status.



Figure 3.1. Islamic composite bows are depicted in this mythical scene from an eighteenth-century manuscript detailing the life of a Persian prince (Cat. No. 1992–0098).

Use of the bow and arrow continued across the region until well after the introduction of firearms. Hunters and warriors alike used guns and bows, but many preferred bows because of their familiarity, speed of use, and suitability to horseback. Sport archery also was widespread, and flight archery (shooting for distance) was a particularly favorite pastime of Islamic archers. Flight archery reached its zenith among the Ottoman Turks, who used specialized bows and arrows to achieve distance records of eight hundred to nine hundred meters, which remained unsurpassed until the middle of the twentieth century. By the turn of the nineteenth century, the bow and arrow was in decline in the Middle East, and today traditional archery craftsmanship and customs are no longer practiced. The legacy of Middle Eastern archery endures through extant equipment and the substantial corpus of traditional Islamic literature on the subject.



48. Cat. No. 1994–0657

Composite Bow

Turkey, eighteenth century

A target or war bow (Karpowicz 2001b; Topkapi Sarayı Müzesi 1999: 54–55) covered with thin leather on back; leather lining inside nocks; and ivory insert where horn meets at handle. The back is painted brown and decorated with a gold floral pattern; there are three elongated, copper-colored medallions with floral motifs on each limb. The belly is also decorated with a gilt floral design, and the ends are red with gold cartouches containing signature and dates. Gold tips. Signed and dated: Ahmed Suran, made A.H. 1159 (A.D. 1743), presented A.H. 1164 (A.D. 1748). 108.5 cm long, 3.3 cm wide at midlimb, and 1.4 cm thick at midlimb.

49. Cat. No. 1994–0981

Composite Bow

Turkey, nineteenth century

A small bow, probably for a woman or young person. Back is covered with red leather and painted with gold foliate pattern; in the center of each limb is a gold lozenge containing a floral motif. Bow has gold tips and a handle painted green and gold. The horn belly is mostly bare, except for the green painted sections with pink flowers near the tips. Signed and dated on back: Abdi, A.H. 1289 (A.D. 1866). Remnants of another inscription on upper limb of belly. 83.5 cm long, 2.2 cm wide at midlimb, and 1.1 cm thick at midlimb.

48. Turkish composite target or war bow (Cat. No. 1994–0657).



49. Small Turkish composite bow (Cat. No. 1994–0981).



50. Cat. No. 1994–0977

Composite Bow

Turkey, eighteenth and nineteenth centuries

A classic Turkish flight bow. Flight bows were made from larger amounts of horn and sinew than were target and military bows, and some required conditioning or treatment to dry them out before shooting (Klopsteg 1947: 38). Sinew backing is painted red; leather lining inside nocks. Insert missing between the horn at handle. 105.0 cm long, 3.0 cm wide at midlimb, and 1.4 cm thick at midlimb.



50. Turkish composite bow (Cat. No. 1994–0977).

51. Cat. Nos. 1995–0422 and 1995–0553

Arrow Guides

Turkey, nineteenth century

An essential piece of equipment for the Turkish flight archer was the *siper*, a grooved piece with a small detachable oval guard plate that was worn on the wrist of the bow hand. The *siper* acted as a support and guide for the arrow and allowed for a long draw with a relatively short arrow (Klopsteg 1947: 61; Latham and Paterson 1970: 145–51). **Cat. No. 1995–0553** (*left*) has a horn groove covered with a thin layer of highly polished leather. It is attached to a wooden bridge that fits into a slot at the front of the plate. The plate is made of rawhide and covered with pebble-grained sharkskin on the top and red leather on the bottom. Braid around edge; wrist strap of leather and cloth. Grooved piece is 12.0 cm long and 3.0 cm wide; plate is 12.7 cm long and 8.5 cm wide. The horn groove of **Cat. No. 1995–0422** (*right*) slides into a plate made of layers of rawhide and wood with a layer of tortoise shell on top. Gold braid around edge; leather wrist strap. Grooved piece is 11.4 cm long and 3.1 cm wide; plate is 11.0 cm long and 8.8 cm wide.



51. Turkish arrow guides (Cat. Nos. 1995–0422 and 1994–0553).

52. Cat. No. 1994–0656

Composite Bow

Turkey, early nineteenth century

Bows such as this one, usually referred to as Crimean Tartar bows, were another common form of the Turkish empire (Petrasch et al. 1991: 231–34; Latham and Paterson 1979: 83). These bows were generally longer and not as heavily reflexed as other Turkish bows, and they usually had a set-back handle and small, oval shoulder pads of ivory. This bow form was originally used by Crimean and Circassian auxiliaries serving in the Ottoman army (Bergman et al. 1988: 665) and became a favored weapon of the Turks as well as of some Eastern European forces. This example has leather covering the tips, handle, and the back and edges of the bow limbs; the surface is painted red with a gold floral pattern. Signed and dated: “Vali, 1223 A.H.” (A.D. 1805–1806). The tips are strengthened with horn inserts; sinew wrapping reinforces the nocks. 148.1 cm long, 3.3 cm wide at midlimb, and 1.7 cm thick at midlimb.

53. Cat. No. 1994–0982

Composite Bow

Turkey, nineteenth century

This Crimean Tartar-style bow is dated A.H. 1253 (A.D. 1834) and bears the signature of Hacı Mustafa Kavsi, the most famous Turkish bowmaker of the nineteenth century (Yücel 1998: 342). The leather covering is painted blue with gold borders and stars on the back; the decoration is in pale pink where the leather covering extends onto the edge of the belly. The gold-painted tips have heavy saddle-shaped ends. 124.5 cm long, 3.2 cm wide at midlimb, and 1.5 cm thick at midlimb.

54. Cat. No. 1994–0651

Composite Bow

Iran, eighteenth and nineteenth centuries

Decorating this bow are hunting scenes that include several mounted archers. This type of scene was common in Persian miniature paintings of the late Safavid–early Qajar periods (E. McEwen, personal communication, September 20, 2004; Diba and Ekhtiar 1998: 179). A similar scene appears on a Qajar-period pen box (*bottom*) also in the Grayson Collection (**Cat No. 2001–01–001**). The belly of this bow has a curvilinear design in gold paint and sinew wrapping below the nocks. 124.3 cm long, 4.3 cm wide at midlimb, and 1.1 cm thick at midlimb.

52. Crimean Tartar bow (Cat. No. 1994–0656).



53. Crimean Tartar-style bow bearing the signature
of Hacı Mustafa Kavsi (Cat. No. 1994–0982).



54. Iranian composite bow (Cat. No. 1994-0651)
and Qajar-period pen box (Cat No. 2001-01-001).



55. Cat. No. 1994–0639

Composite Bow

Iran, eighteenth century

A bow with the broad limbs that is more typical of Persian bows (Paterson 1966: 74; E. McEwen, personal communication, September 20, 2004). Both sides are covered with silver foil and decorated in gold, white, black, and red paint with an inscription in black paint; the tips are painted red and gold. The following is a translation of the inscription:

*The soft bow with bad [twist] who knows what it is
By the time you pull it, it comes right.
The young man who holds bow in his hand
He will not be afraid from lion nor elephant.*

The first two lines may refer to the way a composite bow sometimes appears twisted when unstrung, but corrects itself when strung and drawn (McEwen 1970). Worn silk covers the grip. 114.1 cm long, 5.0 cm wide at midlimb, and 1.6 cm thick at midlimb.

56. Cat. No. 1998–0343

Composite Bow

India, eighteenth and nineteenth centuries

The most common bow form of the Mughal period in India, known as the crab bow, is distinguished by the sharp angle at the knee that gives the bow a crablike appearance (Paterson 1972; Karpowicz 2001a). This unused crab bow displays the distinctive angled recurve. Both sides of the limbs are covered with thin leather and varnished. Decoration includes a gold line-and-dot motif border on the limbs and a floral pattern on the handle. Horn inserts are spliced into the tips to prevent breakage, and there is sinew wrapping under the varnish just below the nocks. There are three threads, of unknown material and function, underneath the varnish of the handle. 112.3 cm long, 4.0 cm wide at midlimb, and 1.1 cm thick at midlimb.

55. Iranian composite bow with inscription (Cat. No. 1994–0639).



56. Mughal-period Indian crab bow (Cat. No. 1998-0343).



57. Cat. No. 1994–0648

Composite Bow

India, eighteenth and nineteenth centuries

A crab bow that has opened up from use. Features sinew wrapping on each side of the handle and at the angled knees. Covered with painted and varnished leather. The limbs are decorated with a paisley pattern in gold on a brown background and curvilinear designs on the tips and the handle. There is sinew reinforcement below the nocks. 114.4 cm long, 3.8 cm wide at midlimb, and 1.3 cm thick at midlimb.

58. Cat. No. 1995–0357

Composite bow

India or Pakistan, nineteenth century

Another distinctive bow type of India is the *chahar-kham*, or “four-curved” bow (Paterson 1972: plate 2; McEwen 1979), which is characterized by its sinuous form, extreme set-back handle, and one or more raised ridges of sinew running along the back of the limbs under the outer covering. The purpose of the sinew ridges is unknown, but they may increase the overall strength of the bow. The *chahar-kham* was widely used in India beginning in the medieval period but was primarily associated with the Sind province of present-day southwestern Pakistan during the later historic period. This is an example of a typical Sind bow. It is covered with bark, painted, and lacquered, and the tips are bound with sinew. The handle and ends of the limbs are painted dark red with floral designs in gold; the bow limbs are yellow with the two parallel ridges on the back highlighted in brown, gold, and white paint. On each side of the handle and at the ends of the limbs are floral and geometric designs in red, white, green, and black. 118.2 cm long, 3.5 cm wide at midlimb, and 1.7 cm thick at midlimb.

59. Cat. No. 1995–0766A

Steel Bow

India, eighteenth and early nineteenth centuries

Steel bows, although lacking the cast and range of composite bows, were popular in late Mughal India as durable military weapons (Elmy 1969). More elaborate examples were made as display pieces. Usually hand forged, they appear in the form of a composite bow that has opened up from use and often were made in two sections so that they could be dismantled for transport or storage. This example has a detachable upper limb that screws into the solid iron handle; the steel limbs are damascened in a gold floral pattern. 106.5 cm long, 3.6 cm wide at midlimb, and 0.4 cm thick at midlimb.

57. Indian crab bow (Cat. No. 1994–0648).



58. Indian *chahar-kham*, or “four-curved” bow (Cat. No. 1995–0357).



59. Indian steel bow (Cat. No. 1995–0766A).



60. Cat. No. 1994–0831

Reinforced Bow

India, nineteenth century

Although less widely used than other bow forms of the Islamic world, reinforced self bows were not an uncommon form (Faris and Elmer 1945: 158). This bow, which is probably from Kashmir, is of a single stave of Lombardy poplar backed with sinew. It has a D-shaped cross section—flat on the belly and rounded on the back—with a slight reflex in the limbs and self nocks with triangular tips. Both sides are covered with fine-line abstract designs painted in red, blue, and green. 137.0 cm long, 1.2 cm wide at midlimb, and 0.6 cm thick at midlimb.



60. Indian reinforced self-bow (Cat. No. 1994–0831).

ARROWS

Turkey, late eighteenth and early nineteenth centuries

Ottoman arrows were made from barreled wood shafts, usually of pine, with wood or horn nocks. Swan, eagle, pigeon, and cormorant feathers commonly were used for radial three-feather fletching, which was glued to the shaft. The size and shape of the fletching varied depending on function. Ornamentation was subtle and generally confined to paint or metallic decoration around the nocks and feathers. Flight arrows were typically about 62 cm long, with conical heads of ivory; target arrows usually carried domed metal heads and were about 66 cm long (Klopsteg 1947: 74–85; Isles 1961). Most practice arrows had no fletching and were approximately the same length as target arrows. Military and hunting arrows normally were longer, with bodkin heads or broadheads of steel or iron (Petrasch et al. 1991: 234–38).

Left to right:

61. Cat. No. 1994–0744

Military arrow with hawk-feather fletching. Decoration between feathers is in diamond pattern in blue and gold; most of shaft is covered with red varnish. Composite nock of ebony and walrus ivory. Small iron broadhead; tanged. Arrow is 72.5 cm long and 0.5 cm in diameter; head is 4.9 cm long.

62. Cat. No. 1994–0705

Military or hunting arrow. Wood nock is painted red inside and reinforced with sinew. Bands of maroon and gold painted between the feathers. Iron bodkin head with diamond cross section; tanged. Thin brass, horn, and green metal washers between base of head and shaft. Arrow is 67.8 cm long and 0.5 cm in diameter; head is 5.4 cm long.

63. Cat. No. 1994–0707

Practice arrow. Sheep horn nock; black horn washer between base of nock and shaft. Self tip; three lines near tip may indicate degrees of draw. Arrow is 63.6 cm long and 0.9 cm in diameter.

64. Cat. No. 1994–0710

Practice arrow. Wood nock with sinew reinforcement; bands of thread or sinew wrapping on a portion of the upper shaft. The nock and sinew wrapping are painted purple. Socketed ivory pile head. Arrow is 66.0 cm long and 0.8 cm in diameter; head is 0.8 cm long.

65. Cat. No. 1994–0702

A practice arrow called an *abrish* (also known as a *flu-flu*). The leading edge of a primary wing feather is stripped from the quill and glued to the arrow shaft in a spiral manner. The purpose of this design is to create air resistance so that the flight of the arrow is slow and the range short; thus observers can see any errors in an archer's technique (Klopsteg 1947: 76). This example has a tanged iron point with a brass washer between the shaft and the head; a sheep-horn nock, painted red on the inside and gold on the outside; an additional set of feathers; and a gold band between the bottlebrush. Arrow is 67.8 cm long and 0.8 cm in diameter; head is 0.7 cm long.



Ottoman arrows
(Cat. Nos. 1994-0744,
1994-0705, 1994-0707,
1994-0710, 1994-0702,
1994-0644B, and
1994-0703G).

66. Cat. No. 1994–0644B

Flight arrow. Woodnock with sinew reinforcement; wrapping of black and metallic thread at base of sinew wrapping. Parchment fletching. Socketed pile head of sheep horn. The name inscribed on the fletching is “Amir Beg” (B. Dwyer, personal communication, September 2004). Arrow is 61.8 cm long and 0.7 cm in diameter; head is 0.7 cm long.

67. Cat. No. 1994–0703G

Target arrow. Hornnock with horn washer between base ofnock and shaft. The fletching is glued on over sinew reinforcement; floral pattern in red, green, gold, and black painted between the feathers. Tanged pile head of iron with two brass washers and one green metal washer between the base of the head and the shaft. Arrow is 65.0 cm long and 0.8 cm in diameter; head is 0.7 cm long.

68. Cat. No. 1994–0745

Arrows

Turkey, early nineteenth century

These four heavy arrows were made for use with the large Crimean Tartar bows (see **Cat. No. 1994–0656**). Straight wood shafts; bulbous wood nocks painted red inside and gold outside. Three-feather fletchings (eagle feathers) (not original), glued on radially, with red and gold paint between and under feathers. Tanged broadheads of steel, ridged at the base and thickened toward the tip. Decoration of shafts at the base of the heads mirrors that around the nocks and fletchings. Arrows are 86.5 cm long and 0.8 cm in diameter; heads are 4.1 cm long.



68. Turkish arrows
(Cat. No. 1994–0745).

Arrows

India, eighteenth and early nineteenth centuries

Arrows of Mughal-period India are characterized by straight reed shafts with nocks of wood, bone, or ivory inserted into the ends. Sinew wrapping reinforces the nocks and often extends downward to provide a surface area to which the fletchings are glued. Feathers from many kinds of birds are used for the shallow fletchings, which are usually of three feathers, although four-feather fletchings are not uncommon. Heads, made of steel or iron, come in a multitude of shapes and sizes. They are inserted into the shafts, and the areas at the base of the heads are reinforced with sinew wrapping or by one or more ferrules of metal, bone, or ivory (Paterson 1972: figure 4). The sinew wrappings are protected by lacquer and paint; decoration is often quite intricate, consisting of colorful floral and foliate designs or abstract patterns (McEwen 1979: 94).

Left to right:

69. Cat. No. 1994–0753

Military or hunting arrow. Woodnock, painted red inside. Four-feather fletching with fine polychrome floral design between and below feathers. Crescent-shaped steel head; tang inserted into shaft, wrapped with sinew, painted and varnished. Irvine (1903: 98) provides a description of the wounds these crescent-shaped arrowheads could inflict: “There was one of crescent shape more than four inches across at the barbs. Though they did not penetrate easily, yet [sic] when they happened to graze a limb, they cut desperately.” Arrow is 76.5 cm long and 0.7 cm in diameter; head is 7.5 cm wide.

