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OF  
SOUTH AMERICAN INDIANS**

**JULIAN H. STEWARD, *Editor***

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OF SOUTH AMERICAN INDIANS**

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## WEAPONS

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By ALFRED MÉTRAUX

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The warlike relations of the Whites with most Indian tribes have contributed greatly to the multiplicity of references to weapons from the earliest chronicles to our own day. In many cases weapons are the only aspects of native culture known to us. Travelers have always shown a particular interest in weapons and, for this reason, bows, arrows, and clubs have been collected more frequently than any other objects in South America.

Basically, there were no great differences in the armaments of the various culture areas of the continent. The *Inca* army may have been superior to warriors in the tribes of the forest because of its greater cohesion and discipline, but its weapons did not give it any decided advantages over its less civilized foes. Weapons everywhere were well adapted to the surroundings in which they were used: slings and bolas were used in open country, bows in the forested area. The bow was a relatively secondary weapon in Perú mainly because of the scarcity of suitable woods in vast regions of the Highlands; moreover, the spear thrower and the sling served the same purpose. The use of metal brought about no revolution in the arms of the Andean Indians. Clubs with copper heads and spears with metal points were hardly more efficient than those made of stone or bamboo. Only defensive weapons were better developed in Perú than elsewhere. Helmets and padded armor were a real protection against sling missiles, and the climate made it possible for the warriors to wear such heavy protective garments. Pitched battles waged in the open also made the use of defensive weapons more necessary than they were in the type of warfare carried on by more primitive tribes. Shields, however, were known to most South American Indians north of the Chaco.

### BOWS

**Distribution of bows.**—Most South American people used the bow at the time of the Conquest. Only the *Taino* of Jamaica, the Bahamas, Cuba, and western Haiti, the *Chibcha*, and several tribes living on the tributaries of the upper Amazon did not have the bow (*Awashiri*, *Iquito*, *Záparo*, *Okaina*, *Bora*, *Coto*, *Urarina*, *Ssabela*, *Yagua*, *Can-*

*doshi*). These tribes preferred to fight and hunt with poisoned javelins. The bow was not used by the early Chimu people and was never a popular weapon along the Peruvian Coast. It was known, however, to the people of the Tiahuanaco culture and is often represented on textiles of that period. Stone arrowheads have been found in great quantities at Tiahuanaco. In the *Inca* army the bow was used by the auxiliary troops from the Tropical Forest, but not by the mountain Indians, who were armed with slings and clubs.

Among the *Araucanians* and *Tehuelche* the bow lost much of its usefulness after the adoption of the horse for, unlike North American Indians, the equestrian tribes of the Pampas did not modify their bow so that it could be used on horseback. Bows and arrows went out of use among the *Tehuelche* in the first half of the 19th century. The bow survived among Chaco horsemen, but they employed it only when they hunted or fought on foot. In *Yahgan* culture the bow and arrow occupied a very subordinate position.

South American Indians have known only the self-bow, that is, a bow made of a single piece of wood. Large powerful bows were, as a rule, characteristic of the forest tribes while smaller bows were found in the open steppes (Meyer, H., 1898, p. 554). Extreme lengths occur among the forest-dwelling *Sirionó*, whose bows sometimes measure 12 feet, and among the *Guayakí* and *Caingang*, whose bows are almost as long. The shortest bows are those of the *Ona*, which average 4 feet 4 inches to 5 feet 5 inches. Other bow lengths are listed in table 1.

Most South American bows are symmetrical and slightly curved. In some bows of the Montaña area the bend is scarcely perceptible; it is, however, very pronounced in *Ona* and *Atacama* bows.

**Bow stave.**—In every region of South America the bow stave is made of a few specific woods which experience has shown to have adequate strength and resilience: *Ona* and *Yahgan*, of beech wood (*Nothofagus antartica*); *Chaco*, mainly palo mataco (*Achatocarpus praecox*) but also *Prosopis abbreviata*, quebracho (*Schinopsis lorentzii*), and urundel (*Astronium juglandifolium*); eastern Brazil and along the upper Amazon, chonta palm (*Guilielma gasipaes*). In eastern Brazil, *Astrocaryum ayri* was so widely used for bows that its common name is pao d'arco (bow wood). In the Xingú and Madeira (*Parintintin*) area, bows are made of aratazeiro (an Anonaceae) or of *Tecoma* wood (also called pao d'arco). The *Tupian*-speaking tribes of this area are the only ones who sometimes use palm wood. In Paraguay bows are carved of *Cocos romanzoffianum*, mbocayá totai (*Guayakí*), *Copernicia cerifera*, *Guilielma insignis* (*Caingúá*), or *Tabebuia chrystanha* (*Caingang*).

The Guiana Indians use six different species of wood, of which only purple heart (*Copaifera pubiflora*), letterwood or snakewood (*Brosi-*

*mum aubletii* or *Piratinera guianensis*), and *Lecythis* sp. have been identified. Letterwood was in great demand and was traded back and forth. Trade in wood for bows occurred in Perú and in Northwest Argentina between the mountain and forest people. In 1637 the Spaniards met in the *Diaguita* region a party of 300 Indians who had just returned from the Chaco forests with 20 bow staves each.

The fabrication of a good bow requires much time and patience. The *Wapishana* allowed the letterwood to season for months in the shade, then split a rough stave from the heart, covered it with beeswax, and dried it slowly under the roof of the house so that it would never crack. The stave was worked into shape by scraping it with a piece of quartz and then it was smoothed with a shell, a stone, or a tooth. The final polish was given with curatella leaves (*Cecropia peltata*), an effective abrasive. Some Indians (*Warrau*, *Arawak*, *Barama Carib*, *Machushi*, etc.) smeared their bows with rosin.

Before cutting the pao d'arco for a bow, the *Botocudo* test the depth of the black layers; then they cut a piece to the desired length and split it into four portions, of which they keep only the straightest. They scrape away the soft whitish portion, but retain the external layers with the core resilient fibers. The bow is then leisurely planed with a sharp stone. The stave is waxed and the ends are wrapped with bark strips to prevent them from splintering.

*Ona* bows were wrought from the wood of the smallest of the three beech trees (*Nothofagus antartica*).

From the selected tree they split a fragment 6 or 7 feet long and 3 or 4 inches thick which must come from just beneath the bark where the wood is most elastic. From it the bow was worked down with a scraper. [Lothrop, 1928, p. 71.]

Many tribes of the tropical area store their bows in the humid forest or in water to preserve their elasticity.

**Bow cross sections.**—Father W. Schmidt (1913) attributes great importance to the cross section of bows, regarding it as a feature determined by strict cultural tradition, which may reveal past migrations and cultural contacts. Actually, other factors may affect the shape of the cross section. For example, among the *Barama Carib*, it varied according to the wood used. Washiba or letterwood bows had oval cross sections; those of bipa wood were flat. *Yariyari* bows were round and had no grooves on their outer side. The rectangular or illiptic section of the *Montaña* bow (the so-called Andean bow of Meyer's classification) is conditioned by the shape of the pieces that are split from the chonta palm.

In making bow staves the inner and softer portion of the chonta stem is first of all removed, whereupon the staves in the rough are split out of the remaining

cylinder of harder wood. These unformed staves are thus of the flattened shape that prevails in the finished bow. [Rydén, 1941 a, p. 66.]

Moreover, the cross section may vary on the same bow from the grip to the ends. In the same tribes bows may have different types of cross sections. Thus, for example, according to the group, the *Nambicuara* bow may be flat, semicircular, or concave.

Several tribes of Brazil and Paraguay that are regarded as more primitive than the *Tupí* and *Carib*, have bows with a round cross section (*Guató*, *Caingang*, *Guayakí*, *Botocudo*, *Purí*, and *Carajá*), but the same shape also occurs among some Chaco tribes (*Chamacoco*), some *Carib* and *Arawakan* groups, and among the *Carahí* of the upper Madeira River, who cannot be classified as "primitive." Moreover, the truly primitive *Ona* use bows with a wedgelike ("tear-shaped") cross section. The Chaco bows, which, in comparison to those of most tropical Indians, are crude, exhibit a wide range of variations in their cross sections. As a rule, they are somewhat flat with rounded edges and the outer side more or less convex, but as one goes from the southern to the northern Chaco the bow staves take a rounded shape. The bows of the ancient *Atacameño* had a semicircular cross section.

Guiana bows were generally convex on the belly while the back or outer surface was concave or flat. The frontal concavity sometimes deepened to a groove in which was held the unused portion of the bow string (Barama River *Carib*). The relation between the two sides of the bow stave were reversed in a few tribes (*Oyana* and tribes of the *Içana-Caiari* Basin).

The bows of a great many *Tupí*, *Carib*, and *Arawakan* tribes south of the Amazon (*Tupinamba*, *Guaraní*, *Caingang*, *Purí-Coroado*, *Mashacalí*, *Bacãri*, *Bororo*, *Apiacá*, *Parintintin*, *Maué*, etc.) are convex on the outer side and flat or concave on the string side.

Some significance has been also attached by Father W. Schmidt (1913) to the fastening of the bowstring. In his opinion bows without shoulders cut at each end to hold the string belong to an archaic culture type. Actually, bows without terminal shoulders occur among some primitive tribes of South America, such as the *Guayakí*, *Sirionó*, *Guató*, *Caingang*, and *Ona*. The extremities of the Chaco bows are sharpened but are without clear cut shoulders to give a fast grip to the string (*Mataco*, *Toba*, *Chamacoco*, *Sapuki*, *Lengua*). According to Father W. Schmidt (1913, p. 1033), the bows of three tropical tribes lack shoulders (*Miraña*, *Yauperi*, *Uashmiri*). The Andean bow also was without any shoulder or notch (Puna de Atacama). Since bows with or without shoulders serve their purpose equally well, it may be surmised that the general shape of the stave determines the presence or the lack of shoulders at the ends. On large bows with a round

cross section, a firm grip for the string at both extremities is often provided by a ring and bulge made of creeper strips (*Guató, Caingang*). On *Sirionó* bows, a few turns of a piece of string prevent the bow string slipping down the stave.

The bows of the forest tribes are of considerable length, averaging from 6½ to 8 feet (2 to 2.4 m.). The size of the bows fluctuates between these two figures within the same area and even within the same tribe. *Cainguá* bows measure from 6 to 8 feet (1.8 to 2.4 m.). The longest bows in South America and perhaps in the whole world are those of the *Sirionó*, which averages from 6 to 9 feet (1.8 to 2.7 m.) and may attain a length of 12 feet (3.6 m.). *Asurini* bows are short, 4 feet 6 inches (1.62 m.) but unusually wide, 2.3 to 2.7 inches (6 to 7 cm.).

