THE EGYPTIAN COMPOSITE BOW

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With all the interest and energy being expended these days in building better composite bows—new materials, new designs, new techniques—it would perhaps be of interest to modern archers if a few comparisons were made with some really old-time bows of this type. In this respect luck is with us, for the dry climate of Egypt has preserved several specimens of ancient Egyptian composite bows which date back more than thirty centuries.

Not long ago I determined to find out what I could about these ancient relics of the bowyer's art, and in due time was able to obtain data on parts of three composite bows preserved in New York's Metropolitan Museum of Art; two other bows are also described here, from data already published.

I was unable to obtain details on the collection of composites in the Egyptian Government Museum at Cairo. Most of these are from the fabulously rich tomb of King Tut-ankh-amen ("King Tut," who died in 1350 B. C.). However, the few bows described here will give a fairly good picture of the type of work being turned out by Egyptian bowyers during the days when Egypt rode the crest of power.

History tells us that the composite was not native to Egypt, but was introduced from Syria or Mesopotamia by Asiatic foreigners sometime before the 16th Century B. C. The leather shoulder quiver, sometimes fitted with a cover or lid, and bronze arrowpoints, were other archery items adopted by the Egyptians. As a result of this Asiatic contact the Egyptians also acquired horses and the war chariot—elements which soon became inaugurated into fast chariot divisions of the army, and literally "put the archer on wheels," (Fig. 1). Using one of these light, springy chariots hitched to a pair of good horses, the Egyptian archer could maneuver quickly over rough country and pour a murderous rain of arrows upon a less mobile enemy force.

The chariot was also used by kings and officials when hunting the larger game of the country with the bow, such as lions, antelope, gazelles, wild bulls, wild asses, striped hyena, and even ostriches.

In Egyptian sculptures and tomb paintings the composite is depicted as a moderately short, angular type bow of about four or four and one-half feet in length. It is shown strung, and at full draw, but not, as far as I know, unstrung. By "angular type" is meant that, in the braced position, the limbs are straight and stand at an angle of about 145 degrees to each other, the bend at the handle providing necessary string height or "fistmele."

Modern archers would very likely be puzzled by this curious, angular shape. However, a study of actual bows, like those of Figure 3, easily clarifies the problem. These bows are reflexed, straight-limbed composites having a wood core backed with sinew and faced with horn. All of them, it will be noticed, are designed with an outward bend at the handle; thus, when braced, the limbs are moved from the reflexed to a straight position and give this type of bow an angular shape. Figure 2 shows the position of the limbs unbraced (a), braced (b), and at full draw (c).

Al of the bows shown in Figure 3 were evidently designed to work throughout their entire length, for there is only a slight thickening at the handle section.

All things considered, it would seem that the real advantage of the angular bow is that, for an arrow of given length, the bend in the limbs is less at full draw than it would be for a bow of conventional style; hence, comparatively short bows of this type were capable of taking a long arrow. This feature is certainly substantiated in Egyptian sculptures and tomb paintings, where the archer at full draw is invariably shown "anchoring" at the ear, or even a few inches past. In this connection we are reminded of the words of Miny, archery tutor of King Amenhotep II (1447-1415 B.C.) and himself an expert bowman: "Draw your bow to your ear, and use all the strength of your arms when aiming the arrow."

As stated before, the bows of Fig. 3 are straight limbed, reflexed composites, and with the exception of (e), all have a rectangular wood core. Another feature in common is the thin wood side-strips. The making of bows with rectangular core and side-strips seems to have been a standard Egyptian practice through many centuries, for there is a difference of upwards of eight hundred years in the ages of (a) and (b).

Another feature in common is the use of birch bark as a covering material. The nearest source of this would be the Lebanon or Palestinian mountains, some three hundred miles northeast of Egypt.

The various crafts and trades of ancient Egypt are frequently depicted in tomb reliefs and paintings, and in this respect the bowyer's art has not been neglected. In Wreszinski's Atlas, Plate 80, is reproduced a tomb painting showing an archery workshop of about 1475 B.C. Here we see native craftsmen, with adze and saw, engaged in making angular type composite bows. Arrow-making is also represented.