70. Cat. No. 1994–1060

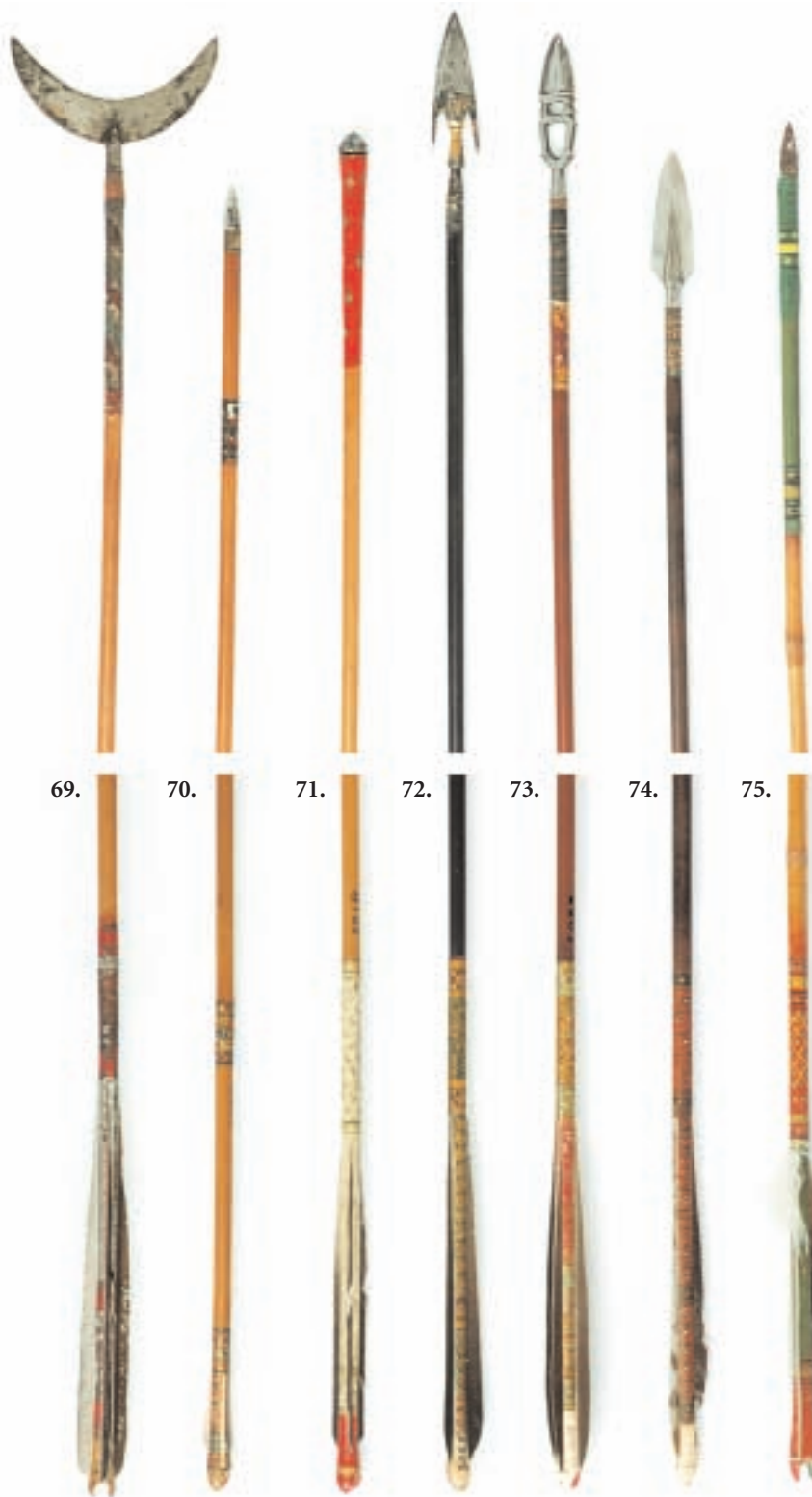
Military arrow. Woodnock, painted red inside. Three-feather fletching; steel bodkin head reinforced with brass ferrule. Floral ornamentation onnock, between feathers, and in bands on upper and lower shaft. Arrow is 71.4 cm long and 0.6 cm in diameter; head is 1.8 cm long.

71. Cat. No. 1994–0633

Hunting arrow. Woodnock painted red with details in black and gold; three-feather fletching with floral decoration between and below the feathers in white, gold, and black. Rounded steel blunt head inserted into the shaft; there is a small gap between the head and the shaft that may have contained a washer at one time. The shaft area at the base of the head is strengthened with sinew and painted red with leaves in gold and black. Arrow is 72.2 cm long and 0.7 cm in diameter; head is 1.0 cm long.

72. Cat. No. 1994–0772

Hunting or military arrow. Bonenock, painted red inside. Shaft lacquered dark brown, with floral decoration in gold, green, and red between the three-feather fletching. There are remnants of gold leaf or wash on the steel broadhead, which has barbs at each corner and ferrule of copper, brass, and silver alloy. Arrow is 76.5 cm long and 0.7 cm in diameter; head is 5.5 cm long.



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Mughal-period Indian arrows
 (Cat. No. 1994-0753, 1994-1060,
 1994-0633, 1994-0772,
 1994-0774, 1994-0629, and
 1994-0632).

73. Cat. No. 1994–0774

Hunting or military arrow. Ivory nock, painted red inside with black line around the base. Four-feather fletching with floral motif in gold, red, green, and black between and below the feathers. Finely chiseled steel broadhead with ferrule of copper, brass, silver alloy, and leather. Arrow is 75.5 cm long and 0.7 cm in diameter; head is 6.2 cm long.

74. Cat. No. 1994–0629

Hunting or military arrow. Bone nock with black line at the base of the notch; polychrome decoration in an abstract pattern from the base of the nock to below the three-feather fletching. Steel broadhead with a triangular design chiseled in the middle; ferrule of multiple scalloped bands of copper, brass, and silver alloy. Arrow is 72.3 cm long and 0.7 cm in diameter; head is 5.2 cm long.

75. Cat. No. 1994–0632

Military arrow. Wood nock, four-sided steel bodkin head, and abstract ornamentation in green, red, yellow, and black paint. Fluffy white feathers are inserted in the sinew wrapping below the fletching. Arrow is 74.4 cm long and 0.7 cm in diameter; head is 2.8 cm long.

76. Cat. No. 1991–0539

Arrows

India, early nineteenth century

A chest of forty-three arrows from Kashmir presented to Sir Henry Clinton (1771–1829) while he was adjutant general in India from 1802 to 1805. All are of superior quality, exhibiting a great assortment of point types and fine floral decoration in gold, green, red, and black. The nocks are made of bone or ivory, some with horn inserts or painted red or green with white dots. Length ranges from 67.0 cm to 82.1 cm.

77. Cat. No. 1995–0416

Arrowheads

India, mid-eighteenth century

Paterson (1972: 88) notes that India is second only to Japan in the variety of designs employed in arrowheads. The examples in this set from Rajputana correspond to many ancient Hindu forms (Pant 1978).



76. Chest of forty-three arrows from Kashmir (Cat. No. 1991–0539).



77. Set of Indian arrowheads (Cat. No. 1995–0416).

78. Cat. No. 1998–0337

Arrows

India, eighteenth and early nineteenth centuries

Short arrows or darts for use in crossbows. The examples shown here have a variety of iron and steel bodkin heads. They have wood nocks and traces of four-feather fletching. The nocks and fletching areas are decorated with painted designs, and on each arrow there is sinew reinforcement at the base of the head. Length ranges from 21.2 cm to 25.5 cm; diameter is 0.7 cm.

79. Cat. No. 1994–0642

Bow Case

India, eighteenth and early nineteenth centuries

A bow case made of thin leather covered with red velvet and decorated with sequins and gold- and silver-thread embroidery. The case is open at the top and bottom and on one side where it is held together by three loops. Similar bow cases are illustrated and described by Zeller (1937). 30.5 cm long and 23.3 cm wide.

80. Cat. No. 1995–0766E

Quiver

India, eighteenth and early nineteenth centuries

A long quiver. Elliptical cross section; green velvet on leather with sequins and silver-thread embroidery in floral pattern. Decorative tassels attached to carrying tabs of red and gold silk thread. Belt loops on the back. Similar quivers are illustrated and described by Zeller (1937). 65.5 cm long and 13.7 cm wide.

78. Indian short arrows or darts for use in crossbows (Cat. No. 1998–0337).



79. Indian bow case (Cat. No. 1994-0642).





80. Long Indian quiver (Cat. No. 1995-0766E).

81. Cat. No. 1994–0643A

Quiver

India or Iran, eighteenth and early nineteenth centuries

Leather quiver with silver band around bottom in hammered floral pattern. Two belt loops and two leather straps for suspension from a belt or saddle. 55.8 cm long and 15.8 cm wide.

82. Cat. No. 1994–0712

Quiver

India or Iran, eighteenth and early nineteenth centuries

Wooden arrow case. Octagonal cross section; painted in colorful floral pattern. Hinged lid; two metal rings on back to attach suspension strap. 78.2 cm long and 7.5 cm wide.

83. Cat. No. 1994–0644A

Quiver

Turkey, late eighteenth century

A wooden quiver for flight arrows (Isles 1961; Topkapi Sarayı Müzesi 1999: 55). Rectangular form, tapering toward the base. Decorated with floral designs and intertwining stem and leaf patterns in gold, with some details in gray, white, and black paint. Ebony and ivory inlay border around the base. A charm to ward off woodworms (B. Dwyer, personal communication, October 13, 2004) is written in black on the inside of the hinged lid. 68.5 cm long and 4.4 cm wide at top.



81. Leather Indian or Iranian quiver
(Cat. No. 1994-0643A).



82. Wooden arrow case (Cat. No. 1994–0712).

83. Wooden Turkish quiver for flight arrows (Cat. No. 1994–0644A).



Archers' Thumb Rings

First row, left to right:

84. Cat. No. 2001–01–106

White jade with turquoise inlay outlined in gold; fairly straight lip; ridge at back. Persian or Turkish, seventeenth through nineteenth centuries. 4.3 cm long and 3.2 cm wide.

85. Cat. No. 2001–01–097

White jade with floral design created by an inlay of pink and green tourmaline and gold outline; slightly rounded lip; ridge at back. Possibly Persian, seventeenth through nineteenth centuries. 3.9 cm long and 3.2 cm wide.

86. Cat. No. 2001–01–100

Lapis lazuli; rounded lip; ridge at back. Possibly Persian, seventeenth through nineteenth centuries. 3.9 cm long and 3.0 cm wide.

87. Cat. No. 2001–01–075

Agate; slightly rounded lip. Possibly Turkish, seventeenth and eighteenth centuries. 3.8 cm long and 2.8 cm wide.

Second row, left to right:

88. Cat. No. 2001–01–071

Nephrite jade with carved flower-and-leaf pattern. Short, straight lip carries a flower that has a purple stone surrounded by gold at the center. Possibly Persian, seventeenth and eighteenth centuries. 4.3 cm long and 3.2 cm wide.

89. Cat. No. 1995–0766C

Green jade; upturned lip; slight ridge at back. Indo-Persian, eighteenth and nineteenth centuries. 5.0 cm long and 2.7 cm wide.

90. Cat. No. 1995–0766C

Elephant ivory; slightly upturned lip; carved floral pattern. Indo-Persian, eighteenth and nineteenth centuries. 4.5 cm long and 3.1 cm wide.

91. Cat. No. 1995–0319

White nephrite jade with carved leaf pattern; rounded lip; ridge at back. Possibly Indo-Persian, seventeenth through nineteenth centuries. 4.0 cm long and 2.8 cm wide.

Third row, left to right:

92. Cat. No. 1994–1120

Bone; short, rounded lip. Possibly Persian, seventeenth and eighteenth centuries. 4.2 cm long and 3.1 cm wide.

Archers' thumb rings (First row: Cat. Nos. 2001-01-106, 2001-01-097, 2001-01-100, and 2001-01-075. Second row: Cat. Nos. 2001-01-071, 1995-0766C, 1995-0766C, and 1995-0319. Third row: Cat. Nos. 1994-1120, 2001-01-124, and 2001-01-057. Fourth row, Cat. Nos. 1994-1155, 1994-1130, and 1994-1125).



93. Cat. No. 2001–01–124

Elephant ivory; elongated lip with slightly upturned tip; vertical ridge on back. Indo-Persian, seventeenth through nineteenth centuries. 4.2 cm long and 2.7 cm wide.

94. Cat. No. 2001–01–057

Horn and walrus ivory, with leather tab. Used in flight archery. Turkish, nineteenth century. 4.2 cm long and 2.9 cm wide.

Fourth row, left to right:

95. Cat. No. 1994–1155

Silver; pointed, slightly concave lip decorated with tendrils and hatch marks; knob at back. Turkish, medieval. 3.4 cm long and 2.7 cm wide.

96. Cat. No. 1994–1130

Bronze; short, straight lip; engraved circle-and-dot pattern on lip and band. Possibly Persian, medieval. 3.0 cm long and 2.5 cm wide.

97. Cat. No. 1994–1125

Bronze; slightly rounded lip; tendril motif on lip; linear band around top. Turkish, medieval. 3.5 cm long and 2.5 cm wide.

4 ▶▶▶▶

Tribal Asia and Oceania

Although the archery traditions of the great empires of China, Japan, Korea, and the Middle East dominated much of Asia during the last half millennium, many local and minority groups maintained their own characteristic archery practices and equipment. The archery equipment used by the Ainu, the indigenous people of the northern Japanese islands, for example, is quite different from that used by the Japanese. Among the tribal societies of the Indian subcontinent, the use of wooden and bamboo self bows for hunting, defense, and sport has remained common long after the historically dominant Mughal traditions have ceased to be practiced (Figure 4.1). Archery equipment of the tribal people of Central Asia shows influences from Islamic and East Asia styles while simultaneously exhibiting traditional ethnic traits (Figure 4.2).



Figure 4.1. Men engaged in a weekly Saturday archery competition at Paro, Bhutan, in 2000. Although modern compound bows are also commonly used in Bhutan today, these archers are still using more traditional equipment. *Courtesy Tibor Bogner/Alamy*



Figure 4.2. Archers at the 2004 Naadam Festival, Mongolia's largest national event. Held each July in Ulaanbaatar, this traditional celebration highlights the three "manly sports" of archery, wrestling, and horse racing. *Courtesy Marco Brivio/Alamy*

In mainland Southeast Asia and southwestern China, wooden crossbows remained the predominant weapon of many ethnic groups into the modern period. Weapons other than the bow tended to dominate much of insular Southeast Asia, although simple self bows and long reed arrows were typical of the Philippine Islands.

The importance of the bow varies among cultures of the South Pacific. It is the basic weapon of most of traditional Melanesia, whereas in Micronesia and Polynesia it has historically been a comparatively insignificant implement. The wooden bows and long reed arrows of Melanesia often exhibit beautifully carved, painted, or woven decorations. The arrows of tribal New Guinea, where the bow is still commonly used for hunting and combat (Figure 4.3), are particularly renowned for their extraordinary craftsmanship.



Figure 4.3. A Huli warrior with bow and arrows, Karida, Southern Highlands, Papua New Guinea, 2000. Tribal warfare remains common in the New Guinea Highlands, and it is only within the last decade that modern firearms have begun to replace traditional weapons in combat. *Courtesy Rob Howard/CORBIS*

98. Cat. Nos. 1994–0790, 1994–0797B, and 1994–0800

Bow, Quiver, and Arrows

Japan, nineteenth and early twentieth centuries

Ainu hunting equipment. The crude wooden self bow is part of a spring-bow trap; the bow is placed on a stock with a trip string and armed with poisoned arrows (Ölschleger 1999: figure 29.6). The two poison arrows have reed shafts with sinew and cherry-bark wrapping, great horned owl-feather fletchings, deer-antler foreshafts, and replica bone points attached with sinew wrapping. The quiver is made of spliced elm bark wrapped with cherry bark, with a matching bark cap; carved wooden “wing” sections on each side, which are typical of Ainu quivers; and a braided carrying strap of elm inner bark, with a green bark-cloth shoulder pad. Bow is 114.2 cm long, 3.1 cm wide at midlimb, and 2.4 cm thick at midlimb. Arrows are 49.5 cm long and have diameters of 1.0 cm; heads are 6 cm long. Quiver is 54.5 cm long and 11.5 cm wide.

99. Cat. No. 1995–0389

Scroll Details

Japan, late eighteenth to mid-nineteenth centuries

Ainu-e, Japanese paintings of the Ainu people, depict Ainu lifeways of the late eighteenth and mid-nineteenth centuries (Sasaki 1999). This *Ainu-e* scroll portrays a variety of practices, including hunting and domestic activities. The bow depicted in the top scene is a common type of Ainu hand bow of yew wood with cherry-bark wrapping.

100. Cat. No. 1992–0215

Self Bow

Northeast India, late nineteenth and early twentieth centuries

Use of the bow and arrow for hunting and defense was common among the numerous tribal societies of the Indian subcontinent until fairly recently, and archery remains an aspect of traditional life for many groups in the region today. Their simple bows usually are made of bamboo or wood, with strings of bamboo or some other plant fiber (Elmy 1998; Pant 1978). This bamboo bow was used by the Lepcha, who inhabit the Sikkim state in India and adjacent areas of Bhutan and Nepal. The stiffener at the handle, which is of wood wrapped with copper wire, is typically seen on Lepcha pellet bows and bows used in marksmanship. Bamboo is also often used for the stiffener. The twisted three-strand fiber string is probably from the nettle plant (Nebesky-Wojkowitz 1953; Siiger 1967). 149.7 cm long, 3.1 cm wide at midlimb, and 1.3 cm thick at edge of midlimb.

98. Ainu hunting equipment (Cat. Nos. 1994-0790, 1994-0797B, and 1994-0800).





99. Japanese scroll details
(Cat. No. 1995–0389).



100. Lepcha self bow
(Cat. No. 1992–0215).

101. Cat. No. 2002–26–004

Quiver

Bhutan, nineteenth and early twentieth centuries

A Bhutanese quiver of dark wood or bamboo with a plug cap and an animal-skin covering at the base; side piece of woven cane to which the carrying strap and lid strap, both of plant fiber, are attached. 26.5 cm long and 6.2 cm in diameter.

102. Cat. No. 2004–01–006

Target Arrows

Bhutan, early twenty-first century

Recreational archery has a long history among many cultures of South Asia and is particularly popular in Bhutan, where it is the official national sport. Archery tournaments in Bhutan often are closely associated with both religious and secular celebrations, and traditional bamboo bows and reed arrows are still common. Bhutanese archers are renowned for their skill in shooting at small targets at a distance around 130 meters (Elmy 1999: 34–36; Karan 1967: 75). This set of four target arrows was made by traditional Bhutanese arrow maker Tsewang Nidup. The arrows have reed shafts; four-feather fletchings; deep, rectangular self nocks; and conical heads of rolled iron. They are decorated with black paint between the feathers and with red, green, and white silk thread wrapping below the nocks. Arrows are 68.3 cm long and 0.7 cm in diameter; heads are 4.1 cm long.

103. Cat. No. 1994–0829

Composite Bow with Arrows

Northern Pakistan, eighteenth and nineteenth centuries

Bow and arrows collected in Hunza, an ethnic enclave in the mountains of northern Pakistan. By the early twentieth century, the Hunzakut used bows primarily for shooting from horseback during local festivals (Gordon 1932). Bow has straight limbs, angular recurved tips, and an elliptical cross section, flattened on the front and rounded on the back. The wooden core is covered with strips of ibex horn on the belly and a rough sinew backing; the limbs are wrapped at intervals with full tendon, as are the self nocks. Rawhide bowstring and rawhide covering at grip. Three of the arrows have wood shafts with slightly bulbous self nocks; one is a reed arrow with a straight self nock. Nocks on all are painted red inside. Radial three-feather fletchings are glued on to the shafts. Tanged steel broadheads are inserted into the shafts and secured with sinew wrapping. The shafts are decorated with red, black, green, and brown paint, and two have bark wrapping where the heads meet the shafts. The bow is 150.2 cm long, 4.1 cm wide at midlimb, and 1.8 cm thick at midlimb. Arrows range in length from 76.8 cm to 83.5 cm and have diameters of 0.9–1.1 cm.