In southern Brazil and Paraguay bows are often entirely or partially wrapped with strips of guembe bark, *Philodendron imbe* (*Guató, Guaraní, Caingang, Botocudo*). Some bows are covered with a basketry casing in the center (*Guaraní, Tupinamba, Guarayú*, etc.). A great many Amazonian bows are wound with cotton threads at the center or near the ends. Bows are often trimmed with feathers.

The strength of the Indian bow seldom has been ascertained by experimentation. According to Rydén (1941), the *Sirionó* could perforate a wooden board an inch (3 cm.) thick at a distance of about 80 feet (25 m.). The *Guayakí* are said to be capable of hitting the mark at a distance of 300 feet (91 m.).

**Bow strings.**—Throughout tropical South America and the Chaco, bow strings are made of vegetal fibers, generally from the tucum palm or from a Bromeliaceae. In the southern part of the continent, they are made of strips of skin or of sinew (*Tehuelche, Araucanian, Ona*,

TABLE 1.—*Length of bows and arrows*

Tribe	Bows	Arrows
	mm.	mm.
<i>Arara</i> .....	1.85	
<i>Asurini</i> .....	1.62-1.67	1.25-1.57,
<i>Bororo</i> .....	1.90	1.50-1.70.
<i>Carajá</i> .....	1.80-2.04	1.50-1.70.
<i>Chiriguano</i> .....	1.45	
<i>Guató</i> .....	1.80-2	
<i>Guayakí</i> .....	1.80-2.10	
<i>Mura</i> .....	2.64-2	
<i>Ona</i> .....	.91-1.21	
<i>Oyampi</i> .....	1.75-2	
<i>Palikur</i> .....	1.82	
<i>Parintintin</i> .....	1.82	
<i>Puri</i> .....	1.50	
<i>Rucuyen</i> .....	1.75-2	
<i>Sharaje</i> .....		1.30-1.40.
<i>Shiriana</i> .....	1.89-2.25	1.56-2.12.
<i>Sirionó</i> .....	2.43-2.74	1-1.6.
<i>Taulipang</i> .....	1.85	1.34.
<i>Tehuelche</i> .....	90 cm.	
<i>Toba</i> .....	1.50	1.
<i>Tucuna</i> .....	2	1.62.
<i>Xingú River</i> .....	2.30	1.50-2.

*Yahgan*). In the intermediary region of the Chaco strings of both kinds occur, sometimes in the same tribe; the choice between them is entirely a matter of personal preference. *Guató* bows have a string made of skin strips.

The extra length of the string is usually carried back and wound around the stave (Guiana tribes, *Carajá*, *Bororo*, Chaco tribes, etc.). This arrangement does not reinforce the bow, but provides an additional string if the one in use should break. To tighten the bowstring, an Indian slips it off one end, gives it a few twists, and replaces it while he flexes the bow by pressure against his knee.

### ARROWS

The type of head is the main basis for a functional classification of arrows because as a rule the head varies according to the special use to which the arrow is put (figs. 64, 65). In most tropical tribes a different kind of arrow is used for war, for fishing, for hunting different game animals, and even for ceremonial purposes. Feathering, on the other hand, may serve as a criterion only to establish a regional classification of arrows.

**Distribution of arrowheads.**—In the mountainous areas of western South America, along the Pacific Coast from Perú to Chile and in the plains of the southern part of the continent, arrows were, as a rule, tipped with stone heads; in the forested regions of the Orinoco, Amazon and Paraguay Basins, and among the tribes of eastern Brazil arrow points were made of wood, bamboo, bone, or sting-ray spikes. There are, however, a few exceptions. The ancient *Diaguita* of Northwest Argentina used both stone and wooden points. Stone arrowheads have been found archeologically in the sambaquís, or shell mounds, of southern Brazil, in the Guianas, and in the Xingú River basin. Im Thurn (1883, p. 239) states that a *Carib* Indian assured him that "as a boy he used to see bone, shell, or stone pointed arrows in common use." The same author writes that he has seen "arrows, headed with stone, in the possession of some *Arecunas*." In Perú stone heads of arrows or of spear-thrower darts are found at the Ancón-Supe (early Ancón) level and then disappear. (More complete information on the sequence and distribution of projectile points will be found in the archeological articles in the *Handbook*, especially vols. 1 and 2.)

**Stone arrowheads.**—No classification of stone heads has been made for South America but a map showing the regions where they have been found has been prepared by Linné (1929, pp. 55-58). The main criteria which differentiate the various types of stone arrowheads are the size, the perfection of the chipping, and the presence or absence of

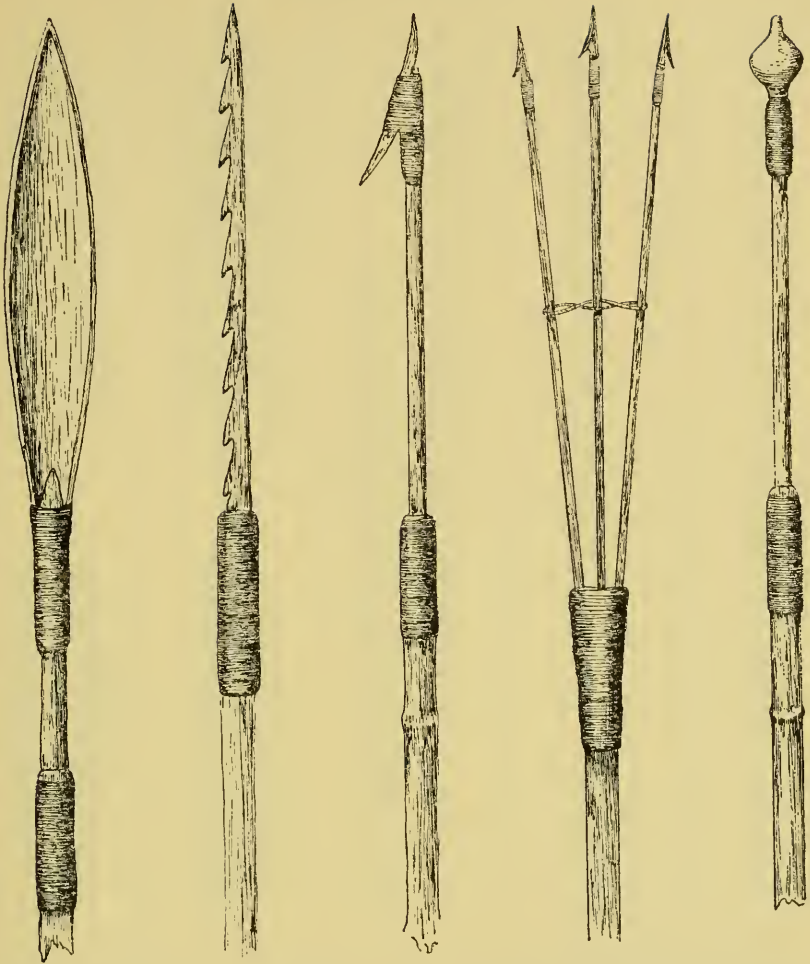


FIGURE 64.—Types of arrow points. *Left to right:* Lanceolate bamboo blade for game hunting; serrate rod for game hunting; barb; triprong, for fish; knobbed head for birds. (After Nordenskiöld, 1923.)

a tang. The best arrowheads are those of the *Ona* and of the *Dia-guita* region. The crudest specimens come from Patagonia. Stone arrowheads were chipped by a blunt rounded tool (*Ona*) or by percussion (Patagonia).

On the *Ona* arrows the tang of the head is fastened to the shaft with guanaco sinew. The ancient *Atacameño* fitted their stone points in a notch or pit at the end of a wooden foreshaft, a method used also in ancient Perú.

Flint arrowheads were used by the *Araucanians*, but bone heads seem to have been more common.



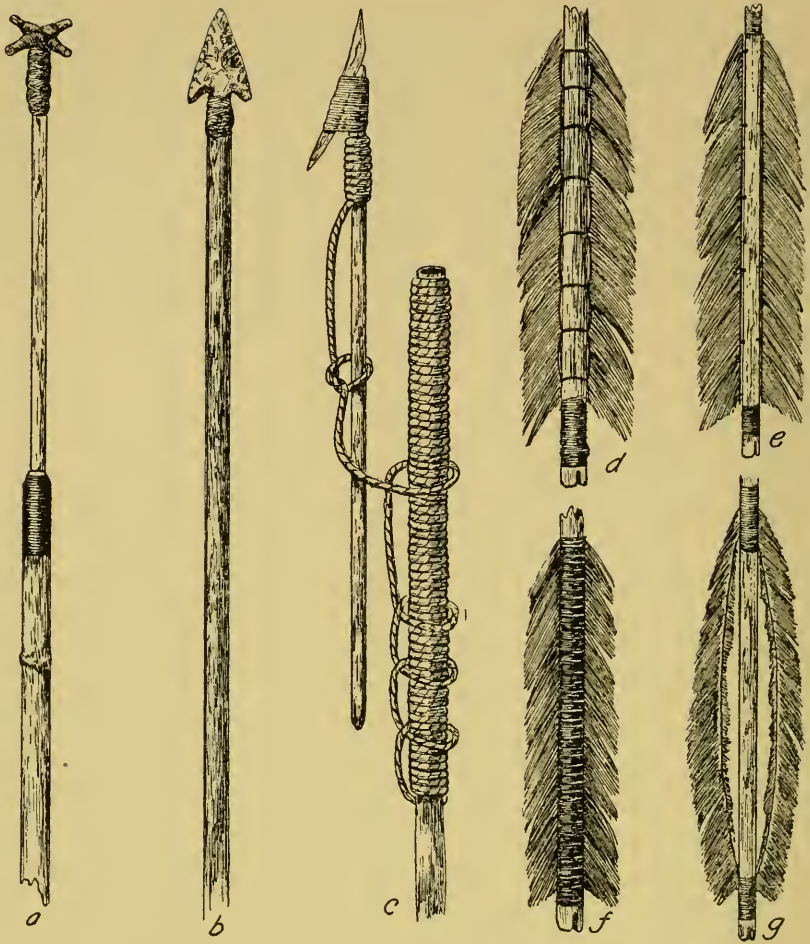


FIGURE 65.—Types of arrow points and feathering. *a*, Crossed-stick point for birds; *b*, stone head; *c*, harpoon point; *d*, flush feathering; *e*, sewed feathering; *f*, wrapped and cemented feathering; *g*, arched feathering. (*a-c*, After Nordenskiöld, 1923; *e-g*, after Nordenskiöld, 1923.)