Of the bows in Figure 3, (a) is the best preserved. It was described by Balfour in Journal, Royal Anthro, Inst., 1897, and was found in a 26th Dynasty tomb at Thebes, Egypt. Since this dynasty extended from about 664-525 B.C., this bow would date from somewhere in between. Measured along the belly it is 57-3/4" long, while at a point A-A in the photo it is 1-1/16" wide and 21/32" thick. The limbs taper very gradually from handle to the slender extremeties. Using the sectional

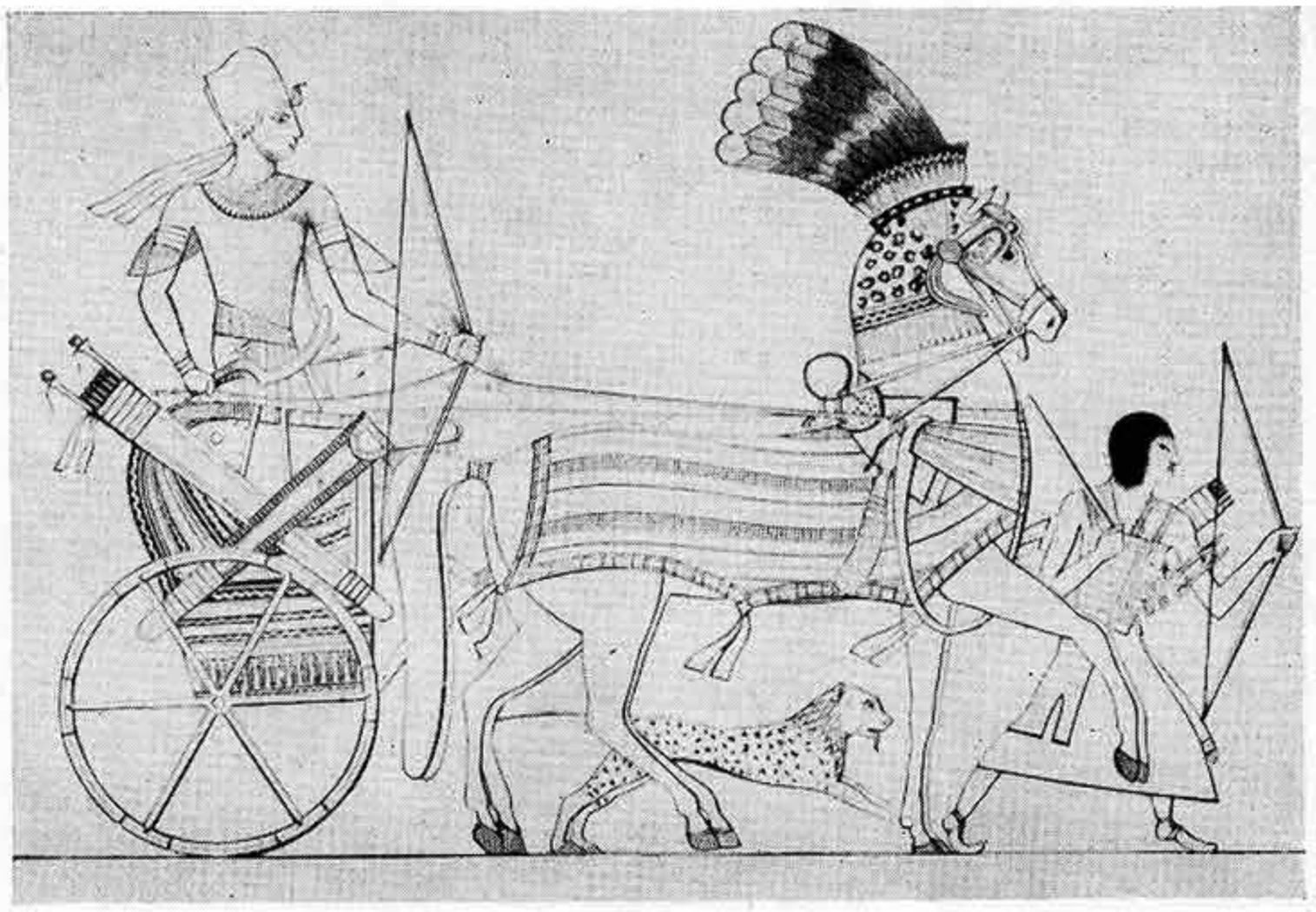

Fig. 1

Egyptian temple sculpture showing King Ramses III in war chariot. Both the King and the foot-archer hold braced, angular type composite bows. Cases for holding extra arrows and bows are strapped to the chariot.

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drawing given with the photo, the structure of this bow can be described as follows: 1) Rectangular core of light-colored, semi-hard wood extending the whole length of the bow. 2) Side-strips, of a hard, brownish-red wood, with flattened inner and rounded outer surfaces. These, wider than the thickness