101. Bhutanese quiver (Cat. No. 2002-26-004).



102. Bhutanese target arrows (Cat. No. 2004-01-006).



104. Cat. Nos. 1995–0738 and 1992–0223

Composite Bow and Arrow

Afghanistan, eighteenth and nineteenth centuries

A large composite bow from Afghanistan with a set-back handle similar to that seen on Sind bows of India. Roughly made wood core with horn belly and sinew backing. Reflexed limbs and rounded re-curved tips; elliptical cross section rounded on both sides. The limbs are attached to a center section with iron rivets and horn pegs; heavy reflex on each side of the handle. Painted orange and red with a design in yellow, self-nocks, and sinew bowstring. The accompanying arrow is of wood with a squared nock made by gluing a thin strip of horn on each side of the shaft; the strips are secured with sinew that is covered with thin leather. The fletching is of four untrimmed vulture feathers glued onto the shaft in radial form; there is a band of silver foil beneath the fletching. The heavy steel head is a large bodkin with an octagonal tip, tanged and reinforced with a long brass ferrule. Bow is 182.1 cm long, 4.5 cm wide at midlimb, and 1.9 cm thick at midlimb. Arrow is 72.4 cm long and 0.8 cm in diameter; head is 5.1 cm long.

105. Cat. Nos. 1995–0743 and 1995–0561

Target and Archery Equipment

Mongolia, twentieth century

Examples of equipment used in modern Mongolian archery festivals. During these festivals, traditional composite bows are used to shoot blunt-tipped arrows at a wall or a target of rows of small woven cylinders (Munkhtsetseg 1999). The bow has double nocks, birch bark on the back, painted decoration, and shagreen on each side of the handle. The arrows have birch shafts; four-feather fletchings (vulture feathers); red paint between feathers and green stingray skin over the nocks and adjacent shafts; slightly bulbous self-nocks (painted red inside); and walrus-ivory heads. The target cylinder is of woven rawhide. Bow is 172.2 cm long, 4.1 cm wide at midlimb, and 1.5 cm thick at midlimb. Arrows are 95.8 cm long and 1.0 cm in diameter; heads are 4.5 cm long. Target is 8 cm high and 8 cm in diameter.

104. Composite bow and arrow from Afghanistan
(Cat. Nos. 1995-0738 and 1992-0223).



105. Equipment used in modern Mongolian archery festivals (Cat. Nos. 1995–0743 and 1995–0561).



106. Cat. No. 1998–0164

Bow Case and Quiver

Mongolia, eighteenth and nineteenth centuries

Buryat Mongol bow case and quiver set of leather with brass decoration. Quiver has one extra pocket on back. Bow case is 41.4 cm long and 31.1 cm wide; quiver is 22.7 cm long and 17.1 cm wide.

107. Cat. No. 2004–01–095

Bow Case and Quiver

Tibet, eighteenth and nineteenth centuries

A Tibetan bow case and quiver set of Islamic style but with Chinese-Tibetan decoration (Edgerton 2002: plate 9; Stone 1961: figure 174, numbers 5–6). Wooden frames covered with reddish leather. Both are decorated with silver boss tacks, brocaded silk, metallic thread, and appliqué designs in leather and cloth. In the center of each piece is a circular shou symbol. Bow case is 37.0 cm long and 21.1 cm wide; quiver is 43.4 cm long and 14.1 cm wide.

108. Cat. No. 2001–01–126

Bow Case and Quiver

Tibet, eighteenth and nineteenth centuries

This bow case and quiver set is similar to Mongol types in form and is decorated with scenes like those depicted in traditional Tibetan temple paintings (Beer 1999; LaRocca 2006: 192–93). Iron tacks hold the leather covering to the wooden frame of the bow case. The leather surface is completely covered with painted dragon and floral motifs. The quiver has leather partitions to separate the arrows. Both have leather thongs for attachment to belts. Bow case is 60.9 cm long and 38.1 cm wide; quiver is 50.8 cm long and 29.2 cm wide.

106. Buryat Mongol bow case and quiver (Cat. No. 1998–0164).



107. Tibetan bow case and quiver set (Cat. No. 2004–01–095).



108. Bow case and quiver from Tibet (Cat. No. 2001-01-126).



Crossbows and Related Equipment

Southeast Asia, twentieth century

Although varying by culture and locality, the crossbows of mainland Southeast Asia tend to follow the same basic pattern (Witte 1967; Tayanin and Lindell 1991: 37–42). The bow section, carved of a single piece of wood, fits through an opening in the front of the stock. The wooden stock has a channel carved into the top to hold the arrow; a trigger mechanism of horn, ivory, or hardwood fits through a slot in the grip section of the stock to catch and release the string. The small arrows used with these crossbows are of split bamboo, sharpened to a point at one end and slotted at the other. A bamboo leaf, folded into a triangular form, is placed into the slot to form the fletching and the split closed with plant-fiber wrapping. Simple bamboo tubes hold the arrows, which are usually tipped with poison.

109. Cat. No. 1992–0230

This crossbow from Thailand has a horn trigger mechanism, a twisted hemp string, and bands of woven bamboo around the bow on each side of the stock. The butt of the stock is turned downward. Stock is 48.2 cm long and 6.9 cm high; bow section is 123.3 cm long, 4.0 cm wide at midlimb, and 2.5 cm thick at midlimb.

110. Cat. No. 2001–05–004A

A Cambodian crossbow with decorative carving covering the stock, the front of which is split into a curved V-shape. Horn trigger mechanism and twisted hemp string. Stock is 90.1 cm long and 13.3 cm high; bow section is 86.2 cm long, 5.1 cm wide at midlimb, and 1.5 cm thick at midlimb.

111. Cat. No. 1998–0208

Quiver and crossbow arrows from Vietnam or Cambodia. The top of the quiver is decorated with geometric designs in black paint; the surface of the bamboo has been shaved off the remainder of the tube. Quiver is 33.8 cm long and 2.4 cm in diameter. Arrows are 38.1 cm long.

109. Crossbow from Thailand
(Cat. No. 1992-0230).



110. Cambodian crossbow (Cat. No. 2001-05-004A).





111. Quiver and crossbow arrows from Vietnam or Cambodia (Cat. No. 1998-0208).

Target-Archery Equipment

Indonesia, early twentieth century

Although ancient Indonesian artworks frequently depict archers, during later historic periods the use of the bow and arrow throughout the archipelago was relatively limited. Self bows were used by some groups for hunting and combat, but in most of the region other weapons were favored (Draeger 1972; Simmonds 1959). Traditional sport archery has retained its popularity, particularly in Java where distinctive target bows are used. Javanese archers use self bows of horn, wood, or bamboo, with cylindrical grips that function as arrow rests. The bows often have detachable limbs. Arrows are made of bamboo with conical target heads and bulbous nocks with flattened sides for use with a pinch draw. Archers shoot from a cross-legged seated position, with the bow held horizontally (Tanuwidjaja 1964).

112. Cat. No. 1995–0737

Javanese target bow of water-buffalo horn. The limbs are detachable, and when the bow is assembled they are held in place by the grip. The wooden grip is covered with lacquered thread and has a brass band and red paint at each end. The limbs taper toward the tips, which are separate pieces of horn spliced into the limbs; the splice is covered with red, wax-coated threads. The splice is unique in that the more force that is applied, the tighter it becomes. The tips gracefully flare back and have deep nocks. 120.3 cm long, 2.8 cm wide above grip, and 1.1 cm thick at midlimb.

113. Cat. No. 1992–0224

Typical Javanese target arrows with bamboo shafts; flattened-bulb self nocks; conical heads of rolled tin; and three-feather fletchings (hornbill feathers), which are glued on and wrapped with plant fibers. Decorated with yellow and brown paint between the feathers and gold bands above and below the fletchings. 61.2 cm long and 0.5 cm in diameter.

112. Javanese target bow (Cat. No. 1995-0737).



113. Javanese target arrows (Cat. No. 1992–0224).



Self Bow and Arrow

Andaman Islands, late nineteenth and early twentieth centuries

The bow was the primary weapon among the aboriginal groups of the Andaman Islands, which lie in the Bay of Bengal between India and Burma, and remains in use among those peoples still practicing a traditional hunting-and-gathering way of life (Man 1932: 175–76; Gibson 1986). Andaman bows are of two kinds, both of hardwood. On Little Andaman Island and a few other islands, a simple bow with tapered limbs is common; these bows often have curved limbs that give them an overall S-shape in profile. The bows commonly used on the Great Andaman Islands are even more distinctive. Always S-shaped, they have long, broad, paddle-shaped limbs that taper to points and a narrow, thicker handle section in the center. Those of the South and Middle Andaman are often decorated with carved criss-cross patterns; those of North Andaman are undecorated and a little shorter and have slightly broader limbs. Both bow forms frequently have cordage below the tips to aid in catching the bowstring, which is usually of twisted bark fibers. Arrows are of reed or wood and are unfletched; heads are of several forms made from hardwood, metal, bone, or shell.

114. Cat. No. 1992–0208

North Andaman Island. Cordage at each tip. 167.5 cm long; 7.0 cm wide at midlimb.

115. Cat. No. 1992–0217

This type of arrow, with a compound, detachable head, typically was used in the Andaman Islands for hunting wild pigs. The wood shaft has straight self nocks; the opposite end is hollowed to receive a short wooden foreshaft and bound with plant fiber. The compound head has a tip of ground iron with two iron barbs bound at the base; the binding is coated with red wax. This compound head is attached to a wooden peg that is lashed to the shaft by a double plant-fiber cord. Arrow is 89.3 cm long and 0.6 cm in diameter; head is 7.1 cm long.

114. & 115. Self bow and arrow from the Andaman Islands
(Cat. Nos. 1992-0208 and 1992-0217).



Self Bow, Quiver, and Arrows

Philippines, late nineteenth and early twentieth centuries

Bows used by the tribes of the Philippine Islands are of palm wood or bamboo, with tapered limbs, cross sections ranging from rounded to flat, and bowstrings of twisted plant fiber or bamboo (Krieger 1926; Kroeber 1928: 175–78). Arrows have long reed shafts with flat fletchings or none at all; heads are of palm wood, bamboo, or metal and can be simple or compound in form. Quivers are simple bamboo tubes or of bamboo with a basketry cap and a bamboo stake extending from the base so that it can be driven into the ground.

116. Cat. No. 1991–0938

A palm-wood self bow with convex cross section, vestigial shoulder nocks, and twisted plant-fiber string. 172.8 cm long, 3.2 cm wide at midlimb, and 1.4 cm thick at midlimb.

117. Cat. No. 1992–0277

Quiver of bamboo with bamboo projection at base; small bamboo handle bound on with bamboo strips. Woven rattan cap covered with black pitch. 124.2 cm long.

118. Cat. No. 1992–0302

This set of twelve arrows displays a variety of heads used in hunting and fishing. Included are long lanceolate and barbed blades and multipronged heads. All are of iron, except for one of the pronged points that is of bamboo (*top*). The arrow shafts are made of reed, with square nocks and flat three-feather fletchings attached with plant fiber; where the heads attach to the shafts, there is also plant-fiber wrapping as reinforcement. Length varies from 109.5 cm to 165.3 cm and diameter is 0.9 cm; heads range in length from 10.2 cm to 22.5 cm.

116. & 117. Self bow and quiver from the Philippines
(Cat. Nos. 1991–0938 and 1992–0277).



118. Arrows from the Philippines (Cat. No. 1992-0302).



Melanesian Archery Equipment

Melanesian bows are made of wood or sometimes bamboo, with bowstrings of twisted plant fiber or of flat strips of split rattan or bamboo. The long reed arrows are rarely fletched and may or may not have nocks, depending on the type of bowstring used. Inserted into the shafts are long wooden heads or foreshafts that may be plain or elaborately carved and painted; arrows with foreshafts have heads of wood, bamboo, or bone. Arrows are usually carried bundled in an archer's hand rather than in a quiver.

119. Cat. No. 1992–0271

An early twentieth-century self bow from Bougainville or Choiseul in the Solomon Islands (Cranstone 1961: figure 16b; Simmonds 1959: 71–72). Made of palm wood with flattened-oval cross section; limbs taper tonockless tips. The entire bow except for the tips is covered with red and orange woven orchid fibers. The fiber string is coated with a blackened gummy substance and permanently attached to one bow tip with gum; the ends of the string are wrapped with strips of yellow plant fiber. 189.3 cm long, 2.4 cm wide at midlimb, and 1.6 cm thick at midlimb.

120. Cat. Nos. 1992–0280 and 1992–0281A

Two characteristic Fijian self bows made of mangrove and featuring elegantly carved nocks. The long limbs are convex-oval in cross section and taper to the pointed tips. Late nineteenth and early twentieth centuries. **Cat. No. 1992–0280** (*left*) is decorated with carved geometric designs and measures 218.8 cm long, 3.1 cm wide at midlimb, and 2.3 cm thick at midlimb. **Cat. No. 1992–0281A** (*right*) has a deep groove along the belly; this is a common feature of Fijian bows made from mangrove root. The cavity is created by removal of the root's pith (Clunie 1985: 72). The bow is 170.2 cm long, 2.6 cm wide at midlimb, and 1.9 cm thick at midlimb.

121. Cat. No. 1992–0274

Black-palm bows with plaited rattan or cane knobs to hold the bowstring are one of the common forms used by the Papuan people of New Guinea (Frobenius 1901; Skinner 1964) during the early twentieth century. This example has moderately wide limbs that are convex-oval in cross section and tapered slightly toward the tips. Additional cane bands decorate the limbs. Flat bamboo string for use withnockless arrows. 194.0 cm long, 4.1 cm wide at midlimb, and 1.6 cm thick at midlimb.

122. Cat. No. 2002–26–079 and 2002–26–082

Bracers are common in Melanesia and are made in a number of different forms, including basketry cuffs, wooden rings, and coil-like varieties made from spiral vines (Cranstone 1961: 62–63; Edge-Partington 1969). These early twentieth-century examples from central Papua New Guinea are made of woven rattan and tortoise shell. Bracers are 13.5 cm and 12.0 cm high.



119. Self bow from the Solomon Islands (Cat. No. 1992-0271).



120. Fijian self bows (Cat. Nos. 1992-0280 and 1992-0281A).

121. & 122. Black-palm self bow (Cat. No. 1992-0274) and bracers
(Cat. Nos. 2002-26-079 and 2002-26-082) from New Guinea.



ARROWS

Papua New Guinea, mid-twentieth century

The arrows produced by the Papuan tribes of New Guinea rival those of many of the world's nontribal societies in terms of diversity and complexity of arrowheads (Skinner 2000). Numerous specialized heads are made, including multipronged heads for bird hunting and fishing, bamboo blades for hunting, and plain and barbed hardwood tips for warfare. The shafts are of reed,nockless, and rarely decorated; embellishment is saved for the foreshafts and heads, which often are elaborately carved and adorned with pigments and orchid-fiber wrapping. These arrows are sometimes used for ceremonial and exchange purposes, but they are also commonly used in combat.

Top to bottom:

123. Cat. No. 2001–05–001CC

War arrow, Eastern Highlands. Barbed palm-wood head decorated with red pigment. Tuft of fur wrapped in with plaited plant fiber under bottom set of barbs. Yellow and brown orchid-fiber wrapping at base. Plaited collar and bast wrapping below head. Arrow is 126.6 cm long and 1.3 cm in diameter; head is 34.8 cm long.

124. Cat No. 2001–05–001T

War arrow, Eastern Highlands. Barbed palm-wood shaft decorated with red pigment; yellow orchid-fiber wrapping over head and base and in plaited and wrapped rings between barbed sections. Plaited collar and wrapped bast below head. Arrow is 122.2 cm long and 1.1 cm in diameter; head is 37.8 cm long.

125. Cat. No. 2001–05–001D

War arrow, Eastern Highlands. Hardwood head with three sets of four long, trailing barbs in the middle and sets of shorter teeth on each side. Decorated with red pigment. Yellow orchid-fiber collar and bast wrapping below head; remnants of plant-fiber wrapping between barbs. Arrow is 140.5 cm long and 1.1 cm in diameter; head is 51 cm long.

126. Cat. No. 2001–05–001Y

War arrow, Kainantu area, Eastern Highlands. Palm-wood point with two bands of shallow, carved ridges; orange pigment covers all but the middle of the head; plaited and wrapped yellow orchid-fiber rings; plaited collar and wrapped bast below head. Arrow is 116.5 cm long and 1.0 cm in diameter; head is 36.1 cm long.

127. Cat. No. 2001–05–001U

A common war arrow with plain, spindle-shaped head of palm wood; plant-fiber reinforcement. Arrow is 121.5 cm long and 1.1 cm in diameter; head is 41.5 cm long.

128. Cat. No. 2001–05–001O

War arrow, Wahgi Valley/Mt. Hagen. Barbed point of carved palm wood; plaited plant-fiber collar. Arrow is 125.5 cm long and 1.0 cm in diameter; head is 37.5 cm long.

123.



124.



125.



126.



127.



128.



129.



130.



131.



132.



Arrows from Papua New Guinea (Cat. Nos. 2001-05-001CC, 2001-05-001T, 2001-05-001D, 2001-05-001Y, 2001-05-001U, 2001-05-001O, 2001-05-001Q, 2001-05-001G, 2001-05-001E, and 2001-05-001N).

129. Cat. No. 2001-05-001Q

War arrow, Southern Highlands. Carved palm-wood foreshaft and bone head; plaited plant-fiber collars. Arrow is 104.3 cm long and 1.0 cm in diameter; foreshaft and head are 34.5 cm long.

130. Cat. No. 2001-05-001G

War arrow, Amanab, West Sepik. Barbed bamboo head attached to a wooden foreshaft; thorns wrapped into various sections of the head. Foreshaft is carved and decorated with white and brown pigment. Plaited collar and bast wrapping beneath head. Arrow is 162.7 cm long and 1.1 cm in diameter; foreshaft and head are 39.5 cm long.

131. Cat. No. 2001-05-001E

Four-pronged bamboo head for bird hunting or fishing; plant-fiber wrapping. Arrow is 124.5 cm long and 0.8 cm in diameter; head is 23.2 cm long.