**Arrowhead types in the Tropical Forests.**—Five main types of arrowheads are distinguishable in the forested areas.

(1) The first has a lanceolate bamboo point with sharp edges and was used only in warfare and to kill large game animals. The point is fastened to a foreshaft of hardwood, which is laid in a groove at the tang of the point and is fastened with rosin, wax, and a tight binding (of peccary hair among the *Parintintin*). On *Bororo* arrows the bamboo blade is attached directly to the seriba reed (*Avicennia* sp.) shaft. A bamboo arrowhead was generally soaked or dried before being fixed to the arrow. The size of a lanceolate bamboo head varies

from 20 to 70 cm. (*Carajá*, from 30 to 40 cm.; *Parintintin*, 40 cm.; *Paracanã* of the lower Tocantins, 70 cm.). The shape may vary even within a single tribe. Some points are almost flat; some are semicircular in cross section; some have deep notches cut near the base to produce long, sharp barbs; and some have a continuous row of teeth almost to the point. Guiana bamboo heads often have a guard directly under the point that prevents too deep a penetration of the arrow and causes it to fall to the ground before the wounded animal breaks it when dashing into thick bush.

(2) The second type is a pencillike wooden rod inserted directly into the arrow shaft. Its cross section may be round, triangular, rectangular, or diamond-shaped. Some are carved in the shape of successive abutting cones (*Parintintin*). Others may be smooth or jagged along one or both sides. Many specimens, especially fishing arrows, have a bone splinter or a string-ray spine fastened against the proximal extremity of the rod to form a sharp barb. In most cases, however, the needle-sharp splinter or spine is laid obliquely in a groove at the tip of the wooden head to serve both as point and barb. Some arrows, which are often classed in a special category, have a tubular bone—generally a monkey humerus—with a sharp point and a beveled, flaring base, fitted over the tapered end of the wooden shaft and cemented with wax (*Cayapó*). All the arrows in this second category are used for hunting large and small mammals and birds, and also for fishing.

(3) The third type of head consists of two or three pointed rods inserted into the arrow shaft. This type is employed mainly for fishing (*Parintintin*), but in some tribes (*Chiriguano*), it is also used for shooting large birds. Generally, each rod is provided with a sharp lateral barb of bone or some other material. Triprong fishing arrows are common in the Guianas. The *Panoan Chama* of the Ucayali River use arrows armed with a bunch of seven points to shoot small fish, and the *Tupí-Cawahíb*, arrows with four to seven points. The *Chané* fishing arrows which bristle with cactus thorns are a local variety of the same type.

(4) The fourth type has a harpoon head, and is used principally for fishing. The point has a hollow tang which is loosely fitted over the foreshaft and is connected to the shaft by a recovery string. The shaft serves as a float. Arrows with heads of this kind are, in fact, small harpoons discharged with a bow. Some of the *Chama* harpoon arrows fall into three parts when they have struck their mark. In certain cases the recovery string is attached to the fisherman's wrist.

The harpoon head of the *Guató* was of bone with a single barb. It was fitted loosely into a funnel made by wrapping cipo around the end of the foreshaft and was attached to the shaft with a string.

Many Guiana Indians and the *Chaké* of eastern Colombia employ harpoon arrows to shoot large game. The dragging shaft prevents the animal's escape into the thick bush.

(5) The fifth type is the blunt-headed arrow used to shoot birds. Instead of points, these arrows have knobs. The Indians give the following reasons for the advantages this type of arrow has over others for this purpose: A wide knob is more likely to kill or stun a bird than is a sharp point that might strike in a nonvital part or slide off; a blunt head does not draw blood and so does not spoil the plumage; birds hit by blunt arrows can be captured alive; when the arrow misses the mark, it does not stick in a branch.

The head of the bird arrow is ordinarily a conical or round piece of wood inserted into the shaft and often is provided with a protruding peg or point. Some Guiana bird arrows are elegantly carved and have flanges and sharp edges which enhance their appearance. The *Taulipáng* wedged the butt end of a deer horn into the split arrow point to form a knob for their bird arrows. For some bird arrows the Indians (*Botocudo*, *Paressí*, *Cayapó*, *Purí*, *Tupinamba*, *Guató*) use reed stems as the shaft and the bulging roots, carefully trimmed, as the round head.

The *Yuracare*, *Maué*, and several Guiana tribes tip their bird arrows with two or four short, cross sticks, lashed to a rod stem. Other tribes make the head of their bird arrows with a lump of wax. An ordinary arrow can also be transformed into a bird arrow by placing a piece of gourd over the point (*Mbayá*).

Bird arrows seem to be rare or lacking altogether in northwestern Brazil and in the Purús River basin, where birds are shot with the blowgun.

**Whistling arrows.**—Many tribes place a perforated nut under the arrow head to produce a whistling noise when the arrow flies through the air (*Arara*, Tapajóz River, *Paracanã*, *Yuruna*, *Shipbo*, *Amanayé*, Guaporé River, *Rucvyen*, *Guayakí*, etc.). Copper arrowheads with a hollow bulb in the middle have been found in Perú. (See Rydén, 1931.)

**Arrowshafts.**—In tropical South America, arrowshafts are made of uba stalks and taquara da frecha (*Gynerium sagittatum*), and camayuva reeds (*Guadua* sp.). Cane for arrows is often cultivated. Many Chaco Indians cultivate the Caña de Castilla (*Arundo donax*), which was imported into South America at an early date and which in many places has supplanted the use of native reeds. Some *Bororo* war arrows had serib (*Avicennia* sp.) reed shafts. Even in the same tribe different materials might be used for the shafts of arrows used for different purposes. *Parintintin* fishing arrows, for example, have

*Gynerium* shafts, while war and hunting arrows have shafts of *Guadua* sp.

The end of the forshaft is set directly into the shaft and is cemented with rosin or wax. Most Guiana Indians compress the section of the shaft which serves as a socket for the foreshaft with a special device which consists of a cord with two pieces of wood or two turtle bones attached at the ends. The operator holds one end between his toes, winds the cord a few times around the shaft and pulls the other end with his right hand, while with his left hand he rolls the shaft uniformly back and forward. A similar procedure is followed when a nock is inserted into the proximal end.

The end of the shaft is wound with a bark strip or cotton thread which extends to the lower part of the inserted wooden head; geometric designs are often produced by crossing the threads of the binding.

In Tierra del Fuego, arrow shafts were wrought of crooked wood which was heated and bent with the teeth until perfectly straight. The shaft was then scraped and polished with a grooved stone. The feathers were attached to the shaft with the skin muscles of the guanaco lashed in spirals.

**Feathering.**—With the exception of the *Cuna*, *Chaké*, *Macú*, and a few other tribes, all South American Indians attached feathers to the butt of their arrows to facilitate their flight through the air. Only fishing arrows are, for obvious reasons, without feathering.

The classification of types of feathering in South America established by H. Meyer (1898) has been so often quoted that it is necessary to reproduce here the definition of the six main types of feathering he found in Brazil, although it is open to criticism in several respects:

*East Brazilian or Ge-Tupí feathering.*—"Two feathers unchanged, seldom halved, are fastened at either upper and lower ends to the shaftment opposite each other with thread, fiber, or cipo bast. Frequently these wrappings are laid on in patterns or have an ornamentation of little feathers added."

For this definition to be adequate, it should be added that the two feathers generally are twisted in a spiral so that they have a propellerlike appearance.

*Guiana feathering.*—The feather is cut at its base and tip and the barbs are removed from one side. The wrapping seizes the two halves at regular intervals and takes ornamental patterns.

*Xingú sewed feathering.*—Two half feathers are stitched to the shaft opposite each other through perforations. The ends are seized fast with plain or patterned lashing.

The "sewed" feathering had a very limited distribution. It was used by the tribes of the upper Xingú (*Bacairi*, *Auetö*, *Camayura*, *Trumái*), by the *Bororo*, *Cayabí*, *Huanyam* and *Paracanã* (lower Tocantins), and *Asuriní*.

*Arara feathering.*—Two long half feathers, which, in addition to the end seizings, are held down by narrow wrappings of thread at short distances apart. At the nock the wrapping is done in beautiful patterns.

*Peruvian or cemented feathering.*—The two feathers of the cemented feathering are separated from the midrib with only a thin portion of the quill remain-

ing. They are bound fast to the shaftment in a close spiral with thread or yarn, and, to increase the hold on the shaft along the feather, the shaftment is covered with black or brown pitch.

*The Maué feathering.*—Like the east Brazilian feathering, this type has two entire feathers bound on above and below. At the base of the shaft, however, a nock piece or footing is set in.

Meyer's classification, which has been accepted by many specialists of South American ethnology, needs to be revised and established on a single principle, for the features that Meyer considers to be characteristic of his five main types have been selected arbitrarily and are sometimes entirely unrelated. In three cases he regards the nature of the binding as a distinctive trait; in one case, the presence of a nock; and in still another, the addition of a substance to the binding.

Our present classification will rest exclusively on the method of attachment of the feathers. If the position of the feathers is considered, two main types of feathering may be distinguished, as follows:

In the first type we have shaftment with two feathers tied at both ends and slightly arched and twisted propellerlike. This type corresponds to the "Eastern Brazilian" or "tangential feathering" of Meyer, and will be called "arched feathering" (*stegfederung*) (*Tupinamba, Caingúá, Guarayú, Cayapó, Carajá, Parintintin, Apiacá, Mashachali, Yuruna, Bororo, Botocudo, etc.*).

In the second type the feathers, split along the quill, are applied flush to the shaft. This type of feathering will be called "flush." It may be divided into various subtypes according to the method of binding employed:

- (a) The threads may be wound around the shaft from one end to the other or they may be wrapped at close or far intervals. This subtype is called "wrapped feathering" and corresponds to the "Arara" and "Guiana" feathering of Meyer (*Apiacá, Mura, Maué, Parintintin*).
- (b) The feathers may be sewed by threads passing through perforations across the shaftment. This is the "sewed feathering" and corresponds to Meyer's "sewed Xingú feathering."
- (c) The binding may be smeared with wax or rosin. This is the "cemented feathering" and corresponds to Meyer's "Peruvian cemented feathering."

Further distinctions may be made in regard to the size or shape of the feathering. In the arched feathering, one vane is removed or is greatly reduced by burning; generally, the remaining strip presents a toothed edge. In flush feathering, the feathers are halved along the quill and the remaining vane is used either with its full length or cut up and down so that only the central portion is left.

*Ona* feathering belongs to the subvariety (a) of our second type, but many details mark it off from all other featherings. The two half-feathers are lashed radially to the shaft with spirally wound sinew or gut. Except in Tierra del Fuego, the feathers are usually fastened to the shaft with cotton threads, often of several colors, or

with thin strips of guembé bark. In many tribes the threads are crossed or wound to produce ornamental effects. W. E. Roth (1924, p. 124), writing about the Guianas, describes four types of feather bindings which he names after their final appearance: diamond, claw, bar, and spiral. According to Ahlbrinck (1924, p. 220), the *Carib* of Guiana had 10 different feather bindings, called, scales of kariwaru (*Hoplosternum*), ananas, tracks of kotaka (*Aramides cayanaea*), etc.

