Horse Gear from Hasanlu

MAUDE DE SCHAUENSEE

The largest collection of contemporaneous, archaeologically documented horse paraphernalia in the Near East comes from the ruins of the town of Hasanlu, destroyed in about 800 B.C. The gear itself, intricate and beautifully made of high quality materials, clearly indicates that horses were not just utilitarian animals but were valued in themselves, perhaps as symbols of high status. Although none of this gear was found in position on a horse, complete pieces of equestrian equipment were found where they had been dropped during the battle for the Citadel, and where they had fallen from hooks or storage areas within buildings that burned and collapsed. The metal parts of the gear are relatively well preserved; these are predominantly copper or bronze, but iron was also used, especially for bits. Leather or fiber straps and backing, as well as textiles and tassles made of fiber, were consumed by fire or decayed in the earth; nevertheless, by looking at complete (though tumbled) pieces of equipment, it is often possible to establish the way in which straps as well as metal elements were arranged.

Prompted by curiosity about the gear and the way it was worn, I have combined archaeological information from Hasanlu and representations of horses from contemporary Assyrian sites (Figs. 1, 2) to make a series of reconstruction drawings. These drawings answer some questions about the Hasanlu horses and their harness, leave others unanswered, and raise still more.

1 Some of the most useful and detailed depictions of horse gear occur at the site of Nimrud in the palace of King Assurnasirpal II (883-859 B.C.). In scenes that record the victories of the king, horses appear pulling chariots in battle and during the hunt, with the details of their equipment clearly represented. Ridden horses wearing breastplates are also shown. (Layard 1849: Pl. 11)
Small-scale representations of horses and their gear found at Hasanlu occur on low-relief ivory plaques. Both ridden and driven horses are depicted, often with flecked bodies, and harnessing is rendered in a rudimentary fashion. This plaque shows part of a chariot horse. The reins pass through a rein ring(s) at the neck and are held by both hands of the charioteer. A tassel(s) hangs below the horse’s chin. (Mascarella 1980; HAS 84-919, Museu Iran Bastan, Tehran. Photo courtesy of the Hasanlu Project)

The Hasanlu Horses and Their Stables

A total of nine horses were found within the Hasanlu period IVB Citadel: five in Burned Building V (Fig. 3), one in Burned Building IV-East, two in Burned Building VI, and one in the courtyard of Burned Building III. At the time of the destruction both Burned Buildings V and IV-East were apparently being used as stables (see Dyson, Architecture, this issue). This interpretation is based not only on the presence of horses inside the buildings at the time of the fire, but also on the buildings’ contents. The floor of the main room of each building was covered with organic deposits and what seemed to be green urine stains, and horse gear had been stored there. Some of the most completely reconstructable headstalls (see Glossary), as well as gear for driven horses, were found at the bases of the central columns in Burned Building IV-East. Presumably, fallen from pegs or from shelves attached to the columns, headstalls and other items were also stored on pegs or shelves along the sides of the rooms.

Skeleton of a horse trapped in Burned Building V. (Photo courtesy of the Hasanlu Project)

Plan of the Citadel Mound at Hasanlu showing the locations where horse gear and horse skeletons were found.

The largest concentration of horse gear was found in a sort of ‘tackroom’—two connecting rooms of Burned Building IV-V, situated next to a long narrow storage room (Fig. 4, rooms 1,4). Building IV-V was constructed during a general remodeling of the buildings around the Lower Court, filling the space between the newly converted stables in Burned Buildings IV-East and V (see Dyson, Architecture, this issue). Within Burned Building IV-V, gear was found fallen from pegs or shelves onto benches that partially edged the room. Items found in the fill above floor level may represent gear stored on the second floor. Alternatively, most or all of the horse gear may have been stored on the first floor, but at different locations and heights within the rooms so that it became mixed with the rubble as the building collapsed. Whichever is the case, related groups of gear can often be identified, and the original arrangement reconstructed. These well-preserved pieces are described in detail below and in the captions accompanying illustrations.

Other buildings also yielded bits and decorative elements that can be associated with horse gear. From the collapse of second floor storerooms in Burned Building II came bits and cheekpieces; these do not seem to have been prepared for use, as they were unassociated and not in equal numbers. Also fallen from the second floor was a horse’s
helmet or chaumfron (Fig. 30). Other evidence indicates that this building was probably a temple, and if the stored horse gear was in this case have formed part of the temple's treasury (see Dyson, “Architecture,” this issue).