132. Cat. No. 2001-05-001N

Bamboo-bladed arrow commonly used in hunting. Bound to bamboo or light wood foreshaft with twine; plaited plant-fiber collars under head and foreshaft. Arrow is 105.5 cm long and 1.0 cm in diameter; foreshaft and head are 31.1 cm long.

5 ▶▶▶▶

Africa

The archery traditions of Africa are generally less well known than those of many other regions, and its bows are often thought of more in association with the continent's great ancient civilizations than with its tribal peoples. Studies of African weapons frequently overlook the bow and arrow in favor of more elaborate weapons or dismiss them as hunting tools. However, historic accounts and ethnographic studies provide evidence that the bow and arrow have traditionally held an important place in the complex weapons systems of many African peoples and that archery has a long and continued social and technological significance.

Among ancient African cultures, the Egyptians, Nubians, and Ethiopians were prominent for their mastery of archery on the battlefield. The importance of archery was particularly profound in Nubia, which was known as the "land of the bow." Military archery also played a significant role in some of the later kingdoms and empires that developed in West Africa, where archers formed a major infantry element in many armies (Spring 1993).

In more recent periods, projectile weapons such as spears and throwing knives have tended to predominate as weapons of war. Still, the folklore and histories of many African peoples describe archery-related feats both in the hunt and in battle, and the development of archery skills remains an important aspect of a boy's education in many traditional cultures (Figure 5.1). The bow and arrow are still commonly used in rural areas for hunting game and in some urban areas as an inexpensive but effective means of protection (Tukura 1994) (Figure 5.2).

The most widespread traditional bow form in Africa is a simple wood stave that is round in cross section and tapered toward the tips. Bows of flattened or grooved staves also occur frequently. African bows tend to be of moderate length, typically ranging from 100 to 170 centimeters, and are distinguished by a number of characteristic string-attachment techniques, including knotted, eyeleted, and indirect forms (Frobenius 1932; Leakey 1926).



Figure 5.1. A Ju|'hoansi elder teaches his grandson to use a bow and arrow. Kalahari Gemsbok National Park, South Africa, 1998. (Courtesy Peter Arnold, Inc./Alamy)



Figure. 5.2. A Maasai herdsman, armed with a bow and carrying a quiver of arrows, stands guard while his cattle cross the Mara River. Masai Mara National Reserve, Kenya, 1994. (Courtesy Images of Africa Photobank/Alamy)

Bowstrings usually are made of twisted sinew in eastern and southern Africa and of animal hide or plant material in the central and western regions. Bows are fairly plain; ornamentation usually is limited to animal-skin wrappings that provide decoration as well as support.

Arrows are made of reed or wood and have self nocks. Nocks are absent on arrows used with flat bowstrings. Fletching shows considerable variation, ranging from single whole feathers to numerous split quills. Leaf fletching is common in the Congo and parts of West Africa; unfletched arrows are common across Sudan and also occur among certain groups in other regions. Arrowheads are usually of iron and occur in a number of different shapes. A common form is an ogee blade with the two halves offset at a longitudinal ridge down the middle. Heads often have long tangs or roughened areas on the tips to hold poison. Without the use of powerful poisons, African arrows tend to be relatively weak and ineffective. Quivers are quite diverse in style and construction, ranging from simple hide pouches to wood and/or leather cylinders to basketry containers. Fine leatherwork quivers with intricate designs are typical of western Sudan.



133. Cat. No. 1992–0120A

Self Bow

Somalia, mid-twentieth century

A Somali bow (Grayson 1961) displaying the typical knotted string-attachment form found throughout Africa, in which knotted loops slip over simple tapered tips, with the excess string wrapped below the loop at one end. The string is made of two-ply sinew. The bow limbs are decorated with bands of giraffe tail hair. Round cross section with slight reflex at handle and decurve toward tips. 161.2 cm long and 2.5 cm in diameter.

134. Cat. No. 1992–0145

Self Bow

West Africa/Western Sudan, early twentieth century

Example of a variation on the knotted-attachment form shown in **Cat. No. 1992–0129A**. Bow has asymmetrical tips (one flared and one tapered) and a twisted leather bowstring. Round cross section. 142.4 cm long and 1.9 cm in diameter.



133. Somali self bow (Cat. No. 1992-0120A).



134. West African self bow (Cat. No. 1992-0145).

135. Cat. No. 1992–0134A

Self Bow

West or Central Africa, nineteenth and early twentieth centuries

A bow with an eyelet attachment. There is a hole in one tip through which the twisted leather string is attached; at the other end the string is hitched over a peg nock and rests on symmetrical shoulders. Excess bowstring is attached to rattan lacings at the center of the bow. The bow stave has a grooved oval cross section and is decorated with small bands of brass and woven rattan. 165.8 cm long and 2.8 cm wide at midlimb.

136. Cat. No. 1992–0147

Self Bow

Central Africa, early twentieth century

The two-strand leather string attaches through perforations at both tips of this bow; the tips flare slightly beyond the attachments. Excess string wrapped below each perforation. The remainder of the bow is covered with a flat leather thong. Round cross section. 168.1 cm long and a maximum diameter of 2.8 cm.

137. Cat. No. 1992–0146

Self Bow

Nigeria, early twentieth century

The twisted leather string on this bow passes over a notch in the end of the flat tip and then through an eyelet; the string is knotted below the hole. Leather wrapping holds the knot in place. Round cross section. 104.5 cm long and a maximum diameter of 2.3 cm.

138. Cat. No. 1992–0137

Self Bow

Nigeria, early twentieth century

A technique similar to the frontal-attachment technique was used to secure the string to one end of this bow. Instead of the leather string passing over a notch at the end of the bow, it attaches to a notch carved on one side of the tip. The notched tip is covered with leather; the other tip is bare and carries a simple knotted-loop attachment. Bands of lizard skin and rawhide are sewn on the stave. Round cross section. 168.2 cm long and a maximum diameter of 2.5 cm.



135. West or Central African self bow (Cat. No. 1992-0134A).



136. Central African self bow (Cat. No. 1992-0147).



137. Nigerian self bow (Cat. No. 1992-0146).



138. Nigerian self bow (Cat. No. 1992-0137).

139. Cat. No. 1992–0122A

Self Bow

Congo Region, early twentieth century

A small bow with an indirect string attachment, a technique common in Central and West Africa. The bowstring is a flat bamboo strip attached to the tips by leather thongs. Irregular knobs at each end of the bamboo prevent the leather thongs from slipping off; the tips have symmetrical shoulders and a deeply carved band to hold the leather attachments. Oval cross section. 93.7 cm long and 2.4 cm wide at midlimb.

140. Cat. No. 1992–0143

Self Bow

Congo Region, early twentieth century

Self bow with an indirect string attachment. Leather thongs attach the bamboo bowstring to the bow, and horn washers help hold the thongs in place at the end of the tapered tips. Large band of lizard skin sewn on center portion of bow stave. Probably made by the Baluba. Round cross section. 118.4 cm long and a maximum diameter of 2.2 cm.

141. Cat. No. 1992–0111

Quiver and Arrows

Nigeria/Cameroon, late nineteenth and early twentieth centuries

This fine quiver is made of wood with a complicated covering of woven, incised, and cut leather that creates intricate geometric designs in variegated browns and whites. Long leather pieces of fringe are woven into the leather coverings at the top and base. Matching leather cap; leather carrying strap attached to quiver by braided leather thongs. The arrows (five shown; eight total) are unfletched and have darkened sinew bindings over and beneath the nocks and as reinforcement at the distal ends; several have decorative carving on the shafts. Most of the tanged iron heads have barbed ogee blades; one head is a four-sided needle with fine chiseling and a sinuous tang with needlelike barbs. The tang of one of the ogee blades has poison present beneath sinew wrapping. Quiver and arrows probably made by the Hausa. Similar quivers and arrows are shown in Agthe (1985) and Frobenius (1932). Quiver is 70.2 cm long and 9.4 cm in diameter. Arrows are 60.0–65.2 cm long; heads range in length from 9.5 cm to 13.7 cm.



139. Self bow from the Congo (Cat. No. 1992–0122A).



140. Self bow from the Congo (Cat. No. 1992–0143).

141. Quiver and arrows from Nigeria/Cameroon (Cat. No. 1992-0111).



142. Cat. No. 1998–0222

Quiver and Arrows

West Africa, late nineteenth and early twentieth centuries

A quiver of soft leather with alternating molded ridges and bands of palm-fiber embroidery encircling the body. These features are characteristic of the leatherwork tradition of the Mande people who inhabit the savanna plateau of western Sudan (Frank 1998: 66; Spring 1993: figure 37). Inner cylinder of rolled rawhide. The long cap is of the same design and material as the body; on one side of the cap is a large leather button with palm-fiber embroidery. The accompanying arrows (two shown; four in total) have reed shafts, small U-shaped nocks, and no fletching. The leaf-shaped iron heads are of ogee form with long tangs and multiple chiseled barbs. Fine plant fiber or sinew thread is wrapped below the nocks and at the base of the heads. Quiver is 64.5 cm long and 4.6 cm in diameter. Arrows are 54.5 cm long and 0.7 cm in diameter; heads are 13.5–14.5 cm long.



142. West African quiver and arrows (Cat. No. 1998–0222).

143. Cat. No. 1998–0229

Quiver and Arrows

Burkina Faso/Northern Ghana, mid-twentieth century

An open quiver of wood with a covering of molded, wrapped, and woven leather in black and white; a two-tone brown diamond motif is painted at the top. The five reed arrows have no fletching or nocks; pointed iron heads with barbs chiseled into the sides; plant-fiber reinforcement extends from shaft onto tang. Most likely made by either the Mossi or the Mande. Quiver is 100.1 cm long and 5.8 cm in diameter. Arrows are 57.8–62.3 cm long and 0.5 cm in diameter; heads are 6.1–7.5 cm long.

144. Cat. No. 1992–0133

Crossbow, Arrows, and Quiver

West Africa, nineteenth century

Simple crossbows (Figure 5.3) were common in equatorial West Africa during the historic period but are not known to have been used elsewhere on the continent. Their similarity to certain European designs might indicate a foreign origin for this African bow form (Balfour 1910). The example shown here is typical of the bows used by the Fan (Fang), who occupy portions of Cameroon, Equatorial Guinea, and Gabon, and by the Aka people of southeastern Cameroon (Harrison 1988). The long wood stock is split for most of its length, from the tail to close to the front; the wood self bow is inserted through a rectangular hole at the front of the stock and held in place with a wooden wedge. A small wooden peg extends from the lower half of the stock up through the upper half. It releases the bowstring when the two limbs are brought together. There is a slight groove at the top of the stock to guide the small arrow, which is lightly affixed to the stock with a small dab of pitch. The nineteen arrows are made of sharpened palm-leaf stems that are flattened lengthwise; small leaves are inserted into a slit in the shaft as fletching. The antelope-skin quiver holds the arrows and extra leaves for fletchings. Crossbow stock is 123.7 cm long, and bow is 60.0 cm long. Arrows range in length from 29 cm to 31.5 cm and are 2.5 cm in diameter. Quiver is 20.8 cm long and 11.2 cm wide.

143. Quiver and arrows from Burkina Faso/Northern Ghana (Cat. No. 1998-0229).



144. Crossbow, arrows, and quiver from West Africa (Cat. No. 1992-0133).





Figure 5.3. An Aka hunter aims his crossbow. Note how the two halves of the stock are held apart; the trigger will be released as the sections are gently squeezed back together. (Courtesy Michael Harrison/Society of Archer-Antiquaries)

145. Cat. No. 1992–0132 and 1995–0435

Archery Gear

Congo Region, late nineteenth and early twentieth centuries

Typical archery gear of the Mbuti, the so-called pygmy people who live in the Ituri Forest of the north-eastern Congo River basin. The Mbuti use bows and arrows to hunt forest antelope, monkeys, and other small game (Turnbull 1965). The self bow is round in cross section with squared peg nocks and monkey tail fur covering each limb. The ends of the flat bamboo bowstring are shredded and woven back through a hole in the solid portion to form the string loop. The arrows (four shown; eleven in total) are of reed and wood with remnants of folded-leaf fletching inserted in a split in the shaft. There are no nocks, but the shafts are carved near the nock ends for a more secure grip with the thumb and index finger. The arrows have leaf- and needle-shaped iron heads, some of which are tanged and others socketed. Wrist guards such as the one shown here are prized items of Mbuti archers; they are usually made of monkey skin and stuffed with fur. Bow is 83.8 cm long and 1.5 cm in diameter. Arrows range in length from 46.5 cm to 53 cm and in diameter from 0.4 cm to 0.5 cm; heads range in length from 6.0 cm to 8.4 cm. Wrist guard is 11.5 cm long and 3.8 cm thick.

146. Cat. No. 1992–0114

Quiver and Arrows

Congo Region, late nineteenth and early twentieth centuries

Open quiver, made of woven reed and plant fibers and stained dark brown. Two woven loops on the side for a carrying strap. The arrows (three shown; eleven in total) have straight reed shafts that flare slightly at the proximal ends; no nocks or fletching present. Long, needle-shaped wooden heads are inserted into the shafts and carved at the tips to hold poison; pitch-covered sinew reinforcement on shafts. Possibly made by the Azande, Nzakara, or Mbuti people. Similar quivers and arrows can be seen in Agthe (1985) and in the American Museum of Natural History African Ethnographic Collection (AMNH) (90.1/2631–90.1/2634). Quiver is 58.2 cm long and 16.5 cm wide. Arrows are 49.3–51.0 cm long and 0.4 cm in diameter; heads range in length from 16.3 cm to 18.7 cm.

145. Archery gear from the Congo (Cat. Nos. 1992–0132 and 1995–0435).



146. Quiver and arrows from the Congo (Cat. No. 1992-0114).



147. Cat. No. 1992–0123

Bow, Quiver, and Arrows

Republic of the Sudan, mid-twentieth century

Equipment collected from a hunter of the Mundari (Mandari), a pastoral group in southern Sudan. The self bow has typical tapered limbs and round cross section; lizard-skin wrapping at one end; and a four-strand sinew bowstring. The open, cylindrical quiver is made from wildebeest (gnu) neck skin with the mane attached; two bamboo rods are inserted along the mane section to serve as stiffeners. Rawhide base and leather carrying strap. The arrows (eight shown; twelve in total) have wooden shafts with deep, straight self nocks. Most of the nocks are reinforced with sinew wrapping; the others are reinforced with lizard skin. The tanged iron heads are of barbed ogee and needle forms; sinew reinforcement on the shaft behind the points. Bow is 164.2 cm long and has a maximum diameter of 2.6 cm. Quiver is 72.7 cm long and 6.0 cm in diameter at the opening. Arrows range in length from 63.5 cm to 78.7 cm and have a diameter of 1.0 cm; heads are 9.8–17.4 cm long.

148. Cat. No. 1992–0120

Quiver and Arrows

Somalia, twentieth century

Characteristic quiver and arrows of the southern Somali archer (Grayson 1961; Spring 1993: 103). The distinctive hourglass-shaped quiver is of carved wood with stretched rawhide forming the base; there is a single X-design incised across the bottom. Wooden cap with carved decoration around edges. Center leather band and attached bag of tooled leather for carrying extra arrowheads, tools, and poison. The four arrows have wooden shafts that flare toward the head and that are enlarged toward the nock. Sinew-reinforced, U-shaped self nocks; four vulture feathers are glued in radial form as fletching; fluffy down present at bottom of fletching on two arrows. Iron heads are inserted into the shafts and reinforced with sinew. One lanceolate head for hunting small game such as gerenuk and dik-dik; three triangular broadheads with long tangs carrying poison for hunting larger game. Quiver is 69.5 cm long and 6.7 cm in diameter at top. Arrows range in length from 59.5 cm to 64.4 cm and are 0.8 cm in diameter. Heads range in length from 7.5 cm to 14.2 cm.

147. Mundari bow, quiver, and arrows (Cat. No. 1992-0123).



148. Somalian quiver and arrows (Cat. No. 1992-0120).



149. Cat. No. 1992–0117

Quiver and Arrows

Kenya, twentieth century

A quiver and arrows collected from a Maasai hunter in Kenya. East African pastoralists such as the Maasai traditionally scorned the bow for its association with hunting and farming, a way of life they considered lowlier than cattle keeping. But as herd sizes have decreased as a result of drought, disease, and loss of land, many pastoralists have been forced to adopt a mixed subsistence that includes hunting and use of the bow and arrow (Spring 1993: 116–17). The equipment here is similar to that used by the Okiek, or Dorobo people (AMNH 90.1/5879, 90.1/334, 90.2/3177), a hunting-and-gathering group that has long had a symbiotic relationship with the Maasai. The cylindrical wooden quiver is covered with thick bands of animal hide; the bands at top and bottom are painted red, and there is a strip of zebra skin below the cap. The arrows (four shown; twelve in total) have wooden shafts; radial three-feather fletchings (vulture feathers), glued on and wrapped with sinew; and tanged iron heads with unilateral or bilateral basal barbs. Remnants of poison on some of the tangs (covered with cellophane tape). Quiver is 73.5 cm long and 6.5 cm in diameter. Arrows are 71.2 cm long and 0.8 cm in diameter; heads are 10.0–11.5 cm long.

150. Cat. No. 1992–0148

Bow and Arrows

Kenya, mid-twentieth century

A bow and four arrows obtained from a Wakamba (Kamba) goatherd in 1960. The Wakamba are a farming-and-herding people renowned for their fine archery skills and equipment. Unlike most groups in East Africa, for whom the spear historically has been the main weapon of warfare, the Wakamba have depended on the bow. They explain their affinity for archery as being a result of their origin as a hunting people (Hobley 1971: 42). The bow shown here is made of yellow-brown wood; it is round in cross section and tapered to the tips; two-strand sinew bowstring in knotted loops over the tips with the extra string wound beneath one loop. Three of the arrows have reed shafts with long wooden heads inserted into the ends; the fourth has a wood shaft with a long, leaf-shaped iron head. All the shafts are bound with sinew where the heads are attached and have narrow, parallel-sided self nocks. The three- and four-feather radial fletching is glued on and wrapped with plant fiber. The wooden heads are decorated with stain to create a negative linear design. Bow is 143.3 cm long and 2.2 cm in maximum diameter. Arrows range in length from 53.5 cm to 58.2 cm and have a diameter of 0.7 cm; head length ranges from 8.7 cm to 14.5 cm.