Oviedo y Valdés (1851-55, 2: 40) states that the arrows of some Patagonian Indians carried three instead of the usual two feathers. Nordenskiöld (1925 a) has made much of the fact that a *Caingúá* arrow published by Ambrosetti likewise had three feathers; actually *Caingúá* arrows had the typical "arched-feathering" so widespread in eastern Brazil. Arrows with more than two feathers occur now and then in tribes which otherwise conform to the classic types of feathering. The *Moré*, for example, attached three or even four feathers to some of their arrows so that they would rotate faster in their trajectory. To single out these exceptions as survivals of a time when the feathering of South American arrows was more like that of North American ones is to take undue advantage of the historical method. Moreover, several types of featherings may be found in a single tribe. Thus, the *Tupí-Cawahíb* have arrows with flush, sewn, and arched feathering. The *Apiacá* used arrows both of the arched and flush types. Krause (1911, p. 264) explains the presence of several different kinds of arrows within a single tribe by the widespread Indian custom of exchanging arrows as signs of goodwill and friendship. However, such an explanation cannot apply to all cases. The feathering may also vary with the function of the arrow; for example, the large war arrows of the *Parintintin* and *Mura* have flush feathering, while their arrows for hunting small game have arched feathering.

**Nocks.**—The butt end of the arrow is generally notched to prevent its slipping from the string. If the shaft reed is a *Gynerium* and consequently likely to splinter, a grooved wooden plug is inserted in the shaft (*Shirianá*, *Chocó*, *Palicur*, *Paracas*, etc.). The *Guató*, instead of notching the brittle uba reeds, insert three small wooden splinters in the butt of the arrow. The nock of the arrow is always reinforced by a tight wrapping, generally of cotton thread or of strips of bark, irrespective of the presence or absence of a peg.

**Arrow release.**—As there are few descriptions of the methods of South American arrow release, it is impossible to map their distribution satisfactorily. Moreover, in a single tribe, such as the *Ona*, the archer ordinarily may shoot with the primary release, but use the secondary or tertiary type if he wishes to shoot far. The three main types of release are as follows:

*Primary release.*—The butt of the arrow is held between the thumb and index finger. Used by Guiana tribes, Indians of the Xingú Basin, *Palicour*, *Siusí*, and *Ona*.

*Secondary release.*—The butt is held as above, but the string is pulled back with all the remaining fingers. Used by the *Carajá*, *Tupí-Cawahib*, *Shavaje*, *Ayomano* of Venezuela, and Chaco Indians.

*Tertiary release.*—The butt is held between the index and middle fingers and the string is pulled with the remaining fingers. Used by *Tupí-Cawahib*, Xingú tribes, *Shavaje*, *Moré*, *Guató*, and *Chaké*.

**Wrist guards.**—Usually the archer protected his wrist against the impact of the string by wrappings of strings of cotton or human hair (*Guató*, *Cainguá*, *Guayaki*, *Parintintin*, *Carajá*, *Shavante*), with a leather bracelet (*Chorotí*, *Mataco*, *Ashluslay*, *Goajiro*), with a strip of bark cloth (*Moré*), or with a wooden guard (*Abipón*, *Mocoví*).

**Poisoned arrows.**—Poisoned arrows were not so widely used by the Indians as is commonly assumed from the exaggerated accounts of the Spanish conquistadors. Curare, which is the most deadly poison known to the Indians, is prepared by relatively few tribes though it is traded throughout wide regions. The descriptions of the effects of poisoned arrows on wounded Spanish soldiers do not suggest the use of curare, and it is not improbable that this deadly substance spread in post-Columbian times to regions where it was formerly unknown. The Indians who in the 16th century lived along the coast of Venezuela and the Gulf of Urabá had the reputation of concocting terrible poisons. The basic material is said to have been the juice of the manzanilla fruit (*Hippomane mancinella*), but the statement has been doubted by modern authorities. Rochefort (1658, p. 471) also mentions manzanilla juice as the poison with which the *Island Carib* smeared their arrows. Orellana was convinced that the soldiers whom he lost at the mouth of the Amazon had been wounded by poisoned arrows.

The Indians of the Apáporis and the Caiarí-Uaupés use curare to poison their arrows. The heads of these arrows consist of a round stem notched at the end to hold a piece of hardwood loosely fastened with rosin and strings. This point is smeared with curare and sometimes is provided with circular incisions.

The tribes that poison their war and hunting arrows are the *Macushí*, *Makú*, *Tucuna*, and, south of the Amazon, the *Kepkiriwät*, *Amniapá* and *Pawumwa* of the right side of the Guaporé River, the *Nambicwara*, and the *Paressí*. In the 16th century, the *Chiquitos* were greatly feared both by their neighbors and by the Spaniards because of their poisoned arrows. It is probable that, like the modern tribes of the area, they extracted curare from a *Strychnos*. The

*Araucanians* poisoned their arrows with the juice of the coligerey root (*Colliguaja odorifera*).

Tribes that use poisoned arrows cover their arrowheads with a sheath as a precaution against accidents and also to prevent water from washing off the coating of poison.

**Quivers.**—A sharp distinction should be made between quivers for arrows shot from bows and those for blowgun darts. The latter have the same distribution as the blowgun and will be described below. Quivers for arrows have a limited distribution—mainly in the southern tip of the continent among the *Ona*, *Alacaluf*, *Chono*, *Tehuelche*, *Araucanians*, *Diaguita*, *Charrua*, *Abipón*, and *Mocoví*.

*Ona* quivers were made from the hide of the hair seal.

To manufacture them a hide was cut in a rectangular pattern of suitable size and shape. This was doubled and sewn up the side, while at the bottom a small oval piece of hide was inserted and stitched into place. Were it not for this flat bottom the delicate glass points [made in post-Columbian times] would have been jammed against one another and thus become broken. On the upper end of the quiver there is a small loop of hide by which it was hung out of reach of dogs when in camp. [Lothrop, 1928, p. 78.]

Similar quivers were used by the *Yahgan* and *Alacaluf*. The *Tehuelche* seen by the early navigators did not have any quivers, but "inserted their arrows in a narrow woven fillet encircling the head so that they projected above like a crown" (Lothrop, 1928, p. 78). However, quivers are mentioned in more recent descriptions of these Indians (Outes, 1905, p. 254). Hide quivers were used by the *Araucanians* (Medina, J. T., 1882, p. 134) and the ancient *Atacameño*, as is apparent from a skin quiver found at Rio Loa (Montell, 1926, pp. 10-12). Azara (1809, 2:18) states that the ancient *Charrua* carried their "small arrows in a quiver suspended from their shoulders." Quivers are not used by modern Chaco Indians and are reported only once for the *Abipón*, by Dobrizhoffer (1784, [1822] 2:398), who says: "The quiver is made of rushes and is adorned with woolen threads of various colours." A quiver of the same type was found by Baucke (1935, pl. 16) among the weapons of the *Mocoví*. A long strap attached to the quiver suggests that it was slung from the shoulder.

The arrows of the tropical Indians were too long to be comfortably carried in a quiver suspended from the shoulders. This probably explains the rare occurrence of quivers north of the Chaco. Quivers, however, were necessary as a protection against one's own poisoned arrows.

Nordenskiöld (1931, pp. 84-85) lists the following tribes north of the Amazon who supposedly had quivers: *Motilones*, *Menimehe*, *Guahibo*, *Guypunavi*, *Corbago*, and the Indians of Trinidad. The *Menimehe*, who poisoned their arrows, carried them in wicker quivers, in bamboos with the partitions scraped out, or in more elaborate con-



ainers made of bound bamboo strips (Whiffen, 1915, p. 117). The quiver also is mentioned among the *Guahíbo*, who used poisoned arrows (Rivero, 1883, p. 223), but is not described. The allusion to a quiver full of darts in Juan de Castellanos' poem (1850, p. 95) hardly is valid evidence for the occurrence of quivers among the Trinidad Indians. The cylindrical baskets in which the *Motilon*es stored their arrows at home cannot properly be called a quiver (Bolinder, 1917, p. 42). The *Corbago* Indians, like the ancient *Tupinamba*, put their bows and arrows in casings, probably as a protection against worms or humidity.

#### THE PELLET-BOW

The pellet-bow is aptly described by Nordenskiöld as a combination of a sling and of a bow (fig 66). Instead of arrows, it projects small clay pellets which are placed on a fabric cradle stretched between the two strings of the bow. A small forked stick keeps the strings apart. When shooting with the pellet-bow, the strings must be pulled aside from the stave.



FIGURE 66.—Pellet-bow, *Guató*. (After Schmidt, M., 1905, fig. 72.)

The pellet-bow has a peculiar distribution in South America. It is found among all the Chaco tribes, among the *Chiriguano*, *Yuracare*, *Churapa*, *Guató*, *Mashacalí*, *Caingúá*, and *Carajá*, and among the Caboclos of eastern Brazil. Nordenskiöld (1929 b, p. 56) is inclined to consider the introduction of the pellet-bow as post-Columbian, because of the resemblance between Hindu and South American pellet-bows, both of which have a thick round grip. He surmises that it spread by means of Portuguese who had become acquainted with it in India. The pellet-bow is, in fact, a favorite toy among Mestizo children; Krause (1911, p. 274) points out that the *Carajá* borrowed it from the Caboclo children. Moreover, our many and detailed authorities on the ancient Indians of the Brazilian coast never mention this weapon, which became so common among their acculturated descendants.

#### THE SPEAR THROWER<sup>1</sup>

The spear thrower (fig. 67) is an old weapon in South America. It was found in Perú in several cultural horizons from Nazca to the *Inca* period. It was known to the builders of Tiahuanaco, and the

<sup>1</sup> The spear thrower is commonly called *atlatl*, its *Aztec* name.—EDITOR.

central personage carved on the gateway of the Sun probably holds a spear thrower in his right hand. The same weapon is frequently represented on Nazca and proto-Chimu (Mochica) vases. Some of the troops of the *Inca* were armed with spear throwers. Though in the 16th century it was still the favorite weapon of the Ecuadorian natives, it was certainly less used in the *Inca* Period than in earlier times.

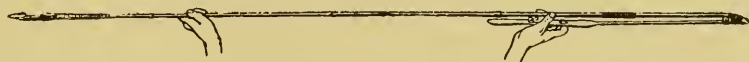


FIGURE 67.—Spear thrower and dart. (After Krause, 1911, fig. 127.)

All South American spear throwers belong to the "male type," i. e., all have a prong or spur on the distal end which engages the butt of the dart so that in South America this weapon can be differentiated only on the basis of minor details, such as the presence or absence of a hole near the distal end or of a supplementary prong. The known specimens fall into three main categories: the two first were represented mainly in ancient Perú; the third type was restricted to a single tribe of northeastern Brazil.