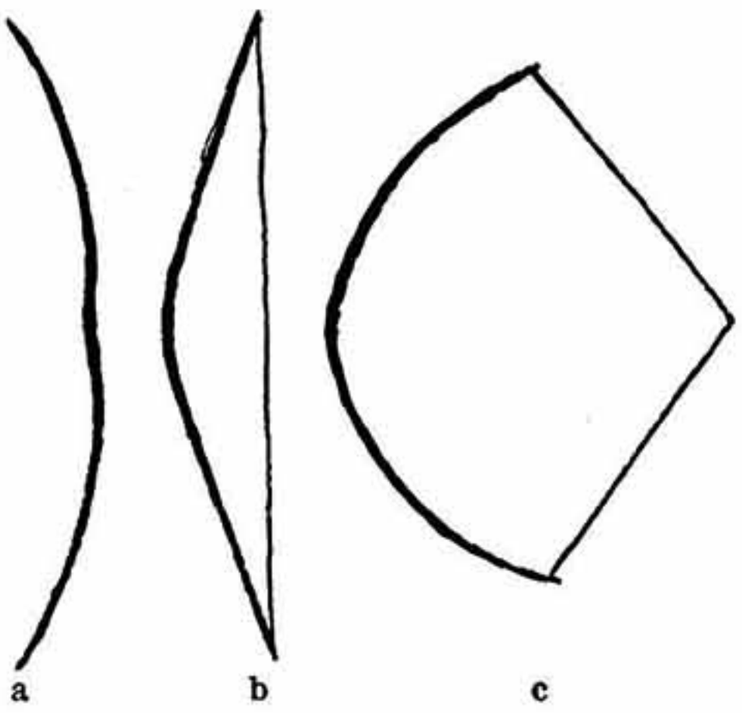

Fig. 2
Position of limbs unbraced, braced and at full draw.

of the core, are glued against the edges of the core and extend the whole length of the bow, thus forming a wide, shallow channel in front and back for inclusion of backing and facing material. 3) Belly, composed of two layers of black horn extending entire length of bow. The inner layer exactly fills the channel formed by core and side-strips, while the outer layer forms a flat obtuse angle in cross-section, and this produces a kind of low ridge along the belly of the bow, in the central line. 4) Thin strip of black horn occupying channel along back of core. (Horn seems out of place as a backing material and is not used for this purpose on the other bows). 5) Two thick layers of sinew backing, lapped around the edges of the bow and enclosing the two side-strips. Near each end of the bow is a transverse wrapping of sinew thread which serves to reinforce the structure at these points.

(In this bow, the surfaces of the core, the inner faces of the side-strips, and inner faces of the horn strips are slightly scored or roughened lengthwise to give a hold to the glue).

6) Birch bark covering about .025" thick, of a rich, brownish-red color and having a smooth, glossy surface. It has been glued on in small rectangular pieces, each wound transversely around until one edge meets and just overlaps the other. The adjacent pieces of bark join one another so as to leave no space between, thus forming a continuous, weatherproof sheath from end to end.

Figure 3 (b) is a composite in the Metropolitan Museum of Art, (No. 28.9.9); 17th to early 18th Dynasty (about 1600-1450 B.C.), from the Birabi, Thebes, excavations of Lord Carnarvon (Photo courtesy Metropolitan Musem of Art). Although the handle section is missing, the limbs each measure 27-1/2", making a total length about the same as bow (a). Structure is very similar: 1) Rectangular wood core, 2) wood side-strips, 3) sinew backing, 4) horn belly, 5) bark covering.

Figure 3 (c) and (d) are cross-sections of short pieces of two bows, likewise in the Egyptian collection of the Metropolitan Museum of Art. (c) (No. 25.3.303) is from an early 18th Dynasty (about 1580-1450 B.C.) cemetery at Sankhkare, Egypt. Lacking side-strips, it consists simply of: 1) wood core, 2) sinew back, 3) horn belly, and 4) bark covering.

Bow (d) (No. 25.3.304) dates from the same period as (c), and was discovered in a pile of debris near a temple platform at Sankhkare. As shown in the sketch, it is nearly square in section, with the core consisting of two lengthwise pieces glued together. Sketch shows: 1) two-piece wood core, 2) thin wood side-strips, 3) sinew back, 4) horn belly, 5) bark covering.

(In connection with the Metropolitan Museum specimens, many thanks are here extended to Mr. W. K. Simpson and Mr. R. Bullock, both of the Museum staff, for historical and descriptive assistance).

Bow (e) is the one described by Longman in Journal, Royal Anthro. Inst., 1895, and was found in a tomb of the 19th Dynasty (about 1275-1208 B.C. It has out-curved handle and reflexed limbs like the other bows, but is shorter (48-1/2") and of different structure. Limbs are semi-circular in cross-section, with round back and flat belly (marked A); these blend into the round handle section (B), which is 1" in diameter. The core (1) is built up of a number of strips of wood glued flat side together and backed from end to end with a heavy layer of sinew (2). Extending from end to end of the bow, on the belly side, is a deep, narrow channel (3) which was probably once filled with horn, but is now empty. Traces of a bark covering are present.

The last bow (f), is an outline sketch of a bark-covered composite in the Cairo Museum (No. 4725), and figured in Wreszinski's Atlas, Vol. 1, p. 80. No details on size of structure are available, and I have included it here merely to show the characteristic out-curved handle and reflexed limbs.