149. Kenyan quiver and arrows (Cat. No. 1992-0117).



150. Wakamba bow and arrows (Cat. No. 1992-0148).



151. Cat. No. 2000–0246

Bow, Quiver, and Arrows

Southern Africa, early twentieth century

A traditional hunter-gatherer group of Africa are the Ju|’hoansi (formerly “San” and popularly known as “Bushmen”). During the recent historic period, this group has inhabited the Kalahari Desert of southern Africa. Although their bows and arrows are relatively small and weak, Ju|’hoansi archers are able to fell giraffes, large antelope, and other game with a combination of extraordinary tracking abilities and lethal poisons (Tanaka 1980). The example shown here is a typical Ju|’hoansi bow: round cross section, tapered tips, sinew wrapping at center and ends, and bowstring of twisted sinew. Cylindrical quiver of rough bark, wrapped with bands of sinew; base and cap of thin, stretched animal skin; twisted-hide carrying strap. The three reed arrows are unfletched and have U-shaped nocks, which are reinforced with sinew. The barreled wood foreshafts are also reinforced with sinew. The detachable heads are inserted into small pieces of sinew-wrapped reed at the end of the foreshafts. The two needle-shaped heads are made of horn; the third is an iron broadhead that has a long, sinew-wrapped tang for application of poison. Bow is 79.3 cm long and 1.4 cm in diameter; quiver is 66.5 cm long and 4.3 cm in diameter. Arrows range in length from 44.5 cm to 54.1 cm and have a diameter of 0.6 cm; heads range in length from 3.8 cm to 8.4 cm.

152. Cat. No. 1992–0115

Arrows

Angola, late nineteenth and early twentieth centuries

Although iron heads predominate in African arrows, long wooden heads occur frequently. The tips often have carved barbs or are grooved or wrapped to hold poison. In this set of six arrows, the wooden heads are inserted into wooden shafts that have V-shaped nocks and radial three-feather fletchings are attached with sinew. Arrows are 58.5–67.5 cm long and 0.7 cm in diameter; heads are 20.5–25.5 cm long.

151. Ju|'hoansi bow, quiver, and arrows (Cat. No. 2000–0246).



152. Arrows from Angola (Cat. No. 1992-0115).



153. Cat. No. 1992–0157

Arrows

Zambia, late nineteenth century

This set of five arrows displays a fletching technique common in central Africa: split feathers are fastened first at the nock end so that they project beyond the end of the shaft; the feathers are then bent back and the bottoms of the quills attached to the shaft. Seven to nine feathers, with sinew bindings, are used on this set. The reed shafts have deep, squared nocks; braided rattan bands serve as reinforcements for the nocks. The tanged iron heads are inserted into the shafts; two are reinforced with sinew wrapping and two with braided plant fiber and wire. A similar set of arrows is described by Lumsden (1992). Arrows are 91.5–97.9 cm long and 1.1 cm in diameter; head length ranges from 14.2 cm to 17.4 cm.

154. Cat. No. 2000–0239B–D

Arrows

Zimbabwe, twentieth century

A set of three arrows with single-feather fletchings (guinea fowl feathers). The feather is attached with sinew at the bottom, and the remainder is secured by sinew thread that is sewn through the quill at several points and perforations in the shaft. The wood shafts have deep, parallel-sided nocks reinforced with sinew. Carved curvilinear decoration with black pigment on shafts between the fletching and the nock. Tanged ogee-type heads in a leaf shape are inserted into the shafts; the shafts are bound with sinew where the heads are attached to the shafts. Arrows are 74.2–78 cm long and 0.9 cm in diameter; heads range in length from 9.8 cm to 15.1 cm.

153. Arrows from Zambia (Cat. No. 1992–0157).



154. Arrows from Zimbabwe (Cat. No. 2000–0239B–D).



Archery Accessories

West Africa, nineteenth and early twentieth centuries

There are a number of standard bow-shooting techniques used in Africa, and African archers, particularly in western and central Sudan, utilize some interesting release aids and protective devices. One technique involves the use of a bracer knife, which functions as a combination hand bracer and dagger. Usually of metal, the upper part of the device is oval and ring-shaped, and the lower half is elongated and pointed. The upper part fits in the archer's pulling hand or over the fingers with the dagger facing downward. When the bowstring is pulled, the friction is borne by the metal hand section rather than by the archer's fingers (Frobenius 1932: 39–40; Tukura 1994: 155). The use of a protective ring worn on the archer's thumb is also found in Sudanese Africa, although it is not clear whether the rings were used with the "thumb lock," with which archers' thumb rings are usually associated, or with other release techniques.

155. Cat. No. 1995–0896 and Cat. No. 1995–0895

Two nineteenth-century bracer knives. The bronze knife (*top*) has a loop handle and flat blade. Incised linear decoration and circle motifs on lower handle and upper blade (25.5 cm long and 4.1 cm wide at handle). The iron knife (*bottom*) has an oval handle with incised decoration and ridged blade (25.2 cm long and 4.3 cm wide at handle).

Clockwise from top left:

156. Cat. No. 2001–01–084

A conical thumb ring of rose-colored granite recovered from a slag heap at the site of the ancient city of Meroë, which was the capital of the Nubian kingdom of Kush from about 538 B.C. to A.D. 350. A similar ring was found on an individual's thumb at a Meroë gravesite; examples of these types of rings have also been recovered from other ancient sites in Sudan (Kronenberg 1962). 2.5 cm high and 4.3 cm in diameter.

157. Cat. No. 1995–0438

A simple coiled archer's ring of bronze from Nigeria; four continuous coils. Late nineteenth and early twentieth centuries. 1.5 cm high and 2.5 cm in diameter.

158. Cat. No. 1995–0432

Double iron thumb ring with braided-leather thong and tab attachment. Nigeria, late nineteenth and early twentieth centuries. 1.3 cm high and 3.5 cm in diameter; thong is 12.0 cm long.

155. Bracer knives from West Africa (Cat. Nos. 1995–0895 and 1995–0896).



Archer's rings (Cat. Nos. 2001–01–084, 1995–0438, and Cat. No. 1995–0432).

156.



157.



158.



6 ▶▶▶▶

The Americas

At the time of European contact in the Americas, the bow was in widespread use for hunting and warfare by most peoples of the western hemisphere. Various types of specialized archery equipment were also used for ceremonial purposes, traditional games, and other activities (Figure 6.1). The self bow dominated—it is the only form known in Central and South America and in North America east of the Mississippi River—and occurred in a variety of shapes and sizes. Longbows were common in the woodlands of North America, and extremely long examples were typical among the tropical forest peoples of South America. Shorter self bows were used in southern South America, Mesoamerica, and the North American Plains and Southwest. Straight-limbed self bows, made in a wide range of cross-sectional forms, were a standard design, but recurves, decurves, and other mechanical variations were also known, particularly in North America.

Figure 6.1. Karl Bodmer's famous nineteenth-century portrait of Pehriska-Ruhpa, a Hidatsa leader, vividly depicts the use of the bow in a Native American ceremony. The image illustrates a dance of the Dog Society, a warrior league common to a number of tribes of the North American Plains. Bows and arrows have been used in many traditional Native American performances as symbols of their importance in subsistence and in warfare. *Courtesy Library of Congress, Prints and Photographs Division*





Figure 6.2. An Ashaninka man fishes with bow and arrow in the Jaminawa/Envira Indigenous Land, Brazil, 1992. (Courtesy Network Photographers/Alamy)

Although use of the self bow was widespread, reinforced and composite bows were also utilized by native North Americans during the historic period. Short wooden bows with sinew backing were used by the horse archers of the Plains, and sinew-backed bows with wide, flattened limbs were common to tribes of northern California and adjacent areas. Bows of horn or antler backed with sinew were made in the High Plains and Plateau regions of North America, but they were relatively rare. In arctic North America, bows usually were constructed of one or more pieces of wood, antler, musk ox horn, or bone that were bound together and reinforced with a complex system of unglued sinew cords.

Native North American bows were often decorated with painted geometric designs. In South America, woven or wrapped plant-fiber embellishments and feather trimmings were typical. Arrows of the Americas varied depending on available materials, function, and the type of bow used. Shafts were made of reed or wood with two or three feathers (tangential or radial) for fletching. Stone heads, later replaced by metal ones, were common on arrows from North America, Mesoamerica, and southern South America. The extremely long arrows of the South American rainforests were tipped with several specialized heads, usually made from bamboo or wood. Baglike quivers of animal skin or woven plant materials were widespread throughout the Americas, and combined bow case and quiver sets were common, especially among the horse archers of the Plains and adjacent

areas. The arrows of tropical South America were usually carried in the archer's hand because their length made quivers impractical. Poisoned heads, however, were often carried separately in small tubelike containers.

The bow was used by some native groups of the Americas until the late historic period, but in many areas it was replaced by firearms for hunting and warfare at a fairly early date. Traditional archery techniques have survived among certain groups, but the bows and arrows made today are usually for traditional ceremonial or sport activities or sold as native craftworks. The traditional archery of the aboriginal people of the Americas is most intact today among the indigenous groups of tropical South America, whose inaccessible habitations have prevented foreign intrusion until quite recent times. Many of these groups now live within protected reserves that allow them to follow traditional practices, and the use of the bow remains a routine part of their lifestyle (Figure 6.2).

SELF BOWS

Hardwoods such as hickory, ash, and black locust were popular bow woods in the eastern woodlands of North America; yew was commonly used along the Pacific coast. Osage orange, considered one of the finest bow woods, was favored by tribes along the Mississippi River. Bows of southwestern North America were by necessity made of brittle woods such as willow, elderberry, and cottonwood root. Because the bows were constructed with such weak materials, bowmakers often heated and bent the wood into a deflexed form to ease the strain on the limbs (Allely and Hamm 2002: 194). Palm wood, beech wood, and letterwood were among the typical materials used to construct South American bows (Métraux 1949).



159. Cat. No. 1994–0970

Bow

Canadian Subarctic, late nineteenth and early twentieth centuries

Birch; long, straight limbs with thick, oval cross section. Double side-notch self nocks. A projecting wooden string guard, which acts as a bracer to protect the archer's wrist from the slap of the bowstring, is bound to the center of the bow with leather thongs. Twisted sinew string. Typical of the Kutchin and related tribes (Mason 1893: plate 64; Crow and Obley 1981: figure 2; Fitzhugh and Cromwell 1988: figure 67). 139.3 cm long, 2.5 cm wide at midlimb, and 1.8 cm thick at midlimb.

160. Cat. No. 1995–0740

Bow

Northwest Coast, Alaska/Canada, late nineteenth and early twentieth centuries

Yew; short, wide, straight limbs; thick, elliptical cross section with ridge running along belly. Peg-shaped nocks. Grip is constricted and thickened; it is wrapped with twisted plant fiber and covered with red pitch. Back has carved and painted raven figures; ridge on belly is highlighted with red paint. This bow was made by the Haida; similar Tlingit bows are illustrated in Fitzhugh and Cromwell (1988: figure 376) and can be seen in the American Museum of Natural History North American Ethnographic Collection (AMNH) (E/2546 and 19/1170). 109.5 cm long, 5.5 cm wide at midlimb, and 1.5 cm thick at midlimb.

161. Cat. No. 1995–0679

Bow

Southeastern United States, late nineteenth and early twentieth centuries

Osage orange; straight limbs and elliptical cross section. Asymmetrical peg-shaped self nocks. Back decorated with painted half-circle and dot designs in black. Grip wrapped with twisted plant-fiber cordage. Made by the Choctaw. 142.8 cm long, 3.8 cm at midlimb, and 2.0 cm thick at midlimb.

162. Cat. No. 1995–0745

Bow

Southeastern United States, late nineteenth and early twentieth centuries

Locust; long, narrow limbs with slight recurve in tips; thick, rectangular cross section. Triangular peg-shaped nocks. Surface polished with varnish but otherwise undecorated. Twisted sinew bowstring is not original. Made by the Creek. 167.6 cm long, 2.8 cm wide at midlimb, and 1.5 cm thick at midlimb.

163. Cat. No. 1995–0680

Bow

American Great Lakes Region, late nineteenth century

Ash; straight limbs with elliptical cross section. Limbs are long and somewhat paddle-shaped with widest part closest to handle and tapered tips. Constricted handle. One side-notch nock and one double-notch nock with two shallow accessory notches underneath. Decorated on back and belly with wide sections of blue and red paint. Probably made by the Sioux or Ojibwa. 138.5 cm long, 5.0 cm wide at midlimb, and 2.3 cm thick at midlimb.

159. Bow from the Canadian subarctic (Cat. No. 1994–0970).



160. Bow from the Northwest Coast of Alaska/Canada (Cat. No. 1995–0740).



161. Bow from the southeastern United States (Cat. No. 1995–0679).



162. Bow from the southeastern United States (Cat. No. 1995–0745).



163. Bow from the Great Lakes Region (Cat. No. 1995-0680).



164. Cat. No. 1995–0662

Bow

American Plateau, early twentieth century

Ash; straight limbs with slight recurve in tips. Limbs are broadest on each side of the handle and tapered toward tips. Peg nocks; constricted grip. Back decorated with pattern of triangles and diagonal lines in orange, green, and black. Made by the Modoc. 130.8 cm long, 7.6 cm wide at midlimb, and 0.6 cm thick at midlimb.

165. Cat. No. 1995–0681

Bow

American Great Plains, late nineteenth century

Hickory; straight limbs with recurved tips; relatively thick, rectangular cross section. Symmetrically notched nocks at each end; one tip wrapped with deerskin thong below nock. Grip wrapped with black cloth and deerskin thong. Double-strand twisted sinew string attached with a slipknot at one end and half hitches at the other. Remnants of painted decoration (red on belly and blue, brown, and white on back). Made by the Lakota Sioux (AMNH 50/3072A). 129.5 cm long, 2.7 cm wide at midlimb, and 1.8 cm thick at midlimb.

166. Cat. No. 1991–1033

Bow

American Southwest, early twentieth century

Elderberry or willow; straight limbs with decurved tips; thick, lenticular cross section. Double side-notch self nocks. Limbs painted green-blue with red triangular motifs on belly and light red with black half circles on back. Twisted sinew bowstring is not original. Made by the Diegueño (Kumeyaay) (AMNH 50/4107A and 50.1/4038A). 112.0 cm long, 3.2 cm wide at handle, and 2.5 cm thick at handle.

167. Cat. No. 1995–0729

Bow

American Southwest, late nineteenth and early twentieth centuries

Cottonwood; deflexed limbs and recurved tips; elliptical cross section. Wide, side-notch nocks. Decorated with dark blue and red triangular designs on white background that forms an hourglass pattern. Tips wrapped with black and red wool yarn to cover splintering that resulted from bending wood while green; grip bound with white cloth. Twisted sinew bowstring. Some restoration to yarn wrapping and bowstring. Made by the Yuma-Mojave (AMNH H/15527 and 1/4685). 118.5 cm long, 4.5 cm wide at midlimb, and 1.5 cm thick at midlimb.

164. Bow from the American Plateau (Cat. No. 1995-0662).



165. Bow from the American Great Plains (Cat. No. 1995-0681).



166. Bow from the American Southwest (Cat. No. 1991–1033).



167. Bow from the American Southwest (Cat. No. 1995–0729).



168. Cat. No. 1994–0247

Bow

Southeastern Mexico, early twentieth century

Made from *lignum vitae* (ironwood) and polished to a rich luster. Straight, slender limbs with a round cross section; tapered tips. Twisted plant-fiber bowstring covered with black wax; wrappings of blackened string at each tip of the bow hold the bowstring loops in place. Made by the Lacandon Maya (Tozzer 1907; Nations and Clark 1983). 153.5 cm long and 1.5 cm thick at grip.



168. Bow from southeastern Mexico (Cat. No. 1994–0247).

169. Cat. No. 1991–0919

Bow and Arrow

Amazon Basin, Brazil, late twentieth century

Palm wood; thin, lenticular cross section; long limbs that taper to blunt tips; side-notch nocks. Partially covered with plaited decoration and trimmed with brown and orange feathers attached by cotton thread. Made by the Karitiana, Rondônia state. 205.3 cm long, 2.3 cm wide at midlimb, and 1.1 cm thick at center.



169. Bow from the Amazon Basin (Cat. No. 1991–0919).

170. Cat. Nos. 1995–0027 and 1995–0711

Bows

American Southwest or Great Plains, late nineteenth century

Two reinforced bows from the Plains region decorated with red paint. Made from mesquite, with sinew lining covering the backs and extending over the notched tips. Both have bowstrings of twisted sinew.

Cat. No. 1995–0027 (*top*) has retained its angular form and features blue-colored sinew wrapping over the grip. The tips are wrapped with sinew; cord wrappings below the tips act as nocks. (Bow is 108.2 cm long, 2.7 cm wide at midlimb, and 0.7 cm thick at midlimb.) **Cat. No. 1995–0711** (*bottom*) exhibits curved limbs resulting from heavy use and is decorated with red paint and spiral bands of sinew. Symmetrical side-notch self nocks. (Bow is 111.4 cm long, 2.5 cm wide at midlimb, and 0.7 cm thick at midlimb.) Comparative examples of this bow form can be seen in the AMNH catalog (1/5425, 50/8344, 50.1/6939, and 50.1/5426) and among the ethnographic collections of the Peabody Museum at Harvard (PMH) catalog (51–51–10/33251).



170. Plains-style reinforced bows (Cat. Nos. 1995–0027 and 1995–0711).

171. Cat. Nos. 1994–0904, 1994–0906, and 1994–0918

Bows

Northern California, late nineteenth and early twentieth centuries

Three examples of California-style reinforced bows. **Cat. No. 1994–0904** (*top*) is an example made by the Tolowa. It is painted with an opposing arrow design in blue, red, and black on back. Grip wrapped with deerskin; twisted sinew bowstring. (Bow is 93.2 cm long and 4.7 cm wide at midlimb.) The yew stave of **Cat. No. 1994–0906** (*middle and detail*) is both backed and wrapped with sinew; the tips are also wrapped with sinew and trimmed with fur, which may have served to silence the bowstring when it is released (Pope 1923: 78–79). Painted orange with dark blue spiral line. Possibly made by the Pomo (Barrett 1952: plate 22). (Bow is 79.5 cm long, 4.0 cm wide at midlimb, and 1.3 cm thick at midlimb.) **Cat. No. 1994–0918** (*bottom*) is an example of the type of bow used by the Hupa-Yurok (Mason 1886: 228; Wallace 1978a: figure 5). Geometric design in blue and red paint on back; grip bound with cloth, twisted sinew bowstring. Restored. (Bow is 99.0 cm long, 7.5 cm wide at midlimb, and 1.9 cm thick at midlimb.)