Burned Building III appears to have been the residence of a rich or powerful person, since it contained seals, a large number of sea shells, and equipment for metal working (Marcus 1989, de Schauensee 1988; see also Reese, this issue). Also found within it was a small quantity of scattered horse gear of a utilitarian nature—four iron bits and a few hobs. A horse skeleton lay in the courtyard, and in outside areas near this building were three pairs of stone yoke saddle pommels. The presence of horse gear in this part of the site is not surprising, since the area to the west of Burned Building III may have been an assembly area for equestrian troops, and stables could have been located nearby.

Burned Building VI, near the main gate to the Citadel, yielded a considerable amount of gear, including a decorated bridle with an iron bit, a pair of antler cheekpieces, two iron bits, two twisted and wrapped bronze bits, a headstall with straps decorated with beads, and a wide band of tiny bronze tacks that presumably decorated an object made of perishable material now lost to us. All this gear apparently was stored on a shelf running the length of the north wall of the main columned room of the building, along with many weapons, a few vessels, and additional items. Other gear was scattered within the period IVB settlement: a bridle with iron bit and antler cheekpieces was apparently dropped in the Upper Courtyard between Burned Buildings I- East and -West, and a bronze bit lay in the area of the Bead House, just south of Burned Building I.

The horses themselves were small, with an average withers height of about 127 cm or 13.5 hands, as estimated from their skeletons by Sandor Bokonyi. Director of the Archaeological Institute of the Hungarian Academy of Sciences in Budapest (pers. com. to R. H. Dyson, 1984). They probably were more lightly built than those shown in the drawings here, conforming to what Bokonyi has called the "eastern group" of Iron Age horses (1968). These animals were characterized by a short broad head and a stocky neck and body; they could carry heavier loads, including armored riders, and cover greater distances than their counterparts of the “western group” (Bokonyi 1968).

**Bits and Bridles**

The headgear used to control horses is the bridle, consisting of a headstall, bit, and reins. At Hasanlu, a decorated bridle was dropped in the portion of Burned Building IV- East during the destruction of the city (Figs. 6-8). This isolated and therefore easily reconstructed example has been augmented by

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**Footnotes**

1. L. 135. cm. (HAS 60-881, Musée d'Archéologie Nationale, Turin. Photo courtesy of the Hasanlu Project)

2. The reconstructed Hasanlu bridle (shown in Fig. 8) has a browband, noseband, cheekstraps, pollstrap, and throatlatch. It is based primarily on the archaeological remains shown in Figure 6, supplemented by another fragment that preserved a few bronze strap ornaments and a large bronze button with tall central knob (see Fig. 19). The position of the metal elements indicates the relationship of the straps, and of bit and cheekpieces. The exact function of the two boxed squared elements is somewhat uncertain. We have shown them as covers for secondary cheekstraps based on their position when found, but their very boxed shape would have projected some distance at either side of the horse's head. (Drawing by Marianne Fentai Estornell)
other bridle elements were stored on pegs or shelves and that fell to the floor when buildings burned. In the reconstruction drawings, I have chosen to show one style of bridle only. It should, however, be borne in mind that Assyrian reliefs show several bridle types. There clearly was a great amount of variation in headstall decoration at Hasanlu, and several styles of bridle may also have been in use.

Much more complicated than the individual bridles is a large mass of gear, apparently for four horses (Figs. 9a, b). This was found piled on the floor at the base of one of the columns in the central hall of Burned Building IV-East, from which it had apparently fallen. It included bits, plaques, large discs, small pendants, domed bosses, and some sort of fringe, probably made of wool. The three large discs have been interpreted as shoulder rondels, based on comparisons with Assyrian reliefs and excavated horse and chariot burials at Salamis on Cyprus (Karageorghis 1974). During the 9th century in Assyria, shoulder rondels are shown on chariots rather than ridden horses.