As far as can be discerned, none of the bows described above appear to have well-defined nocks, i.e., definite grooves for the seating of the bowstring loops, as with modern tackle. However, Carter's book "Tomb of Tutankh-amen" illustrates the lower portions of three of the King's reflexed, bark-covered composites in which this feature is very clear (Fig. 3, g). Carter states that all of the bowstrings preserved in the King's tomb were of 4-ply twisted gut.

In concluding, it may be said that the composite bow had reached an advanced stage of development in western Asia long before it was imported into Egypt, and in this connection Professor A. L. Oppenheim, of Chicago's Oriental Institute, informs me that the composite was known in ancient Mesopotamia from the predynastic period on, which would be at least as far back as 3000 B.C. How much older it is than that is anyone's guess.

Using modern backing and facing materials, it would be interesting to construct several experimental bows of angular type, and to determine their cast and efficiency. Perhaps this type could be used to advantage by modern archers.

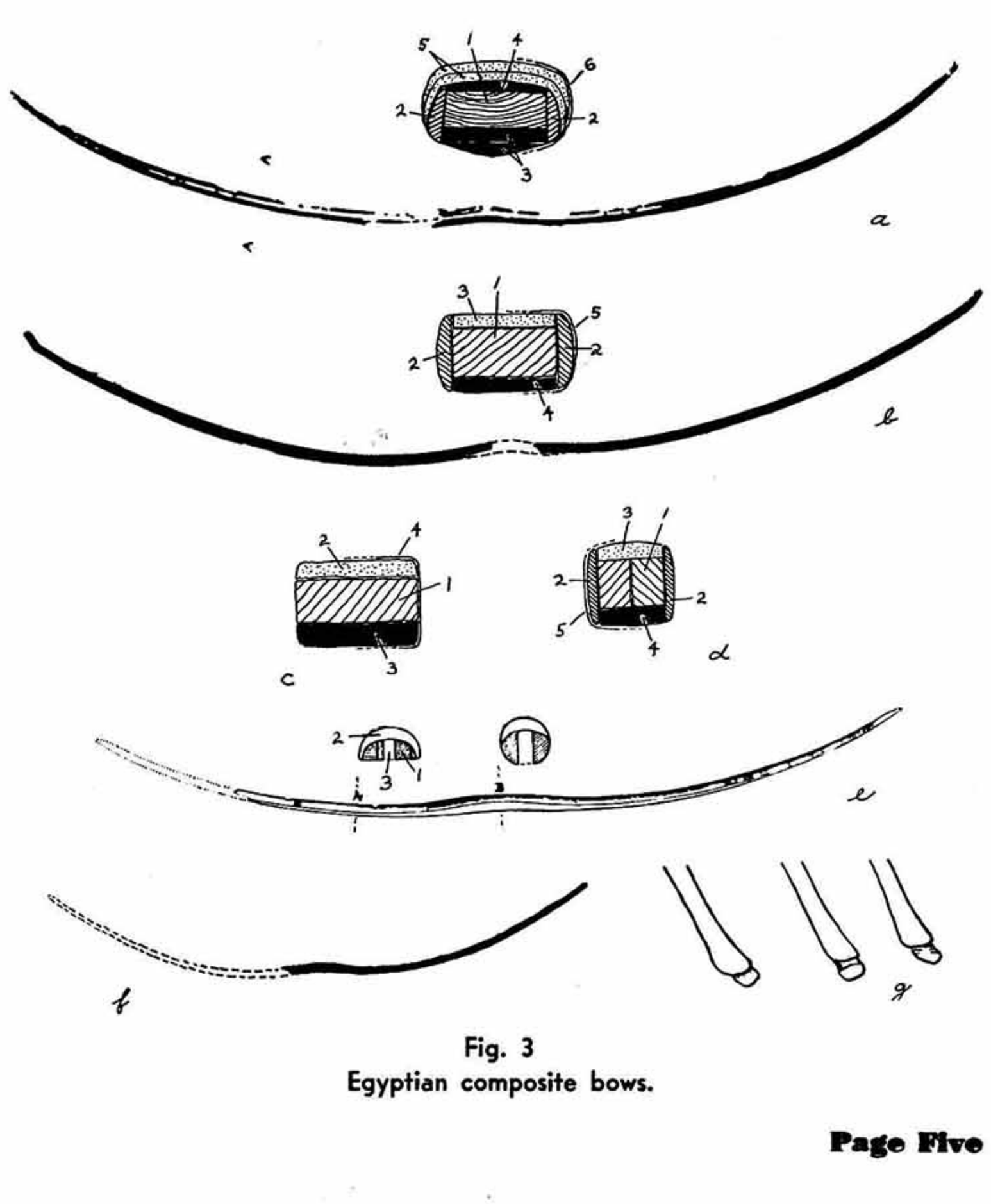

Fig. 3
Egyptian composite bows.