171. California-style reinforced bows (Cat. Nos. 1994–0904, 1994–0906, and 1994–0918).

REINFORCED BOWS

Two basic forms of sinew-reinforced bows were used by native North Americans during the historic period. Both types consist of wooden staves with sinew glued to the back and have relatively short, reflexed limbs (Hamilton 1982). The Plains variety is characterized by narrow limbs with a rectangular cross section and an angular center reflex. This style was common to many tribes of the Plains, Great Basin, and Southwest regions. The design is an adaptation for use on horseback and was retained long after the introduction of firearms because of its suitability to this purpose. The California-style reinforced bow, on the other hand, was used for foot archery. It has wide limbs with a lenticular cross section; the limbs have a curved reflex, and the short tips are recurved. Variations of this form, often elaborately painted with repeating geometric designs, were common to tribes of the San Francisco Bay area northward into southern Oregon and eastward to the Nevada border.

ARCTIC BOWS

A unique form of sinew backing distinguishes bows made by the Inuit (Eskimo) of the North American Arctic. Rather than being glued down as they are on most sinew-backed bows, the sinew strips are twisted or most often braided and attached to the bow through the nocks and with a series of ties and wrappings along the limbs. This type of backing, which could be tightened and loosened as needed, was common across the Arctic from eastern Siberia to Greenland on native bows of a variety of styles and materials. It was used to reinforce bows of one or more pieces of wood (often driftwood) or composites of caribou antler, musk ox horn, or other materials that were riveted, spliced, or wrapped together. Arctic bows typically carried deep, side-notch nocks to accommodate both the bowstring and the sinew backing. Wooden examples often have a sharp recurve or double-curved form created by heating the limbs.

172. Cat. No. 1994–0871

Reinforced Bow

Northern or Western Alaska, late nineteenth and early twentieth centuries

A spruce stave with straight limbs and a rectangular cross section; constricted and thickened at the handle (Murdoch [1892: figure 177] describes a similar bow, which is from Point Barrow). Backing of two cords made of multiple bands of braided and twisted sinew; the cable is attached by sinew wrappings down the length of the limbs. Sealskin wrapping at handle and a sealskin liner underneath the backing on the limbs. Bands of pale, unprotected wood can be seen where the sinew has shifted. Bow-string of six-strand braided sinew. 109.7 cm long, 3.3 cm at midlimb, and 1.7 cm thick at midlimb.



172. Reinforced bow from Alaska (Cat. No. 1994–0871).

173. Cat. No. 1994–0971

Reinforced Bow

Northern Alaska, late nineteenth and early twentieth centuries

A reinforced bow of spruce with an angular recurve in the tips (Murdoch [1892: figure 179] describes a similar bow, which is from Point Barrow). The limbs are moderately wide and thick and rectangular in cross section; they are tapered toward the tips and constricted at the handle. Grooves run along the edge of the handle, and a central groove runs along the belly near each tip and at the handle. Whale-bone braces add support at the recurve angle under the sinew backing, which consists of multiple sinew strands wrapped spirally by another strand to form a cord. The backing is attached to the limbs beginning at the reflex point and continuing to the edge of the grip on each limb. Three strands hold the cord in place at the center of the bow. Rawhide bowstring. 118.0 cm long, 4.0 cm wide at midlimb, and 1.3 cm thick at midlimb.



173. Reinforced bow from northern Alaska (Cat. No. 1994–0971).

174. Cat. No. 1994–0756B

Composite Bow

Northern Canada, twentieth century

A bow of caribou antler. Reflexed limbs with slightly recurved tips, which are attached to the handle section with copper rivets; oval cross section, flattened on back and convex on belly. The braided sinew backing lies flat along the limbs. The backing is secured to the bow with sinew ties below the tips and at the handle and is also bundled together at the handle by a sinew strand wrapped spirally around it. Bowstring of three-strand braided sinew. This type of bow was traditionally made by the Copper Inuit, Central Eskimo, and other groups in the Canadian Arctic, where bow wood was less plentiful. Comparative examples can be seen in the Canadian Museum of Civilization (CMC) collections (IV-D-1811, IV-C-3165, and IV-C-3166). 85.2 cm long, 2.4 cm wide at midlimb, and 1.0 cm thick at midlimb.



174. Composite bow from Northern Canada (Cat. No. 1994–0756B).

Arrows

Arctic Alaska and Canada, nineteenth and early twentieth centuries

Although people of the Arctic preferred spears and harpoons for hunting the sea mammals central to their subsistence, they depended on the bow and arrow as their main weapon for warfare and for hunting caribou and other large land animals. Specialized arrows also were used for shooting fish and birds. Most Inuit arrows were flattened at the nock end for use with the Mediterranean, or three-finger, draw. Fletching was tangential or radial; in the radial form, portions of the quills often were inserted by a feather setter into slits in the shafts (Mason 1893: plates 52–60).

Right to left:

175. Cat. No. 1994–0681

Hunting or war arrow. Straight cedar shaft; flattened, U-shaped self nock. Radial two-feather fletching inserted at nock end and bound with sinew threads at each end of the feathers. Barbed antler foreshaft inserted into end of shaft and reinforced with braided sinew; a slate broadhead is inserted into a slot in the end of the foreshaft and held in place with a bone pin. The tip (*top and middle detail*) is covered by a cap made of two pieces of wood bound together with sealskin rawhide. Arrow is 94.5 cm long and 1.1 cm in diameter; head is 3.7 cm long.

176. Cat. No. 1994–0698

Hunting or war arrow. Straight cedar shaft; flattened, U-shaped self nock. Radial two-feather fletching (eagle feathers) inserted into slits at the nock end and wrapped with sinew. Caribou antler foreshaft with two long barbs cut into one side; metal broadhead tip inserted into slot in foreshaft and secured with an iron rivet; sinew binding at junction of foreshaft and shaft. Arrow is 88.1 cm long and 0.9 cm in diameter; head is 5.8 cm long.

177. Cat. No. 1994–0689

Hunting or war arrow. Straight wood shaft; flattened, V-shaped self nock. Radial three-feather fletching (cormorant feathers) inserted into slits and bound with twisted sinew. The bone head has barbs carved into one side; sinew binding on shaft where the head meets the shaft. Shaft (*bottom detail*) is decorated with bands of red paint below fletching, at midpoint, and at the base of the head. Arrow is 73.5 cm long and 0.9 cm in diameter; head is 8.9 cm long.

178. Cat. No. 1994–0878

Bird or small-game arrow. Wooden shaft, painted brown; flattened, U-shaped self nock. Radial two-feather fletching (hawk feathers) inserted into slits and bound with sinew threads. A knob-shaped bone head fits over the end of the shaft; the tip is crenellated, and the base is decorated with a carved geometric pattern. Arrow is 59.2 cm long and 1.5 cm in diameter; head is 2.7 cm long.

Arrows from Alaska and Canada (Cat. Nos. 1994–0681, 1994–0698, 1994–0689, 1994–0878, 1994–0684, and 1994–0690).



179. Cat. No. 1994–0684

Fish or bird arrow. Cedar shaft with flattened, U-shaped self nock reinforced with twisted sinew threads. Radial two-feather fletching (cormorant feathers) inserted into slits and bound with sinew. Compound head consisting of three bone or antler points with carved barbs on the inside; the points are set into grooves at the end of the shaft and secured with thin strands of twisted sinew. The shaft is decorated with bands of red paint. Arrow is 75.7 cm long and 1.1 cm in diameter; head is 14.1 cm long.

180. Cat. No. 1994–0690

Harpoon arrow. Cedar shaft; flattened, V-shaped self nock reinforced with sinew thread. Radial three-feather fletching (cormorant feathers) inserted into slits in the nock end and bound with sinew at the bottom. Short foreshaft of walrus ivory inserted into the end of the shaft and secured with sinew. A small head with two barbs on each side fits into the end of the foreshaft and is attached to the main shaft by a short twisted sinew cord. Bands of red paint decorate the shaft beneath the fletching, at midpoint, and above the foreshaft. Arrow is 66.5 cm long and 1.1 cm in diameter; head is 5.3 cm long.

181. Cat. No. 1991–0864

Arrow

Southern Alaska, nineteenth and early twentieth centuries

A sea otter harpoon arrow with a bulbous V-shaped self nock for a primary release, indicative of the Aleuts and Pacific Inuit of southern Alaska. Barreled cedar shaft painted red. Radial three-feather fletching (eagle feathers) attached with sinew at top and bottom. Long-bone foreshaft with linear marking and twelve small copper pins to add weight. Small ivory head with three barbed inserts attached to shaft by a long dragline of twisted sinew. Arrow is 84.2 cm long and 1.0 cm in diameter; head is 4.3 cm long.

182. Cat. No. 1998–0261

Arrows

Northwestern Canada, nineteenth century

A set of four big-game arrows with barbed iron heads used by both Inuit and Athapaskan people of the Mackenzie River region in the postcontact period (Hosley 1981: figure 535; Mason 1893: plate 55). Wooden shafts with flattened U-shaped self nocks. Radial two-feather fletching of Cooper's hawk feathers attached with sinew. The points have long tangs that are inserted into the shafts and secured with twisted sinew; notches are filed into the sides of the heads to form barbs. Arrow lengths range from 76.5 cm to 80.0 cm long; arrows are 1.0 cm in diameter; and head lengths range from 9.5 cm to 11.5 cm.



181. Sea otter harpoon arrow (Cat. No. 1991-0864).

182. Big-game arrows with barbed iron heads (Cat. No. 1998–0261).



183. Cat. No. 1998–0289B

Arrows

Southeastern United States, nineteenth century

A set of nine arrows (four shown), probably made by the Creek. Straight wooden shafts; slightly expanded, U-shaped self nocks; rolled conical metal heads; and radial three-feather fletching. Arrow lengths range from 68.7 cm to 75.8 cm long; arrows are 0.7 cm in diameter; and heads are 4.5 cm long.

184. Cat. No. 1994–0723

Quiver

Southeastern Alaska, twentieth century

An Aleut quiver in the cylindrical, carved-wood style common to tribes of southeastern Alaska. Made of a single piece of cedar that was split, carved out, then put back together and secured with sinew. It flares toward the top and has a wooden plug-lid attached with a leather thong. Decorated with carved and painted bands of alternating red and black triangles. 89.8 cm long and 10.5 cm in diameter at top.

185. Cat. No. 1994–0872

Arrows

Northwest Coast, late nineteenth and early twentieth centuries

Four hunting arrows (sometimes referred to as rankling arrows) from the Olympic Peninsula-Puget Sound area of the Pacific Northwest. The straight cedar shafts have flared, U-shaped self nocks. Two-feather fletchings consist of whole cormorant feathers placed flat and secured with thin bark strips at top and bottom. Long bone heads with barbs carved along one side are inserted into the ends of the shafts; bark wrapping on shafts behind heads. Probably made by the Makah (Mason 1893: plate L; Renker and Gunther 1990: figure 6). Arrows are 77.2 cm long and 1.0 cm in diameter; heads are 18.5 cm long.

186. Cat. No. 1991–0878

Arrow

Northwest Coast, late nineteenth and early twentieth centuries

A cedar arrow with a bulbous self nock (broken); flat two-feather fletching attached with black thread. The pronged head consists of two pieces of metal wire inserted into grooves along the shaft and bound with sinew; the tips of the prongs are flattened. Possibly made by the Kwakiutl. Arrow is 67.5 cm long and 1.2 cm in diameter; head is 11.0 cm long.

183. Arrows from subarctic Canada (Cat. No. 1998-0289B-C).



184. Aleut quiver (Cat. No. 1994-0723).



185. Northwest Coast hunting arrows (Cat. No. 1994–0872).



186. Pronged arrow from the Northwest Coast (Cat. No. 1991-0878).



187. Cat. Nos. 1994–0897, 1994–0691, and 1994–0675

Archery Equipment

Northern California, late nineteenth and early twentieth centuries

A Hupa-Yurok quiver and arrows representative of the equipment used by tribes of northern California and southern Oregon. The quiver is a marten pelt sewn closed at the mouth and the fur turned toward the inside; three acorn woodpecker scalps and strands of black and white glass beads decorate the tail. This type of strapless quiver was carried under the arm so that the arrows could be pulled out from the front (Bright 1978: figure 3). The seven arrows have wooden shafts, V-shaped self nocks, and three hawk feathers glued on and secured with sinew. The triangular heads are of jasper and slate (for warfare and large game) and carved bone (for small animals and birds); the heads are attached to the shafts with sinew. One of the jasper-head arrows (*third from top*) is a fishing arrow with a barbed bone foreshaft that is painted black. All the arrows are decorated with bands of red, blue, and black paint in various widths and patterns. For comparison, see collections at AMNH (50.1/2096 and 50.1/6135) and the California Academy of Science (CAS) (0425–0256). Quiver is 79.2 cm long and 12.1 cm wide. Arrows are 76.8–81.5 cm long and average 0.8 cm in diameter; stone heads are 1.8–3.7 cm long; and bone heads are 4.0–7.3 cm long.

188. Cat. Nos. 1994–0808, 1998–0260, and 1998–0265

Archery Equipment

Central California, early twentieth century

A quiver and arrows from the Yokuts people, who traditionally resided in the San Joaquin Valley and adjacent Sierra Nevada foothills of California (Wallace 1978b: 450–52; Mason 1893: plate 49). The quiver is a complete coyote pelt sewn closed at the mouth to form the bottom of the bag; the carrying strap is a piece of silk cloth tied to two of the legs. There are nine reed arrows (six shown), including wood-tipped arrows for hunting birds and small mammals and stone-tipped arrows for warfare and big-game hunting. All of the arrows have V-shaped self nocks and radial fletching of three hawk feathers attached at top and bottom by sinew. The long wooden points are inserted into the shafts and reinforced with sinew; the chipped-stone points (two obsidian and one unidentified) are inserted into wooden foreshafts and bound with sinew. Bands of black pitch decorate the upper shafts of four of the wood-tipped arrows; the same material covers the sinew bindings on one of the obsidian arrows. Quiver is 98.1 cm long and 23.4 cm wide. Arrows range in length from 100.1 cm to 117.8 cm and in diameter from 0.8 cm to 1.1 cm. Stone heads are 1.9–3.3 cm long; bone heads are 12.2–15.1 cm long.

187. Hupa-Yurok archery equipment (Cat. Nos. 1994-0897, 1994-0691, and 1994-0675).



188. Yokut archery equipment (Cat. Nos. 1994–0808, 1998–0265, and 1998–0260).



189. Cat. No. 1994–0915

Quiver and Arrows

American Plateau, late nineteenth and early twentieth centuries

A quiver and arrows characteristic of the Klamath and Modoc of southeastern Oregon and northern California (Barrett 1910: 246; CAS 0389–0565). The flexible basketry quiver is of twined tule stems in variegated browns; the carrying strap is no longer present. The arrows (two shown; three in total) are in the style of traditional Klamath-Modoc war arrows, which are made of light wood or cane with a hardwood foreshaft and tipped with chipped obsidian heads. The arrows shown here have wooden shafts, V-shaped self nocks, and sinew wrapping around the lower shafts to simulate foreshafts. The fletching comprises three eagle feathers applied radially and attached at top and bottom by sinew. The corner-notched obsidian heads are tied on with sinew. The shafts are decorated with areas of red and black paint. Quiver is 45.1 cm long and 9.8 cm wide; arrows are 75.2 cm long and 0.8 cm in diameter; heads are 2.6 cm long.

190. Cat. No. 1995–0689

Quiver

British Columbia, late nineteenth and early twentieth centuries

A quiver collected in British Columbia. Made from one piece of rawhide folded over and sewn up the side with buckskin double-stitch; a sewn-in piece forms the bottom. Painted geometric design in red and blue on upper half. Buckskin fringe on one side and bottom. Remnant of buckskin carrying strap at top. Probably made by the Kootenai people. 65.4 cm long and 10.2 cm wide.

191. Cat. No. 1995–0671

Arrows

American Great Plains, late nineteenth and early twentieth centuries

A set of three arrows made by the Sioux people who dominated much of the northern Plains during the historical period. The bow and arrow remained the main weapon for hunting and warfare among many Sioux tribes until the early twentieth century (Mason 1893: 47; DeMallie 2001: 811–12). The shafts are painted red and have incised lines along their lengths. Often called “lightning marks” or “blood marks,” these types of grooves are common on Plains arrows. They also carry the flat iron heads that replaced the stone heads of precontact times. Metal heads were made by Native Americans from Euro-American trade items such as frying pans and barrel hoops or were purchased ready-made. The heads are inserted into slots in the shafts and bound with sinew; one is lanceolate with serrated sides, one is triangular with a straight base, and one is triangular with basal barbs. All have notched tangs to hold the sinew bindings. Fletching of three hawk feathers attached with thick bands of sinew. Flared, V-shaped self nocks. Arrows are 55.5–59.3 cm long and 0.9 cm in diameter; heads are 4.8–6.2 cm long.

189. Quiver and arrows from the American Plateau (Cat. No. 1994-0915).



190. Quiver from British Columbia (Cat. No. 1995-0689).



191. Siouan arrows (Cat. No. 1995-0671).



192. Cat. No. 1995–0677

Bow Case, Quiver, Bow, and Arrows

American Great Plains/Southwest/Great Basin, nineteenth century

Archery gear typical of many different groups throughout the North American Plains and adjacent areas of the Southwest and Great Basin (AMNH 50/2436, 50/8159, 50.1/2659). The combined quiver and bow case are made from sewn elk hide. The quiver has a wood stiffener along one edge, a slot in one side, and fringe at the base. The long bow case is sewn to the stiffened side of the quiver and is fringed along its outer side; a golden eagle feather is attached to the case by a leather thong. A wide shoulder strap is attached to both the quiver and the bow case; faint traces of a red painted decoration are present on the set. The four arrows have wooden shafts with grooved lines. Two turkey tail feathers and one wing feather have been split for the fletching, leaving a tuft at the lower end to test wind direction and speed; the three feathers are attached with sinew in radial form. The V-shaped self nocks are slightly flared and painted red; the shafts at the lower end of the fletching are painted with wide red bands bordered on each side with black. The heads are inserted into slots in the shafts and reinforced with sinew. The accompanying bow is a simple hickory stave. Bow case is 106.1 cm long and 26.2 cm wide; quiver is 63.9 cm long and 16.2 cm wide. Bow is 117.4 cm long, 2.4 cm wide at midlimb, and 1.4 cm thick at midlimb. Arrows are 67.8 cm long and have a shaft diameter of 0.8 cm; heads are 7.0 cm long and 1.1 cm wide at the base.