The distribution of spear throwers of the first category is limited to ancient Perú. It was a stick from about 15 to 24 inches (38 to 60 cm.) long with two hooks or prongs inserted in grooves at each end and lashed with cotton twine or sinew. The hook on the distal end served to engage the butt of the missile; the second prong, turned backward and placed near the other end, was intended for the forefinger that was crooked over it. Thus, the hand was forced into the most convenient position to hurl the dart. The hooks for engaging the darts were of stone, bone, shell, or copper in conventionalized shapes of birds or human figures.

A great many spear-thrower hooks have been discovered in Ecuador, including a specimen covered with an artistically wrought gold plate. (See Verneau and Rivet, 1912-22, 1: 200-203.) Spear throwers of the same type were used by the *Chibcha*, the tribes of the Cauca Valley, and perhaps by the ancient *Cueva* of Darién.

The *Taino* spear thrower belonged to the Peruvian and Colombian type. It consisted of a straight staff with a rear hook or, more correctly, an oblique fish bone against which rested the butt of the dart ("pececito con su muesca donde asentaba la vara como dardo"). A braided loop was attached to the proximal end of the weapon (Lovén, 1935, pp. 441-446).

In the past, the *Jívaro* had a type of spear thrower which, judging from Pigorini's design (1881, pl. 1, fig. 4), was typologically related

to the Peruvian and Ecuadorian specimens. It consisted of a straight stick tapering from the butt to the tip where the spur was lashed; a perforation near the proximal end through which a string was passed, permitted the implement to be fastened to the wrist (Stirling, 1938, p. 86).

Evidence of the use of the spear thrower was found in the Second Pre-pottery Period and in the pottery layers of the north Chilean Coast. This weapon also was seen in the hands of the *Araucanians* by the conquistadors of Chile (Mariño de Lovera, 1865, 6: 46).

That the spear thrower was used in Northwest Argentina by the *Atacameño* and *Diaguita* is shown by figures on vases, especially on those of Los Borreales. The spear thrower so represented seems to be provided, like the Andean specimen, with two hooks. (See Vignati, 1936, pp. 356-358; and Márquez Miranda, 1942-43, vol. 4, pp. 52-56.) A beautiful spear thrower from Atacama has been recently published by Casanova (1944, p. 117). It is a broad stick with a shallow groove, a bone hook, and a handle.

On spear throwers of the second category the shaft widens near the grip to allow for a hole for the forefinger. Only two specimens of this kind have been unearthed in Perú; both were found at Nieveria and belong to the first civilization of Lima. They are almost identical to those used by the modern *Carajá* and by most Xingú River tribes; therefore, Krause has called this type "Amazonian."

The spear thrower of the *Auetö*, *Camayura*, and *Trumái* is a round stick which widens into a flat, wide grip. The Xingú River specimens measure about 28 inches (70 cm.). The major width of the grip, which is concave on both sides, is 2 to 2½ inches (5 to 6 cm.) and its length is about 6 inches (15 cm.); it has a perforation for the forefinger. The hook at the distal end is formed by a wooden stick or piece of bone fastened obliquely to the shaft. Similar spear throwers occur among the *Carajá*, *Shavaje*, and probably among the *Tapirapé*. Among the Xingú tribes the spear thrower—formerly a war and hunting weapon—has been displaced by the bow and arrow, and it survives only as a sporting weapon used in a game or as a dance accessory (Steinen, 1894, p. 232).

The spear thrower darts of the *Camayura* and *Auetö* are made of uba reed and often have a carelessly fastened feathering. They are tipped with blunt stone heads or sometimes with wooden knobs like bird arrowheads. *Carajá* spear thrower darts are made of canna brava and, like the Xingú River specimens, they are tipped with stone or heavy palmwood knobs, but they lack feathering (Krause, 1911, p. 273).

To cast the dart the *Carajá* rest it on the spear thrower with the butt end against the hook. The index finger goes through the hole, the

dart is held between the thumb and middle finger and the two remaining fingers rest against the grip under the dart. The dart is supported by the left hand. The *Carajá* use the weapon to play the "game of the *Tapirapé*"; it is probable that they received the spear thrower from the *Tapirapé*, who in turn may have borrowed it from the Xingú tribes (Krause, 1911, pp. 273-274).

The spear thrower of the Purús River was a small board with a narrow handle and a hole for the fore finger. The spur was lashed at the distal end.

The Indians of the upper Amazon (*Mainas*, *Cocama*, *Omagua*) fought against the first Spanish explorers with spear throwers; 18th-century *Omagua* and *Cocama* still used it, mainly to hunt turtles. A *Cocama* museum specimen closely resembles the descriptions of early travelers. It is a thick board, flat on the upper side and convex underneath, that widens toward the center, where it has a pit for the fore finger. The peg is lashed at the end of a groove running the full length of the shaft. The same type of spear thrower, characterized however by a bulging distal end, occurred among the Indians of the Cauca Valley, Antioquia, and the upper Magdalena. A spear thrower is also mentioned but not described among the *Panobo* (Tessman, 1930, p. 11).

The *Mojo* and *Canichana* used the spear thrower for hunting and warfare. Eder (1791, p. 287) describes the spear thrower of Mojos as a tube (capsula), which must mean a halved section of bamboo; according to a picture in Eder, the *Mojo* spear thrower was a narrow board with a hook to engage the butt of the dart. The *Mojo* discarded this weapon soon after European contact.

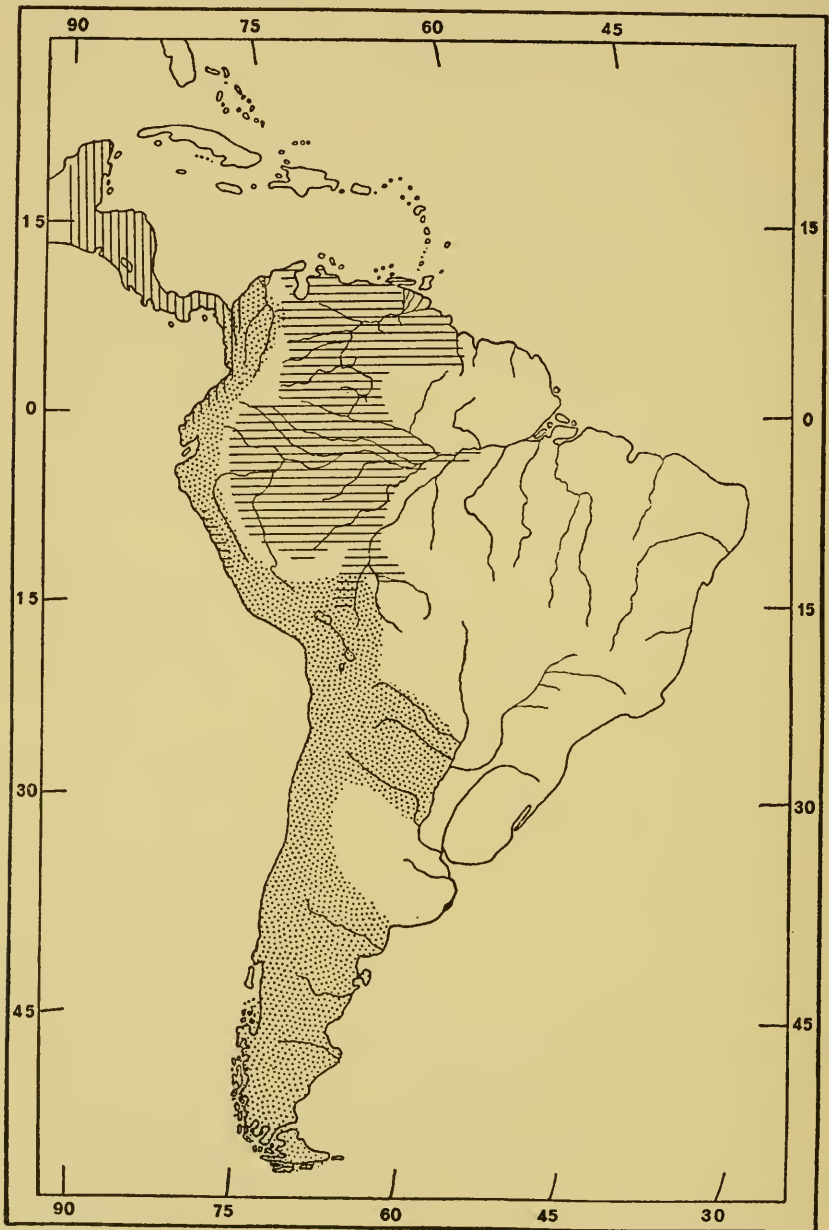
In the 17th century, the *Caripuna* and *Quirina*, of the Purús River, had beautifully carved spear throwers which they traded to other nations (Acuña, 1891, p. 145).

The third category of spear thrower is represented by a single specimen in the Museum of Copenhagen, collected in the 17th century from the *Otschukayana*, a "*Tapuya*" tribe of eastern Brazil. It consists of a tapering piece of wood with a deep groove to receive the dart, which is engaged by a horizontal peg lashed to the proximal and narrower end of the instrument. It measures about 35 inches (88 cm.) in length and 1½ inches (4 cm.) in width. It is mentioned by Herckman and has been drawn by Eckout (Bahnsen, 1889).

The spear thrower (*varas tiraderas*) has been attributed by Oviedo y Valdés (1851-55, vol. 2) to the *Chana* and *Timbú* of the Paraná Delta, and a spear-thrower hook was found archeologically by Lothrop (1932, fig. 74) in a region formerly occupied by the *Querandí*. The mouth of the Río de la Plata probably is the southernmost limit of the spear thrower in South America.

## THE BLOWGUN

**Distribution.**—Although the blowgun (map 4) has attracted wide attention among modern travelers, it is rarely mentioned by



MAP 4.—Distribution of the sling (*stipple*) and blowgun (with poisoned dart, *horizontal hachure*; with clay pellet, *vertical hachure*).

16th- and 17th-century writers. There is a reference to its use in Colombia by Cieza de León and, according to a report of the Maldonado expedition to eastern Bolivia, it was used by an Indian tribe located approximately in the Beni Basin. Heriarte refers to the blowgun in the Province of Aguas, somewhere on the upper Amazon, and both Oviedo y Valdés and Simón speak of the "zerbatana" of the natives around Lake Maracaibo (*Bubure?*). According to Saabedra (1620) and Figueroa (1904, p. 95), who were among the first missionaries to visit the area of Mainas (eastern Ecuador and Perú) at the beginning of the 17th century, the *Mainas*, *Paranapura*, and *Muniche* of this region used the blowgun.