193. Cat. No. 1991–0897

Bow Case and Quiver

American Great Plains/Plateau, nineteenth century

Richly decorated bow case and quiver sets, made of valued furs such as otter and mountain lion, were a status symbol of the nineteenth-century Plains warrior. Among the most visually impressive was the elaborate Crow-Nez Perce sets made of otter skin, trimmed with trade cloth, and highly decorated with geometric beadwork (Holm 1981). This style is perfectly replicated in the example shown here. Bow case is 98.0 cm long and 9.1 cm wide; quiver is 65.7 cm long and 15.4 cm wide.

192. Bow case, quiver, bow, and arrows typical of many different groups throughout the North American Plains, the Southwest, and Great Basin (Cat. No. 1995-0677).



193. Bow case and quiver from the American Great Plains/Plateau (Cat. No. 1991-0897).



194. Cat. No. 1995–0670

Arrows

American Great Plains, nineteenth and early twentieth centuries

Two Plains Indian gaming arrows, which were probably made by the Kiowa or Plains Apache. Native Americans played a variety of archery games. Stylized arrows such as these were usually hand tossed at a mark or for distance (Culin 1907; Eyeman 1965). Each has a wooden shaft, radial three-feather fletching, and an expanded, V-shaped self nock. The long self heads (one triangular and one two-sided) are decorated with carved and painted designs; painted details are on the shafts. Arrows are 73.2 cm long and 0.6 cm in diameter; heads are 19.0 cm long.

195. Cat. No. 1967–0562

Bow and Arrows

American Southwest, early twentieth century

A small bow and arrow set from Jemez Pueblo, New Mexico, that is typical of the equipment Pueblo dancers carry during ceremonial performances (Allely and Hamm 2002: 210; AMNH 50/9598; PMH 984–20–10/59618). The wooden bow is decorated with sections of orange, purple, green, yellow, and blue paint on the belly; the back is painted red. The four matching arrows have wooden shafts, blunt self heads, and straight self nocks; radial three-feather fletchings (hawk feathers) are attached with sinew and string. The shafts are painted orange, with green and brown near the tips and purple bands between the feathers. Bow is 66.5 cm long, 1.7 cm wide at midlimb, and 1.1 cm thick at midlimb. Arrows are 41.5–46.5 cm long and 0.4 cm in diameter.

194. Plains Indian gaming arrows (Cat. No. 1995–0670).



195. Bow and arrows from Jemez Pueblo, New Mexico
(Cat. No. 1967-0562).



196. Cat. No. 1992–0202

Bow and Arrows

Brazil, twentieth century

A bow and eight arrows from the Aweti people who live in the Upper Xingu River region of central Brazil (Lévi-Strauss 1948b). The long palm-wood bow has a thick oval cross section and long nocks with well-defined shoulders. Half of the bow is wrapped in solid white and variegated black-and-white thread; small colorful feathers (blue, yellow, and red) are tucked in the threads. Heavy, twisted plant-fiber bowstring, the excess of which is coiled around the tip at one end and secured with thread wrappings. The arrows have reed shafts, V-shaped self nocks, and bindings of various plant-fiber wrappings and cotton threads. Most have radial two-feather fletching attached at intervals with plant-fiber threads; one is unfletched and one has feather tufts in a flu-flu-type fletching, in which the leading edge of a primary wing feather is stripped from the quill and glued to the arrow shaft in a spiral manner. The arrowheads, each different, represent the types commonly used by the inhabitants of South America's rainforests (Métraux 1949): lanceolate bamboo heads bound to foreshafts; pencil-like wooden rods inserted directly into shafts; multiple-rod heads; and blunt heads. The multipronged head and one of the single-rod heads have a sliver of monkey bone bound at an angle at each tip to serve as both a point and a side barb. Bow is 166.5 cm long, 2.5 cm wide at midlimb, and 1.7 cm thick at midlimb. Arrows are 115.5–123.0 cm long and 0.9 cm in diameter.

197. Cat. No. 2004–01–090

Archery Equipment

Brazil, twentieth century

Archery equipment obtained from the Nambiquara people of west-central Brazil in the 1960s (Lévi-Strauss 1948a; Dale 1970). The palm-wood bow has a flattened oval cross section and a slightly concave belly; the straight limbs taper toward tips that have vestigial shoulders. The excess of the twisted plant-fiber bowstring is wrapped in an interlaced pattern at the center of the bow. The set of fifteen arrows (five shown) have reed shafts. Twelve of the arrows have V-shaped self nocks, bark wrappings on the shafts, and radial two-feather fletching attached with fine threads; three have no nocks or fletching. The heads include lanceolate bamboo blades bound to wooden foreshafts (some with bulbous enlargements and fine reed wrapping behind the heads); long hardwood rods with wooden barbs attached to the tips; a flared blunt head of hardwood; and a trident head with serrated prongs of carved wood inserted into the shaft and reinforced with plaited plant fiber and copper wire. Bow is 199.1 cm long, 3.8 cm wide at the center, and 1.5 cm thick at midlimb. Arrows are 116.0–167.5 cm long and 0.7–2.0 cm in diameter.

196. Aweti bow and arrows (Cat. No. 1992–0202).



197. Archery equipment from Brazil (Cat. No. 2004-01-090).



198. Cat. Nos. 1991–0924 and 2000–0216

Arrows

Venezuela/Brazil, twentieth century

Arrows of the Yanomami and Yekuana, neighboring groups in the Orinoco and northern Amazon River basins of southern Venezuela and northern Brazil. The Yanomami arrow (*center*) has a reed shaft with a V-shaped self nock and two parrot feathers (one red and one blue) bound at the ends with pitch-covered cotton threads. The quills are attached in a slightly spiral manner so that the arrow will spin when shot. Between the fletching and the nock, the shaft is wrapped with cotton thread and decorated with small red feather tufts that extend past the nock end. A long wooden head is inserted into the shaft and tipped with a bone sliver that is attached with pitch-covered thread. The Yanomami use these barbed bone points primarily for bird hunting (Chagnon 1983: 48). Arrow is 167.1 cm long and 0.9 cm in diameter. The two Yekuana arrows have reed shafts and deep V-shaped wooden nocks inserted into the ends. The radial two-feather fletching is attached to the shaft at intervals with pitch-covered threads. The heads are a thin, flat bamboo blade and a wooden rod with a bone-sliver tip. The ends of the shafts, near the heads, are wrapped with red threads that are covered with black pitch. 167.2 cm and 170.8 cm long and 1.2 cm in diameter. Heads range in length from 6.2 to 13.6 cm.

199 Cat. No. 1992–0183

Bow and Arrows

Suriname, twentieth century

Equipment collected from the Trio people of the rainforest of southeast Suriname. The bow has a thick concave-elliptical cross section, long limbs, and peglike nocks with slight shoulders. The bowstring is made of twisted plant fiber; the excess string is wrapped in a spiral pattern along the upper limb. The grip is covered with white cotton string wrapped around the shaft in a decorative crisscross pattern; the cotton band is trimmed on each side with a bundle of toucan feathers. The six arrows have reed shafts and very shallow V-shaped self nocks that are reinforced with pitch-covered threads. White cotton thread and dark brown painted designs ring the fletching area; small yellow feathers are attached with decorative wrappings and nock reinforcement. The radial two-feather fletching is attached at intervals with white cotton thread; small fluffs of yellow and white feathers are tucked between the fletchings and around the other decorative wrappings. The arrows are tipped with a variety of heads: a bamboo blade wrapped to a wooden foreshaft; a bell-shaped wooden head with a center projection; a composite head of three wooden prongs with bone tips; and two barbed, rodlike heads (one of metal and one of wood). The points are inserted into the shafts and attached with thread wrappings; both the thread wrappings and the points are covered with brown pitch. The arrow shown here without a head normally would be tipped with a poisoned bamboo blade, which is carried separately and inserted once the archer is ready to shoot (McKinney 1978). The small bamboo case holds the poisoned arrowheads. It has a rawhide cap and a cotton carrying strap and is decorated with toucan feathers. Bow is 220.2 cm long, 2.3 cm wide at midlimb, and 2.2 cm thick at midlimb. Arrows are 187.5–216.3 cm long and 1.3 cm in diameter. Case is 18.8 cm long and 3.5 cm in diameter.

198. Arrows of the Yanomami and Yekuana (Cat. Nos. 1991–0924 and 2000–0216).



199. Bow and arrows from Suriname (Cat. No. 1992–0183).



200. Cat. No. 1992–0234

Arrows

Ecuador/Peru, mid-twentieth century

A set of five arrows decorated with the distinctive angular geometric patterns used by tribes of the Montaña area of eastern Peru and Ecuador (Tschopik 1952). Reed shafts; heads of palm wood and a lighter, yellow wood; no nocks; radial two-feather fletching (vulture feathers) in a slight spiral. The bindings at each end of the shaft are of white cotton thread, some of which is painted brown. The white cotton sections and the two light wooden heads bear interlocking designs in black paint. 153.5–173.1 cm long and 1.5 cm in diameter.

201. Cat. No. 1992–0184

Bow

Ecuador/Peru, mid-twentieth century

A presentation bow, probably from the Montaña area. Palm wood, with fairly wide limbs that are rectangular in cross section; peglike nocks with well-defined shoulders; and a twisted plant-fiber string. The entire length of the bow is wrapped in black and white cotton thread; small pieces of red feathers are tucked into the black bands of thread. Bow is 197.1 cm long, 4.1 cm wide at midlimb, and 1.5 cm thick at midlimb.

202. Cat. No. 1992–0244

Bow and Arrows

Uruguay, early twentieth century

This bow and arrow set was collected in Uruguay in the 1920s. It is a typical example of bow and arrow sets used by groups that traditionally inhabited the arid subtropical region of south-central South America known as Gran Chaco (Métraux 1946: 294–96). The bow has straight limbs and a thick, elliptical cross section that is flattened on the belly; the tips taper to blunt points but have no shoulder to catch the bowstring. The twisted rawhide bowstring is attached with a slipknot to one end and half hitches to the other; the excess string is looped around one limb. The reed arrows (six shown; ten in total) have deep V-shaped self nocks reinforced with plant-fiber threads. Although all originally were fletched, the feathers are now absent on several of the specimens. Those with fletching present have two guan feathers attached in radial form; the quills are bound to the shaft with plant-fiber thread. The arrowheads are similar to those made by tropical forest people, but with metal used in place of bamboo for the lanceolate blades and for one of the rodlike points; the other heads are made of wood. Black pitch covers the plant-fiber bindings. Bow is 140.8 cm long, 2.4 cm wide at midlimb, and 2.2 cm thick at the center. Arrows are 75.0–83.2 cm long and 0.9 cm in diameter.

200. & 201. Bow and arrows from Ecuador/Peru (Cat. Nos. 1992-0234 and 1992-0184).



202. Bow and arrows from Uruguay (Cat. No. 1992-0244).



Wrist Guards

Most native people of the Americas wore some sort of wrist guard to protect against the impact of the bowstring. In South America, wrappings of cotton strings or human hair were worn, as were bracers of leather, bark cloth, or wood (Métraux 1949: 242). Simple leather wrist guards were common to North America, although the Navajo and other silversmiths of the American Southwest made elaborate bracers. Small guards of carved bone, ivory, or antler are typical of Arctic North America.

203. Cat. Nos. 1994–0563 and 1994–0560

Inuit bone bracer (*left*), with carved geometric motif (7.2 cm long and 3.0 cm wide), and ivory bracer (*right*), with carved details and remnants of leather ties (7.5 cm long and 3.0 cm wide).

204. Cat. Nos. 1991–1021 and 1991–1022

Tubular copper wrist guard (*left*) from central California; two tie holes on back (12.1 cm long and 6.8 cm in diameter). Leather wrist guard (*right*), probably from the Great Plains region. Six circular tie holes (7.7 cm wide and 7.2 cm in diameter).

205. Cat. Nos. 2000–0252 and 1998–0253

A Navajo silver wrist guard (*top*) with large turquoise center inset; black leather band with metal buckles (18.5 cm long and 11.5 cm wide). A rectangular Navajo silver wrist guard of stamped silver (*bottom*); copper loops on back for attachment to leather band (9.0 cm long and 7.0 cm wide).



203. Wrist guards (Cat Nos. 1994–0563 and 1994–0560).



204. Wrist guards (Cat. Nos. 1991–1021 and 1991–1022).



205. Wrist guards (Cat. Nos. 2000–0252 and 1998–0253).



Europe

The archery traditions of Europe are perhaps the world's most widely recognized and beloved. This land of legendary archers such as Robin Hood and William Tell has a long and respected history of military and recreational archery and is the birthplace of the modern sport of archery as it is practiced internationally today.

Two main bow forms—the crossbow and the English longbow—were dominant in Europe from the Middle Ages until the advent of firearms in the sixteenth century. The crossbow was the leading missile weapon of most Continental armies for almost five hundred years, and crossbowmen often formed an elite corps. Many types of crossbows were used. In the eleventh and twelfth centuries, archers employed wooden bows that could be drawn by hand, but by the thirteenth century weapons fitted with composite bows and drawn with various mechanical devices were popular. The high point of crossbow development occurred with the introduction of the steel crossbow in the early fifteenth century. This extremely powerful weapon had a short metal bow that usually was drawn with a hand crank or winch and included a small lever to trigger the release of a short, heavy bolt (Payne-Gallwey 1903).

Crossbows were also used by the British military, but during the Hundred Years' War with France (1337–1453) the longbow was found to be the superior weapon. The characteristic English longbow was a stave about six feet long, rounded in cross section with a flattened back, and long, straight limbs that tapered toward horn tips that were grooved to hold the loop of a linen bowstring. Typically made of yew, their composition exploited the two distinct layers of this material. Staves were cut and shaped so that the elastic outer layer of sapwood handled the tensile stress placed on the back of the bow when it was drawn while the more rigid heartwood formed the core of the bow (Heath 1971: 84–85). The arrows used with the military longbow had wooden shafts a “cloth yard” long, socketed iron points, and three-feather fletching, usually made of wing feathers from the grey goose. Skilled bowmen armed with these weapons were capable of overwhelming their opponents with a shower of arrows at a rate of ten to twelve per minute (Kaiser 1980; Rees

1993). The longbow's effectiveness was proved at battles such as Crécy (1346), Poitiers (1356), and, most famously, Agincourt (1415), where Henry V's army of six thousand men (five thousand of whom were longbowmen) bested a French force of twenty thousand to thirty thousand cavalry and infantrymen.

Although the crossbow and English longbow were the most prominent weapons during the medieval period and early Renaissance, they were not the only bow forms used in Europe. Continental self bows were made in various styles and usually were about four feet long. The cavalry archers of Russia, Poland, and other areas of Eastern Europe used composite bows and related equipment similar to the accoutrements employed by the Ottoman Turks (Abratowski 2001; McEwen 2001b). In northern Europe, Finno-Ugrian tribes such as the Saami made two-wood bows constructed of strips of different kinds of woods glued together (Insulander 1998).

Bows of any type had generally become obsolete as military weapons in Europe by the end of the sixteenth century. Many of the archery guilds that had been established during the medieval period to train soldiers gradually evolved into social organizations and honor guards (Figure 7.1). Recreational archery remained popular, especially in England where it was strongly supported by the monarchy. The English longbow was adapted for



Figure 7.1. Members of the Royal Company of Archers carry their longbows in formation at the opening of Scottish Parliament in 1999. PA/EMPICS

sporting use in Great Britain and also became the bow of choice for most Continental and Euro-American archers. Modified crossbows were also used in some forms of recreational archery.

A number of different kinds of sport archery have long been practiced in Europe, one of which, target archery, became popular during the Victorian period (1837–1901), when recreational archery was at its height of popularity. The familiar ringed target was standardized in 1844 by Britain's Grand National Archery Society and was later adopted internationally. Victorian longbows showed modifications from the war bows of earlier eras, but the basic design remained the same. Yew bows were still prized above all others, but weapons of lancewood, lemonwood, and other woods also became common as yew became scarce. Victorian target arrows averaged about 70 centimeters in length. The shafts were usually made of pine with a hardwood "footing" that was spliced into the shaft as reinforcement. Nocks were reinforced with horn inserts. Heads were usually of metal, but horn heads were not uncommon on arrows from the Continent. Fletching was of three turkey or peacock wing feathers glued on to the shaft in radial form (Longman and Walrond 1894: 304–15; Soar 1994a). Cresting usually included a series of colored bands.

British archery grew to be the international model, and in 1931 the Federation Internationale de Tir a l'Arc (FITA) was founded by six European countries and the United States as the worldwide governing body for the sport (Rhode 1981). Traditional equipment was still in use but soon began to be replaced by modern bows made of steel, laminated wood, plastic, or fiberglass, and subsequently by the compound bows with cables and pulleys that are standard in modern competition. However, traditional European archery has persisted. A number of the old guilds and societies remain active, and new organizations have developed to preserve the techniques and customs of Europe's celebrated archery heritage.



Target Bows

England, mid-nineteenth and early twentieth centuries

206. Cat. No. 1994–0606

A lancewood bow made by the firm of Philip Highfield, which operated in London from 1858 to 1910 and was the major supplier of bows to the American market (Soar 1994b). The straight limbs have a flattened oval cross section. The horn tips turn toward the back of the bow and have carved side nocks; the upper tip has a pierced hole to hold a string keeper, which holds the string in place when the bow is unbraced. The grip is built up on the back, covered with red velvet, and trimmed with decorative gold and black cloth tape. 40 lb draw weight. 190.0 cm long, 2.4 cm wide at midlimb, and 2.3 cm thick at midlimb.

207. Cat. No. 2002–26–096

This Highfield lady's bow, also of lancewood, is small and light and has a 35 lb draw weight. The upper horn tip is longer and has a flattened face. Green velvet grip. Twisted linen bowstring. 172.5 cm long, 2.0 cm wide at midlimb, and 2.1 cm thick at midlimb.

208. Cat. No. 1994–0605

A yew-wood bow produced by the workshops of Thomas Aldred, London, which operated from 1846 to 1918. Aldred specialized in manufacturing yew bows, a process that took five years to complete—three years to cut and season the stave, one year to allow the glue for the handle splice to set and to roughly shape the bow, and a year for the finishing steps (Lake 1972). The grip is wrapped with green fabric tape, and the upper horn tip is longer than the lower. 48 lb draw weight. 185.5 cm long, 2.7 cm wide at midlimb, and 2.7 cm thick at midlimb.

209. Cat. No. 1994–0599

A lancewood bow made by F. H. Ayers, London, which operated from 1889 to 1948. Red silk wrapping beneath both horn tips; upper tip is longer than lower and has a hole for a string keeper. Grip wrapped with patterned fabric tape. 45 lb draw weight. 188.1 cm long, 2.5 cm wide at midlimb, and 2.1 cm thick at midlimb.

206. English target bow (Cat. No. 1994-0606).



207. Highfield lady's bow (Cat. No. 2002-26-096).



208. Yew-wood bow (Cat. No. 1994-0605).



209. Lancewood bow (Cat. No. 1994–0599).



210. Cat. No. 1994–0785

Target Arrows

England, mid-nineteen and early twentieth centuries

A set of five Highfield target arrows. Footed shafts; parallel-sided nocks with horn inserts. Iron heads, slightly tapered pile with rounded tips. Triangular turkey-feather fletching. Cresting in red, green, and gold bands. 63.5 cm long and 0.7 cm in diameter.

211. Cat. No. 1994–0795

Target Arrows

England, mid-nineteenth and early twentieth centuries

A set of six Aldred target arrows with original wooden case. The shop address (258 Oxford Street, London) on the case provides a precise date range for this set. Aldred's was at this location for only a short period, from 1882 to 1891 (Lake 1972). Footed shafts; horn nock inserts. Tapered pile heads of iron. Balloon-shaped turkey-feather fletching. Cresting in blue and silver bands. 71.2 cm long and 0.8 cm in diameter.

212. Cat. No. 1994–0615

Tackle Box

England/United States, late nineteenth century

A set of typical archery tackle used by the Victorian-period target archer. The carved wooden box contains twenty-six footed arrows with turkey-feather fletching and horn nock inserts, a leather bracer, a leather glove with three finger tips, and a small quiver of metal covered with black leather that would be attached to a waist belt. An end compartment contains extra heads, bowstrings, wax, a scorebook, and other accessories. This equipment was used by Helen Kern of Dayton, Ohio, who was America's National Archery Association women's champion in 1894. Her husband, Albert Kern, served as the association's president from 1888 to 1890 (Rhode 1978). Box is 63.3 cm long.

210. Highfield target arrows (Cat. No. 1994–0785).





211. Aldred target arrows (Cat. No. 1994–0795).



212. Victorian-period archery tackle (Cat. No. 1994–0615).

213. Cat. Nos. 1994–0761 and 1998–0475A

Arrow Case and Quiver

England, nineteenth century

A closed cylindrical arrow case made of tin (*left*). Tin cases were popular in England during the first half of the nineteenth century as a lighter, less expensive, waterproof alternative to wooden and leather cases (Soar 1997). They were made to hold between six and twenty-four arrows and usually were equipped with a locking lid to keep the contents secure. This example has a hasp closure, but the lock is no longer present. Two carrying loops of wire are attached to a rib on the back side of the tapered body. 74.5 cm long and 6.4 cm in diameter. A cylindrical Victorian quiver of cloth-lined leather (*right*) with a buckled lid and leather shoulder strap. 73.5 cm long and 6.4 cm in diameter.

214. Cat. No. 1994–0779E–L

Target Arrows

Belgium, late nineteenth and early twentieth centuries

A variety of Belgian target arrows with grooved shafts and points of horn or metal. All have horn reinforcements in the nocks, and several have footed shafts. Dyed feather fletching. Cresting is of bands of silk threads. 72.0–77.8 cm long and 1.0 cm in diameter.

215. Cat. No. 1994–0779A–D

Popinjay Arrows

Belgium, late nineteenth and early twentieth centuries

A set of four arrows used in popinjay, a form of sport archery traditionally popular in Belgium, the Netherlands, and northern France. Popinjay involves shooting at wooden or stuffed replicas of birds that are placed on top of a tall mast or pole. Archers, shooting straight up from the base of the pole, use blunt arrows to knock the birds off the perches. The arrows have grooved poplar shafts that flare at the point ends and deep, squared self nocks with horn reinforcements. The heads consist of thick, flat disks of black horn. The three-feather fletching is of dyed, barred turkey wing feathers, which are glued on; cresting of bands of colored silk. Arrows are 76.0–78.0 cm long and 1.1–1.5 cm in diameter; heads are 1.0–2.2 cm long.



213. Arrow case and quiver from England (Cat. Nos. 1994-0761 and 1998-0475A).

214. Target arrows from Belgium (Cat. No. 1994-0779E-L).



215. Belgian popinjay arrows (Cat. No. 1994-0779A-D).



216. Cat. No. 1998–0346

Crossbow

England, eighteenth and early nineteenth centuries

A pellet crossbow produced by Simkin of Bolton, Lancashire. Pellet crossbows were popular in rural England during the eighteenth and early nineteenth centuries and were known as “bullet crossbows” or “stone bows.” Bullet crossbows were used for recreational shooting of game, especially rooks and rabbits, rather than for serious hunting or defense. Their production was concentrated in Lancashire, and this example is typical of the crossbows produced there (Littler 1991; Payne-Gallwey 1903: 177–81). It has a wooden stock and a steel bow. The bow originally would have been equipped with a double string of gut or hemp with a central leather pouch to hold stones or a clay or metal ball. Hinged metal front sight and rear sight; steel locking and trigger mechanisms. Stock is 76.6 cm long; bow is 76.2 cm long.

217. Cat. No. 1994–0759

Prize Arrows

England, mid-nineteenth and early twentieth centuries

A prize arrow made by Purle of London (*left*), one of the finest arrow makers of the late nineteenth and early twentieth centuries (Duff 1927: 96). Prize arrows are more elaborate versions of recreational arrows and are traditionally presented as awards. This example has a footing and nock inserts of ebony and ivory and cresting in gold, silver, red, and black paint. The three-feather fletching consists of one peacock feather, one turkey feather, and one barred turkey feather. 71.4 cm long and 0.5 in diameter.

218. Cat. No. 1998–0486

Prize Arrow

Belgium, nineteenth and early twentieth centuries

A Belgian prize arrow (*right*) previously owned by distinguished British archer Jack Flinton (1892–1982). Flinton was a member of the British archery team at the 1939 and 1946 world championships and the national flight-shooting champion for eleven consecutive years. The arrow has a complicated footing in two sections. Behind the metal head is a cylinder of white horn or ivory decorated with four black circles at the upper end; this joins the hardwood footing, which is overlaid with exotic woods in red, yellow, and blue. The nock piece is of horn or ebony surrounded by layers of yellow and red wood. Two of the turkey feathers in the fletching are dyed blue, and the third is pink. Cresting in bands of red, blue, and green silk threads. A similar prize arrow, also owned by Jack Flinton, is described by Soar (1999).

216. English pellet crossbow (Cat. No. 1998-0346).





217.

218.

Prize arrows (Cat. Nos. 1994–0759
and 1998–0486).

219. Cat. No. 1994–1154

Medal

England, eighteenth century

An award in the form of an oval glass-topped box of Georgian silver; the interior has a matte finish and the exterior is highly polished. The inscription on the back reads, "Presented to the Royal Toxophilite Society by Mr. Crunden and Mr. Bullock and won by Mr. Shepherd, 23 Augst, 1796." The Royal Toxophilite Society is England's foremost archery club. It was founded in 1781 by Sir Ashton Lever and fellow archers. 11.4 cm tall and 10.1 cm wide.



219. Medal from England (Cat. No. 1994–1154).

220. Cat. No. 1992–0096

Certificate

Scotland, eighteenth century

Membership certificate to the Royal Company of Archers, dated July 9, 1789. Created in Edinburgh in 1676 as a private archery club and granted a charter by Queen Anne in 1704, this organization functions as the sovereign's bodyguard during official visits to Scotland. The longbow is still the company's principal weapon. Their elite membership consists primarily of senior military officers, politicians, and members of the nobility. 39.5 cm high and 43.2 cm wide.



220. Membership certificate to the Royal Company of Archers (Cat. No. 1992–0096).

221. Cat. No. 2001–01–127

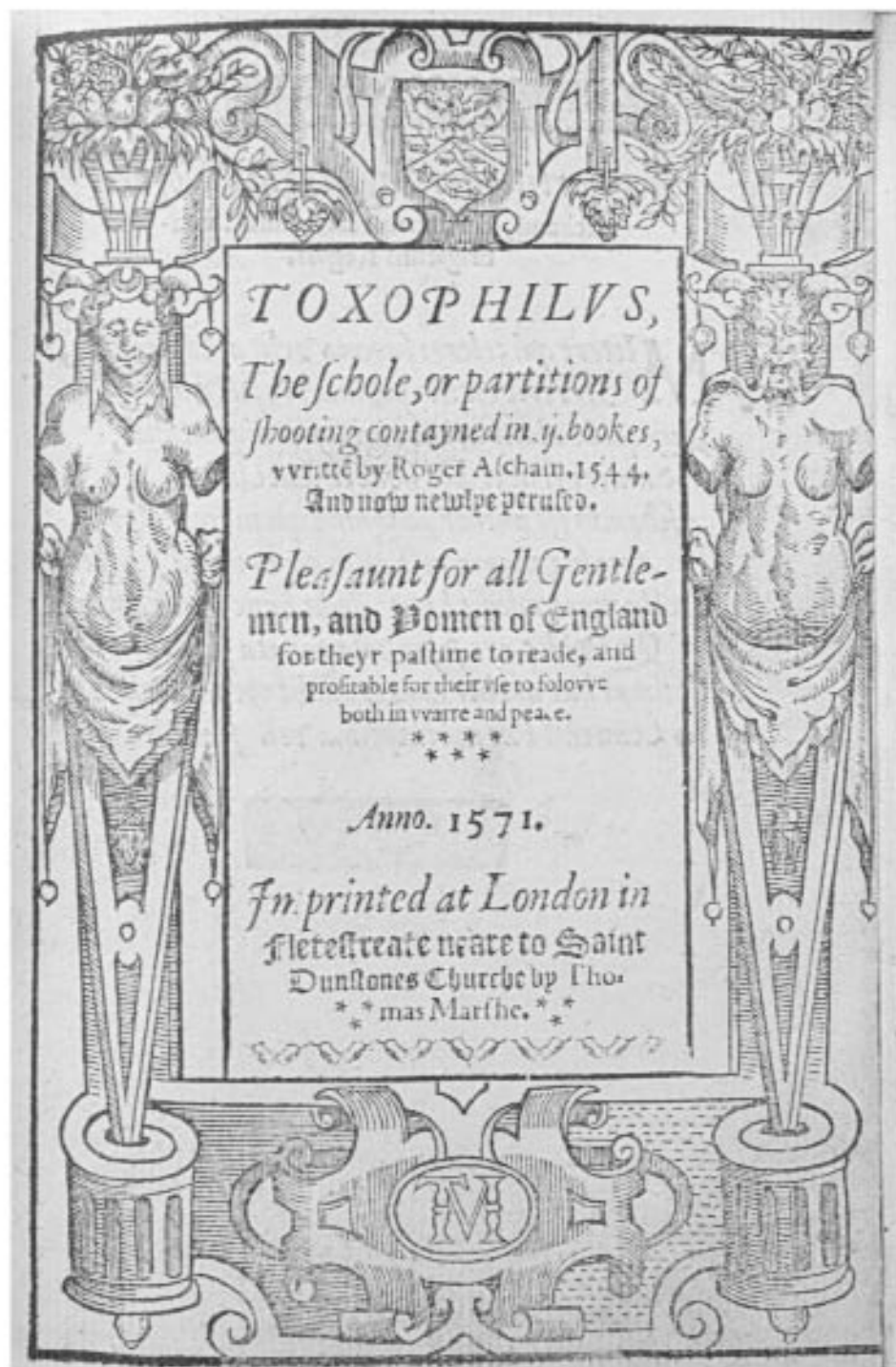
Bracer

Belgium/The Netherlands, seventeenth and eighteenth centuries

A finely shaped and engraved ivory armguard depicting the martyrdom of St. Sebastian, the patron saint of archers. These types of bracers are thought to be associated with one of the many archery guilds established under the name of St. Sebastian in Flanders, a region with a rich archery history (Soar 1990; FITA 2004: 14–15). The most famous and exclusive of the St. Sebastian guilds is the one founded in Brugge in the fourteenth century. This society, whose membership has included Belgian and British monarchs, remains active today. Two holes on either side of the bracer hold leather attachment straps. 16.9 cm long and 6.4 cm wide.



221. Bracer from Belgium/The Netherlands (Cat. No. 2001–01–127).

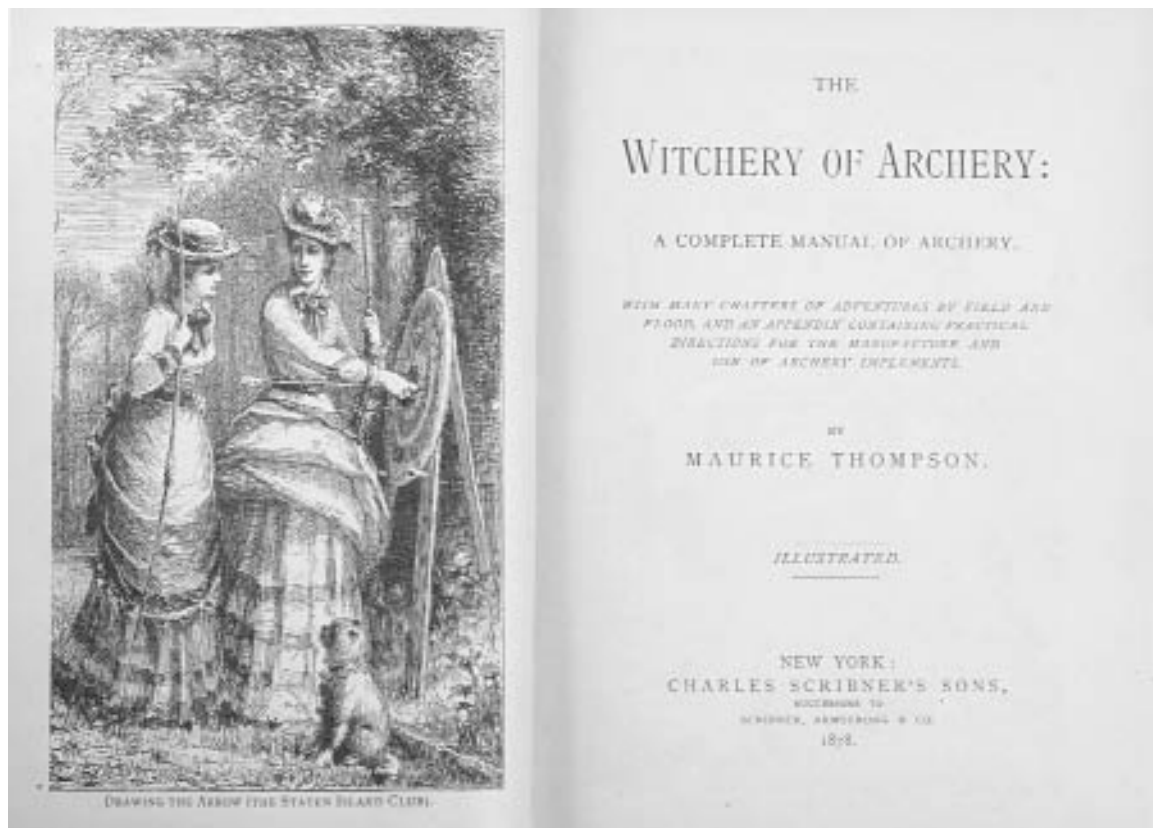


222. Cat. Nos. 1999–0025 and 1994–0081

Archery Texts

England and United States, sixteenth and nineteenth centuries

Two important archery texts in the history of European and Euro-American archery: one is a second edition of *Toxophilus* by Roger Ascham, published in 1571, and the other a first edition of *The Witchery of Archery* by Maurice Thompson, published in 1878. Ascham's *Toxophilus* ("Lover of Archery") was originally published in 1545 and was the first book on archery written in English. It was a guide for shooting with the longbow and was formally presented to Henry VIII, who was a strong proponent of archery. Thompson's book is also a classic in the field. This compilation of essays on the joys of archery was hugely popular upon its publication and is credited with fueling the surge of interest in archery that occurred in America at the end of the nineteenth century.



222(b). *The Witchery of Archery* by Maurice Thompson (Cat. No. 1994–0081).

223. Cat. No. 1995–0792F

Print

England, nineteenth century

An aquatint depicting military archers during the reign of King Edward IV (1442–1483). The figures are using the yew longbows of the late Middle Ages and have sheaves of twenty-four heavy war arrows at their waists. Published in 1812 by Colnaghi and Co., London. 37.7 cm high and 26.0 cm wide.

224. Cat. No. 1992–0095

Print

Europe, eighteenth century

A popular and often reproduced artwork is this scene of a meeting of the Society of Royal British Bowmen in Gwersyllt Park, Wales, in the late eighteenth century. The Royal British Bowmen was the first society to admit women as shooting members (in 1787), and this work focuses on a competition of lady archers. Aquatint by C. Apostool, 1794, after the original by Robert Smirke and John Emes. 45.0 cm high and 59.5 cm wide.

225. Cat. No. 1995–0791Q

Print

Europe, nineteenth century

An engraving of Bartholomeus van der Helst's *The Four Regents of the St. Sebastian Archery Contest in Amsterdam*, 1653. The regents are seated in the foreground holding the guild's award; they have a slate at their feet that lists the archers' scores. In the background is a group of archers carrying longbows. 42.5 cm high and 32.0 cm wide.



223. English aquatint depicting military archers (Cat. No. 1995–0792F).



224. European print of a scene of a meeting of the Society of Royal British Bowmen (Cat. No. 1992–0095).



225. Print of Bartholomeus van der Helst's *The Four Regents of the St. Sebastian Archery Contest in Amsterdam, 1653* (Cat. No. 1995-0791Q).

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