It was obviously an ancient weapon in Perú, for men shooting birds with a blowgun are represented on early Chimu vases and on a fabric discovered at Pachacamac. The Peabody Museum of Harvard recently has acquired a blowgun made of an 18-foot (about 5.4 m.) cane found near Trujillo. With it were discovered a bundle of darts from 4 to 5 inches (about 7.5 cm.) long. That it was of little importance or obsolete at the time of the Conquest may perhaps be surmised by the silence of our sources.

Early data on the occurrence of the blowgun are scarce mainly because the tribes that used it inhabited regions that were explored long after the more desirable parts of the continent had been subdued, but 17th-century conquistadors did not fail to allude to it when the tribes they visited used it. The *Jivaro*, however, constitute a remarkable exception, for although today they manufacture beautiful blowguns, the 16th-century Spaniards who fought against them never mention the weapon. A possible explanation is that the *Jivaro* acquired the blowgun sometime after the 16th century. Recently, it has been adopted by many tribes who formerly did not use it. Nordenskiöld (1924 a, p. 62) rightly observes that the efficiency of the blowgun depends on the use of curare poison, the preparation of which is the monopoly of a few tribes.

Nordenskiöld bases his hypothesis that the use of the blowgun is fairly recent in tropical America and that it spread mainly in post-Columbian times on the scarcity of references to curare in the early sources and on the distribution of the weapon. The vagueness of our early sources on tropical South America does not justify our accepting such purely negative evidence, but it is, nevertheless, striking that the blowgun is not found in eastern South America and in the Xingú region. In the Guianas the blowgun is found among the *Western Carib* (*Taulipáng*, *Arecuna*, *Acawaí*), but is lacking among the more easterly groups (*Warrau*, *Baramá Carib*, *Surinam Arawak*).<sup>2</sup>

The blowgun reached its highest development in South America

<sup>2</sup> For its post-Conquest spread in the Montaña, see Handbook, vol. 3, p. 515.—EDITOR.

among the tribes of the upper Amazon and in the regions between the Orinoco and the Andes. It remained unknown to the tribes of the West Indies.

Manufacture of blowguns was formerly the specialty of some tribes that bartered them to their neighbors. In Brazilian Guiana, the *Yecuana* had the monopoly of their fabrication because the best bamboo for the purpose grew along the upper Marewari, Ventuari, and Orinoco Rivers. The *Iburuana* of the upper Ventuari imported the tucún nuts of which they made the mouthpieces of their blowguns (Koch-Grünberg, 1923 a, 3: 338). Likewise the *Macushi* imported their blowguns from the *Arecuna*, *Maiongkong*, and *Guinau*, who live in a region where the *Arundinaria* are abundant. The *Camaracoto* obtained their blowguns at high prices from the *Marikitare*; sometimes they bought only the inner tube and then encased it themselves, for they were well provided with suitable wood for the outer tube.

Certain tribes had a monopoly on the fabrication of curare. The blowgun poison of the *Tucuna* was considered to be the most effective in the whole of Amazonia, but the knowledge of its preparation, which requires time and care, is being lost.

**Types of blowguns.**—There are four main types of blowguns:

(1) The most primitive type consists of a single bamboo tube. It is represented in South America by the *Mojo* and *Huari* blowgun, which is a simple bamboo stem, straightened by heating it over a fire and with its inner partitions abraded by fire, sand, and water. (See Métraux,, 1942 a, p. 68, and Nordenskiöld, 1924 a, p. 80.)

(2) The second type, found among the tribes of the Guianas and of the Orinoco and Uaupés Rivers and also among the *Macú* and *Passé*, consists of two tubes, one placed within the other to prevent warping. The inner tube generally is of *Arundinaria schomburgkii*, which is cut to the desired length, rotated over a fire until dry, and then exposed to the sun until it becomes yellow. The outer protective tube is made of a straight stem of the paxiuba palm (*Socrates exorrhiza*) or more rarely of a palm of the *Arecineae* tribe, which is dried until the central pith can easily be removed with a rod. The bore often is rubbed clean and is polished by rubbing through it a little bunch of tree fern roots. A conical mouthpiece, often carved from an *Astrocaryum* kernel, is fitted to one end of the tube, while the other end is reinforced with a wooden ring. A peccary tusk stuck in wax is mounted on the tube to serve as a sight. The weapon often is wound spirally with the shining black bark of a creeper. Its length is 10 to 13 feet (3 to 4 m.).

(3) The third type also consists of two tubes. The inner reed is encased within the two halves of young stems that have been carefully

scooped out. The whole is smeared with a layer of black wax and is wrapped with bark strips "in a somewhat overlapping spiral" (*Siusí, Tucano*).

(4) The fourth type, found in the upper Amazon and the *Choco* region (*Chébero, Jivaro, Chocó, Shipibo, Miraña, Pioje, Záparo, Quijo, Coto, Colorado, Ticuna, Tucuna, Yamamadí*), consisted of two sections of palmwood grooved longitudinally and fitted together to form a round bore. The manufacture of this type was observed and described by Stirling (1938, p. 83) among the *Jivaro*.

The *Conibo* blowgun was wrapped first with maize leaves, then wound with bark strips and finally coated with rosin.

The *Cuna* blowgun, which is unlike any other in South America, is composed of several tubes of slightly varying diameters joined together so as to obtain the correct length.

**Missiles.**—In Central America the most common missiles for blowguns are clay pellets, but in South America such projectiles are reported only among the *Cuna* and the *Colorado* Indians of western Ecuador (Linné, 1934, p. 192). Ribeiro de Sampaio's (1825, p. 55) statement about the use of clay pellets among the Indians of the Juruá River is not sufficiently specific to be included in a distribution map.

Everywhere else in South America, blowgun missiles are darts smeared with curare, a poison which made the blowgun into an efficient hunting weapon. The darts were thin splinters of the midrib of palm leaves (*kokerit, Astrocaryum, inaja, bacaba, etc.*). The technique used by the *Jivaro* for making these darts also has been described by Stirling (1938, p. 8).

A wadding of wild cotton that will receive the impact of the air puff is attached to the butt end of the dart. Since the wad is put on the dart when it is loaded, the Indians carry a supply of floss in a little calabash or in a basket tied to their quivers. Before shooting the dart, the hunter notches the curare-smeared point to facilitate its breaking off in the wound if the wounded animal tries to rid itself of it. Formerly, the notch was made with a piranha jawbone (*Pygocentrus*), which also was attached to the quiver.

**Blowgun quivers and protection of darts.**—Guiana quivers, which sometimes hold 150 to 200 darts, are twilled baskets made of strong strips of creepers. The bottom is made of wood or a gourd, the lid of tapir skin. The outer surface is smeared with wax or pitch; sometimes (e. g., among the tribes of the Içana and Caiarí Rivers) the quivers are partly covered with an additional layer of basketry with geometric designs. The *Jivaro, Chama, Aguano, Candoshi, Mayoruna, Chayavita*, and *Lamista* use bamboo quivers that sometimes are engraved in various patterns. Wooden quivers are reported among the



*Buhagana* of the upper Apáporis and Tiquié. A palm spath serves as a quiver among the *Hwanyam* and the *Yecuana* (Koch-Grünberg, 1923 a, 3: 341).

The darts must be stored with great care to avoid accidents. Many Guiana tribes (*Taulipáng*, *Macushí*, etc.) twine their darts together with two pairs of cotton strings—one at each end—and then wrap the bundles so obtained around a stick of the length of the quiver. A hoop is attached at the end of the stick as a protection for the hand when the quiver is reversed in order to let the bundle of darts drop out. The Içana and Caiarí River Indians place their darts point down in the quiver, where a layer of bast fibers prevents them from breaking. The *Buhagana* fold their darts in a grass mat. The *Jívaro* fill their quivers with a fibrous material which holds the darts in place.

Not all the darts in a quiver are poisoned, for the Indian smears with curare only those he intends for immediate use. The *Arecuna* sprinkle their darts with powdered stone to prevent the darts from sticking together (Koch-Grünberg, 1923 a, 3: 65).

**Technique of shooting.**—Shooting with a blowgun does not entail so much skill and strength as has often been claimed. When shooting, the Indian holds the tube with both hands, palm down, close to the mouth and with the sight uppermost. He sends the dart on its way with a slight puff (Stirling, 1938, p. 83). The maximum effective range is from 30 to 45 yards.

This weapon is especially useful for shooting birds or small mammals, but the amount of poison on the darts is not sufficient to cripple permanently a large animal and even less a man.

#### SLINGS

**Distribution.**—The sling (map 4) can be used to good advantage only in open country. It was the favorite weapon of mountain Indians from Colombia to Chile (Cauca River, *Quimbaya*, *Ica*, *Panche*); it was also used by the *Ona* and *Yahgan* of Tierra del Fuego and by the *Tehuelche*. In the forested areas of South America it occurs as a boy's toy, e. g., in the Chaco. It is found in eastern Bolivia among the *Mojo*, *Canichana*, *Itonama*, and *Bauré*, who live partly in open savannas. Lacking stones, the *Mojo* are said to have cast with them clay pellets bristling with curare-poisoned thorns. The sling also is found among the *Chiriguano*, who have borrowed it from their *Quechua* neighbors.

**Types of slings.**—The Andean sling generally was made of wool or cotton; the broad central cradle which held the stone was woven in a tight fabric, often decorated with varicolored geometric designs. The slit in the middle of the cradle gave a certain elasticity to the textile

so that stones of different sizes could be thrown. On some slings the cradle was a separate piece to which strings were tied. One of the strings ended in a loop which was slipped over a finger. Both strings were held in the same hand, the sling was whirled around the right shoulder, and the missile was thrown by releasing the loopless string.

The cradle of the *Ona* and *Yahgan* sling was a piece of Guanaco or seal skin. On *Ona* specimens it was suspended on braided whalegut lines, while on *Yahgan* slings it was attached to strips of guanaco hide. The method of discharge also differed in the two Fuegian tribes. The *Ona* wrapped the "long end around the fore finger, while the *Yahgan* inserted it between the fourth and little fingers so that it extended across the palm of the hand" (Lothrop, 1928, pp. 83-84).

The Chaco sling is a flimsy implement made in a few minutes by looping a cord in the middle to form a rudimentary cradle or central net. The only missiles are fragments of hardened clay.

#### BOLAS

**Distribution.**—The distribution of bolas (Spanish: boleadoras) coincides, in part with that of the sling, a coincidence that is not entirely fortuitous, since both weapons are effective only in open country.

The occurrence of the bolas among the *Ona* of Tierra del Fuego is doubtful. Spherical stones that may have been for bolas have been found in the open country of the Isla Grande, but their actual use is not reported by our authorities on these Indians. Bolas were a favorite weapon among the *Tehuelche*, *Puelche*, *Querandí*, *Charrua*, and probably all tribes of the Pampa. They were known to both Chilean and Argentinian *Araucanians*. In ancient Perú, bolas were used mainly by the *Aymara*, but also by the *Quechua*. Bolas have been found in the chullpas of Bolivia, but they do not appear in archeological collections made on the coast and are not reproduced on the Chimu ceramics, an indication that they were not adopted by the coastal cultures. Bolas also are mentioned by the conquistadors who, at the beginning of the 16th century, entered the plains of Mojos. In the 18th century, both the *Mocoví* and the *Abipón* used them. In modern times, the *Lengua* still employed them to catch rheas. Koenigswald (1908) assigns the use of the bolas to the *Shokleng* (*Aweikoma*) of Santa Catharina, but the statement needs confirmation. Stone for bolas were found archeologically in Uruguay and in southern Brazil, a distribution which coincides with historical data.

**Types.**—Typologically, bolas may consist of one, two, or three stone balls. The one-stone bolas, or "bola perdida," is described by the 16th-century Spaniards who saw it in the hands of the *Querandí* when they attacked the horsemen of the Adelantado Mendoza. The

bola perdida was still used 100 years ago by the *Tehuelche*, who sometimes handled it as a mace to smash the skull of pumas. A text by Sarmiento referring to a *Quechua* weapon may be interpreted as a reference to the bola perdida. The *Uro* on the southern shore of Lake Titicaca still hunt ducks with a straw bola perdida.

Two-stone bolas are reported in Patagonia, and among the *Aymara* and the *Shokleng* (*Aweikoma*) of Santa Catharina.

The most common type of bolas consists of three stones; the one held in the hand is smaller and more elongated than the others. This is the bolas used by the *Aymara*, the *Mojo*, and the Chaco Indians, and today by the gauchos of Argentina and Uruguay.

The weights of the Patagonian bolas were often beautifully polished spherical stones with a deep groove around the middle for fastening the cord. The stones of *Aymara* bolas (*llivi*) were smaller but also grooved; modern *Aymara* bolas are folded in raw leather, as were the stones of the *Mocovi* and *Abipón* bolas.

The bolas was principally a hunting weapon, but it became a war weapon that was used with some success against the Spaniards when the Indians observed how effectively it stopped their horses. (See Friederici, 1915, p. 34, and Nordenskiöld, 1929 b, p. 52.)

#### CLUBS

South American clubs fall into four main categories: (1) staff clubs or cudgels; (2) flat clubs or wooden swords, called in Spanish literature "macanas"; (3) maces or clubs with a stone or metal head; and (4) throwing clubs.

**Staff clubs or cudgels.**—The crudest forms of this weapon are the ordinary sticks used by several tribes for hunting or warfare (*Boto-cudo*, *Yahgan*, *Alacaluf*, *Guayakí*). The Indians of the Apáporis region used knotty branches to break their enemies' legs. Nimuendajú saw the *Parintintin* use simple sticks as cudgels.

Cudgels usually are carefully carved and given a conical shape (*Carajá*, *Shavaje*, *Cayapó*, *Caingang*, *Shipaya*). The clubs of the southern *Caingang* have a prismatic cross section and sharp edges. Clubs with a square cross section occur only among the *Caingua*. The clubs of the Chaco tribes were heavy cudgels of palomataco wood with a bulging conical head or a wooden disk carved at the distal end of a cylindrical shaft. The latter type is reminiscent of the *Inca* maces. The *Shipaya* used short, cylindrical clubs with a suspension loop.

**Flat clubs, or macanas.**—"Macana," a *Taino* word, was applied by the Spanish conquistadors to all flat wooden swords or clubs used by the South American Indians. The original macana of the *Taino* was about 5 feet to 5 feet 4 inches (1.50 to 1.60 m.) long and 2 inches (5 cm.) wide. It was flat with two sharp edges and tapered from the

handle to the straight distal end. The Indians handled it with both hands.

On the mainland the wooden sword is reported among the Indians of Darién, Urabá, the Cauca Valley, the region of Piritú (*Cumanagoto* and other tribes), among the *Piapoco*, *Guahibo*, *Pioje*, and *Achagua*, and, south of the Amazon, among the *Cayabi*, *Huari* and the *Nambicuara* (as a ceremonial weapon). It was also the weapon of the Panoan tribes of the Ucayali.

The wooden sword was also used by the *Inca* armies. Here it was made of hard chonta wood, was about 4 feet (1.2 m.) long, 4 inches (10 cm.) wide, and tapered toward the handgrip. The rounded hilt ended in a knob or pommel.

The Guiana macana had the appearance of a sharp-edged paddle. The short, flat clubs of the *Macushi*, *Acawoi*, *Carib*, and *Umaua*, which had the handle near the middle and a pointed shaft, served as a knife, a club, and a bayonet (Roth, W. E., 1924, p. 173, and Koch-Grünberg, 1923 a, 3:302).

Typologically the famous *Tupinamba* tacape, or sword, with its round or oval flat head at the end of a long flattened shaft, is related to the Guiana paddle club, though it must be regarded as a highly aberrant form. The spatulate club of the *Chiriguano* and *Guarayú* belongs to the same general type.

Besides their conical cudgels, the *Cayapó* had two types of flat clubs: the first with a round grip and a flat rounded end; the other flat from the tapering grip to the sharp flat blade. The latter type is covered with a basketry sheath (Krause, 1911, p. 392).

The *Suya*, *Trumaí*, and *Asurini* of the Xingú River and the *Chacobo* of eastern Bolivia have small clubs with a flattened oval head and a short shaft. These clubs often are used as dance accessories (*Trumaí*, *Camayurá*, *Chacobo*).

**Maces.**—The favorite *Inca* club was a mace consisting of a starlike head of stone, bronze, silver, or even gold with a central perforation into which a handle (generally about 3 feet long) was inserted.<sup>3</sup>

Many maces with stone or copper heads have been found on the Peruvian Coast. A Nazca specimen is described as follows: The shaft of hardwood, 74 cm. long, passes through the central hole of the copper head and is fastened by a piece of leather connecting the head to the shaft. Similar clubs have been found at Pachacamac, Marquez, Chiuitanta, and Trujillo (Antze, 1936).

Stone or copper maces found in the *Diaguíta* territory belong to two types: one consists of simple rings; the other has a star-shaped head (Márquez Miranda, 1942-43, p. 42).

<sup>3</sup> Casas, B. de las, 1939: "Las porras eran a manera de esarella, y pasaba el palo por medio con un astil cuasi de cuatro palmas, y traíanlas ceñidas al cuerpo del brazo."

In the 17th century, some tribes of the upper Paraguay River used maces with stone heads (*itaiza*). These Indians were probably *Guaraní*, not *Caingang*. Countless stone rings, probably mace heads, have been found on archeological sites in the State of Rio Grande do Sul.

**Throwing clubs.**—The short, bulky clubs of the Chaco Indians could be hurled effectively both at men and at game. *Mbayá* and *Mocoví* hunters cast clubs at deer and rheas, which they pursued on horseback. Smaller clubs with a bulging head and a short handle are used by the *Chamacoco* and other Chaco tribes to knock down camp rats. Throwing clubs with bulging heads are also reported among the *Guayakí*.

There is no convincing evidence that the *Tehuelche* were armed with throwing clubs attached to a recovery cord.

**Aberrant types of clubs.**—An *Araucanian* club deserves special mention for its peculiar shape and specialized function. The end of the weapon expanded on one side into a sharp blade and on the other into a hook. An enemy who had been knocked down with the blade was dragged off the field of battle with the hook.

The national weapon of the *Sherente* is the “*kwiro*,” a staff club 48 inches (1.20 m.) long with a thickened butt somewhat curved in saber fashion which has an edge on both the convex and concave side (Nimundajú, 1942, p. 76).

**Decoration of clubs.**—Clubs often were decorated with black and white basketry sheaths (Guiana, *Cayapó*, *Cayabí*, *Cainguá*, etc.). Guiana clubs were engraved with designs filled in with diverse colors. *Cayapó*, *Apinayé*, *Carajá*, *Shavaje*, and *Camayura* clubs had longitudinal flutings that probably originated in the marks left by the scraping instruments. *Tupinamba* clubs were embellished by a cotton fringe and feathered tassels that were renewed before the execution of war prisoners. The handles of the clubs often were covered with cotton, wound tightly to give a better grip to the hand. Short clubs were provided with a loop for the wrist.

#### THE BATTLE AX

The battle ax, or halberd, existed only in ancient Perú. The stone or metal head of the battle axes was the common Andean or T-shaped type with two ears that were lashed against the shaft. The halberd was either a combination of the star-shaped mace and the ax or a blade with several sharp hooks similar to the heads of European halberds.

#### DAGGERS

Daggers seldom are mentioned in the literature. For hand to hand fighting, the *Sherente* carried a dagger 12 inches (30 cm.) long made

either of bamboo or of the femur of a steppe deer with a feather-ornamented wooden handle. The weapon was suspended on the back by a neck cord (Nimuendajú, 1942, p. 76).

The daggers of the *Panoan* tribes of the Juruá River are short bamboo blades with a hilt covered with squirrel skin; they were worn on the back held by a tumpline.

*Parintintin* daggers were made of bamboo; the internodium served as a handle. They were used both as weapons and cutting tools.

#### LANCES, JAVELINS, AND HARPOONS

Cieza de León (1932, pp. 55, 70), in listing the weapons of the *Quimbaya* and those of the Indians of the Cauca Valley, distinguishes carefully between the "dardos" and "lanzas," i. e., between javelins and lances. Few of our ancient sources make this distinction so that it is difficult to establish the respective distribution of these two weapons.

**Lances and spears.**—The distribution of the lance certainly is greater than would be apparent from a listing of the tribes mentioned in the available literature. Moreover, the iron spear heads traded to the Indians by the Spaniards contributed to the increased popularity of this weapon among many tribes that perhaps had not previously used it or that had considered it of secondary importance.

The lance was one of the chief weapons of *Chibcha* and *Inca* warriors; it is still the chosen weapon of the *Jívaro*. The use of the thrusting spear or lance is reported among a great many tribes of the upper Amazon and its tributaries, including the *Yameo*, *Coto*, *Mayoruna*, *Cashibo*, *Chayavita*, *Iquito*, *Chamicuro*, and *Jívaro*. It is also found among the tribes of the Tapajóz River (*Apiacá* and *Mundurucú*), the Araguaya River (*Carajá*, *Shavaje*), the coast of Brazil (*Purí-Corodo*), southern Brazil (*Caingang*), and the Chaco, and among the *Guató*.

The thrusting power of a lance carried by a man on horseback made it the favorite weapon of the equestrian tribes (*Abipón*, *Mocoví*, *Mbayá*, *Araucanians*, *Charrua*, *Tehuelche*).

The chief weapon of the *Yahgan*, *Alacaluf*, and *Chono* was the spear. The *Yahgan* spear varied in type according to the purpose for which it was intended; fish and bird spears consisted of "a beechwood shaft tipped with a serrated whalebone head lashed in place with seal-hide or braided sinew" (Lothrop, 1928, p. 150). Sometimes an additional point was lashed against the shaft. Guanaco spears were equipped with a large, single barbed bone point. *Ona* fishing and hunting spears had a unilaterally barbed bone shank. Throwing spears with a wooden serrated point, identical to those of the *Yahgan*, were used by the ancient *Mocoví* to kill capivara and caimans.

Lances were often a simple pole with a sharpened and fire-hardened

end (*Tucuna*, *Charrua*, Indians of Darién, and, in certain cases, the *Inca*).

In some tribes the shaft and head were carved out of one piece of wood. *Jivaro* spears, for instance, have a head "either diamond shaped with a low ridge running down the center of each side and tapering to a cutting edge, or triangular in section without the cutting edge" (Stirling, 1938, p. 86). Similarly, the *Yamamadí* spears, which were used both as lances and javelins, ended in a tip with four to six edges.

Lances were frequently tipped with heads, which may be classified as follows: (1) A sharp wooden or bamboo blade (*Apiacá*, *Mayoruna*, *Arara*, *Omurana*, *Tucuna*, *Piojé*, *Andoa*): (2) the sharpened portion of a tubular bone of a large animal—generally a jaguar—or occasionally of a man (*Shavaje*, *Carajá*, *Sherente*, *Ssabela*, *Encabellado*, *Guató*); (3) a socketed deer horn (*Mocoví*, *Abipón*, *Mataco*, *Toba*); (4) a stone point (*Araucanians*) or a copper or bronze head (ancient Perú). In the Colonial Period iron heads became very common among Chaco and Pampa Indians. The longest lances were those of the equestrian *Araucanians*, *Charrua*, and *Guaycuruan* tribes of the Chaco, averaging in these tribes from 12 to 18 feet (3.6 to 5.5 m.). Lances handled by footmen were generally from 6 to 7 feet (1.8 to 2 m.) long (*Páez*, *Latacunga*, *Apiacá*, *Carajá*, *Sherente*).

Lances were often trimmed with feather tufts (*Carajá*, *Sherente*, *Apiacá*, *Maina*, *Záparo*, *Mocoví*) or were decorated with a black and white basketry cover with geometrical patterns (*Carajá*, *Shavaje*).

**Javelins.**—The use of the javelin in preference to the bow and arrow characterizes a great many tribes on the tributaries of the upper Amazon River (*Mayoruna*, *Candoshi*, *Záparo*, *Gaye*, *Chébero*, *Maina*, *Ssabela*, *Menimehe*, *Muinane*, *Tšoloa*, *Coto*, *Bora*, *Witoto*, *Yameo*). Warriors and hunters generally carried several javelins which they hurled in rapid succession.

The javelins of the *Yameo*, *Iquito*, *Gaye*, *Pioje*, *Menimehe*, *Muinave*, *Ocaína*, *Yagua*, *Tucuna*, *Bora*, *Witoto*, *Juri*, *Uainumá*, and *Passé* were tipped with a poisoned palm spine. Simson describes this type:

Here, these weapons are scraped to taper gradually almost to a point at the hilt; and the head end of the spear, which by degrees thickens, has another thin, sharp dart of chonta, about 3 inches long, inserted into and bound to it. This dart is besmeared with poison; and when the lance is thrown at any animal it breaks off in the flesh, to facilitate which it is usually cut half through at the base.<sup>4</sup> [Simson, 1886, p. 195.]

The javelin was one of the weapons used by the *Querandí* and *Charrua* in their fights against the Spaniards. Their darts are described as half-spikes with stone heads. Darts (javelins) are also attributed to

<sup>4</sup> Figueroa, 1904, p. 155: "[los Gayes] arrojan las [lanzas] que llevan, que son fornidas de una pieza de chonta ambas puntas trianguladas y bien agudas, apuntando a los bultos que en medio de la obscuridad divisan."

the *Tehuelche* though the reference is obscure. We know that they sometimes hurled their lances at their foes.

**Harpoons.**—Harpoons thrown by hand were rare in South America before the Europeans contributed to their diffusion. Harpoon arrows, however, probably had a wide distribution throughout the tropical area. (See above.)

To catch seals, porpoises, and whales, the *Yahgan* and *Alacaluf* employed "a harpoon with a heavy shaft and detachable head joined to the shaft by a thong." In eastern Tierra del Fuego, the head was single-barbed; in the western part of the island, double-barbed. The tang of the spearhead was inserted in a slot "which ran completely through the head of the shaft, where it was loosely lashed by an encircling sealhide thong. It was held in place by a second thong tied to the tang and attached to the shaft 2 or 3 feet from the head" (Lothrop, 1928, p. 153).

The *Mocoví* hurled a harpoonlike javelin at their enemies. The head was made of a tip of deer horn loosely socketed into a rod of hardwood fastened to a haft of softwood. A cord connected the point to the haft, which fell to the ground when the weapon found its mark and thus hampered the flight of the wounded men or animal.

#### SHIELDS

References to shields are abundant in the ancient literature but details about their composition and form generally are lacking. The distribution of this defensive weapon (map 5) has been outlined by Nordenskiöld (1924 a, map 7), who stresses its frequent occurrence north of the Amazon, in the Guianas, along the Colombian Andes, on the tributaries of the upper Amazon, and in the Andean region from Perú to Chile. South of the Amazon the shield becomes rare and is reported only among the *Tupinamba*, the *Guaraní*, and, in eastern Bolivia, among the *Mojo* and the *Bauré*. Shields are made of several different materials, including hide, wood, and basketry.

**Skin shields.**—Among many tropical tribes, shields were made of one piece of tapir or manatee hide (Indians of the Orinoco and of the upper Amazon, *Juri*, *Uainumá*, *Passé*, *Tucuna*, and *Tupinamba*). The shields of the *Yahuna* and of the nearby *Arawakan* tribes were formed by five layers of tapir skin which rendered them almost bullet proof (Koch-Grünberg, 1923 b, p. 383). Shields made of several hides sewn together were found among the *Tehuelche* of Patagonia and the *Araucanians*.

**Wooden shields.**—Soft light woods, such as the palo balsa, often were used for making shields by the Guiana *Carib*, the *Galibí*, *Palicur*, *Iquito*, *Jívaro*, *Záparo*, and *Tupinamba*. The wooden shields of the *Jívaro*, and probably also those of the *Záparo*, were made from the





MAP 5.—Distribution of shields: Rod (*horizontal hachure*); basketry (*vertical hachure*); light wood (*diagonal hachure*); tapir hide (*stipple*).

large flat buttresses of the ceiba tree (*Bombax ceiba*), a wood which does not split and which, moreover, is tough and light. The *Jívaro* shield is composed of three superimposed disks, each about a half inch in thickness and each with a diameter approximately one-half that of the disk upon which it was superimposed (Stirling, 1938, p. 87). *Warrau* shields were made of parallel strips of the pith of the aeta palm held together by means of three long transverse sticks.

**Basketry shields.**—Basketry shields were common among the tribes of the Caiarí-Uaupés, the upper Amazon, and among the *Achagua*. Those of the *Omagua* are made of carefully interlaced reeds (caña brava) reinforced by a frame (Chantre y Herrera, 1901, p. 88). The *Tucano* and *Desana* shields, formerly used at war, but today mere dance accessories, are woven on a spiral foundation like baskets. Some *Iquito* and *Yameo* shields were made of a tight fabric woven of chambira strings (Maroni, 1889-92, 31: 50).

The handle is rarely described. The *Jívaro* shield had a hand grip of rattan attached to the apex of the central concavity and fastened in place by pegs (Stirling, 1938, p. 87). *Záparo* shields had a grip of thick cotton threads.

**Shapes of shields.**—In Perú and in the Amazon Basin shields were either round (*Tucano*, *Záparo*, *Jívaro*, *Tucuna*, *Tupinamba*) or rectangular (*Galibí*, *Carib*, *Juri*, *Iquito*).

**Size of shields.**—The size of the shields varied considerably. In the region of Maynas and in the valley of Patía in Colombia, they covered the warrior from shoulders to feet. *Iquito* shields were narrow but so long that they protected the warrior up to the shoulders (Maroni, 1889-92, 31: 75).

**Decorations.**—Peruvian shields were often covered with decorative cloth or feather fabrics bearing the soldier's devices in color. The *Jívaro* represented on their shields animals and spirits that bestowed power in warfare; *Galibí* shields were daubed with various colors (Barrère, 1743, p. 168). Sometimes shields were covered with feather mosaics or were trimmed with feather tassels (e. g., those of the *Aracajú*; Bettendorf, 1910, p. 32), but it is probable that these luxurious shields were mere dance accessories.

#### ARMOR

*Inca* warriors protected their bodies with tunics (map 6) padded with cotton, similar to those used by the Aztec and adopted by the Spaniards in their war against the Indians. A fragment of such a tunic has been described by Montell, as follows:

Between two layers of brown cloth there is a padding of cotton wool which appears to have been about 2 inches thick. The whole is held together with stitches of coarse thread which on one side forms knots at intervals of 4 cm. [Montell, 1929, p. 110.]



MAP 6.—Distribution of protective garments for warfare: Padded tunic (*solid black*); skin armor (*diagonal hachure*).

The Chaco Indians, particularly those who adopted the horse, wore leather—generally jaguar skin—jackets that sometimes reached the knees. These served the double purpose of a protective and an ornamental garment. The ones made of jaguar skin communicated to their wearers the fierceness of the animal. The *Ocaína* were said to have tapir-hide armor.

The conquistadors of Chile mention that the *Araucanians* had hide armor, sometimes made of seal skin. In post-Colombian times long cowhide jackets were part of the regular outfit of *Araucanian* and *Tehuelche* warriors. In González de Nájera (1889, p. 33), there is a reference to "whale bone armor," but unfortunately he gives no details.

The term "armor" also may be extended to the thick shirts of the *Mataco*, *Chorotí*, and *Toba* Indians, which were made of a fabric of caraguatá fibers and were donned for battle as they were not easily pierced by arrows.

Some of the huge complicated headdresses of the Chimu warriors were perhaps helmets that, besides being extremely ornamental, protected the wearers from the impact of clubs and sling stones. A helmet described by Montell (1929, p. 58) consisted of a wooden frame covered with a layer of sticks wound with cotton. Both sides of such helmets have disks that covered the ears and generally have been interpreted as earplugs. Cobo lists among *Inca* defensive weapons helmets made of reed, wood, and cotton wool. The *Mapuche* had helmets made of sealskin.

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