Applying this analogy to the Hasanlu cluster, it can be interpreted as harness for four driven horses, basing the number of horses on the number of bits. We do not know if this group was intended for two chariots, each pulled by a pair of horses, or one chariot pulled by four horses. I would propose pairs of horses for two chariots based on representations of paired horses on the Hasanlu ivories. The fact that three rondels were found in this group also suggests two pairs, since shoulder decorations would not be needed (or visible) on the interior two of a four-horse hitch. (The fourth shoulder rondel expected for two pairs of horses may well have been present in this group, since the spread of artifacts continues into an unexcavated area.) The type of bit found with this group, a jointed snaffle with smooth canons made by casting and piercing a bar cheek-piece with two loops near the ends of the bars (Fig. 10), can now be proposed as the type used for driven rather than ridden horses at Hasanlu. Similar harness, with bits piercing their cheekpieces (but with twisted canons), were found with chariot burials at Salamis.

The other kind of bit found at Hasanlu is also a jointed snaffle, but one shaped by hand out of thick wire that is twisted and wrapped or sometimes simply twisted to form canons (Fig. 11). These bits were associated with separate bar cheekpieces and were sometimes associated with decorated headstalls, but never with the complex of gear found with our smooth canon bits. One may therefore propose that bits with twisted canons and separate cheekpieces were for ridden horses.

The Hasanlu bits described above were made of bronze. (These artifacts have not been analyzed for metal content, so it is not known whether the copper was alloyed to form bronze; for convenience, all of the "copper/bronze" objects are referred to here.

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9a This large group of horse gear found in Burned Building IV-V is thought to have been used for driven horses. (HAS 74-486, Musée Iran Bastan, Tehran. Photo courtesy of the Hasanlu Project)

9b Line drawing showing the mass of gear illustrated in Figure 9a. (HAS 74-499, Musée Iran Bastan, Tehran). We can identify four bits with their cheekpieces; four small pendants; four small rods (two bronze and two iron) that might have been toggles for throatlash; four sets of plaques, each composed of two long strips with a short central plaque; and three large discs with low-relief designs and an edge of large studs. Also part of this group were domed bosses of two sizes, the exact number undetermined due to their poor state of preservation. One fragment of a long, flexible coiled strip that might have decorated a rein also formed part of the group (Fig. 13), and a dense area of fringe in the same area may have served as a fly fringe, often shown on Assyrian reliefs. In our reconstruction drawing we have omitted the coil and the fringe as we cannot determine where or how they were used. (Drawing courtesy of the Hasanlu Project)

10 Bronze jointed snaffle bit, cast with smooth canons piercing bar cheekpiece with strap loops at either end. This type of bit was found with the large group of gear shown in Figure 9a. b. L. of canons 19.0 cm; overall L. 20.5 cm. (UM 61; 5-185. Photo courtesy of the Hasanlu Project)

11 Twisted and wrapped bronze wire bits were found with separate bar cheekpieces that had three holes for attachment to bit and bridle straps. In two cases the cheekpieces either lay or were corroded in position on the rein ring (see Fig. 8 for example). This type of bit was found with decorated headstalls, but not with gear such as that shown in Figures 9a, b. L. of canons 14.0 cm; overall L. 21.0 cm. (UM 85-31-185. Photo courtesy of the Hasanlu Project)
Reconstruction drawing suggesting a function for the groups of bronze strips and short plaques found with the gear shown in Figure 9a. It may have formed a head decoration or protective element. This reconstruction is based on Assyrian reliefs of the 9th century B.C., which indicate decorations on the nose and head of the horse, and on the horse bridle at Salamis in which a hinged plaque lies on the nose of the horse, over the poll and part of the neck.

Measurements seem to indicate a similarity between the length of the face decorations at Salamis and those proposed for Hasana. Like the long strips at Hasana, the component parts of the Salamis decorations are flat and uncurved, but the hinge in the Salamis pieces is replaced by the small plaque at Hasana. When in place, the flat strips would lie on the upper neck as well as on the face of the horse, thereby protecting the vulnerable nose of the neck as well as the forehead and face. (HAS 74-266, Musée Iron Basket, Tehran. Drawing by Marianne Fester Eternoll)

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as bronze.) Iron jointed snaffle bits also exist, but their state of preservation is so poor that one cannot determine whether they were smooth or twisted, although it is apparent that they were not wrapped. These iron bits were almost always associated with antler tine cheekpieces.

Also found in the Burned Building IV-East horse gear cluster were four groups of long strips and short plaques made of fairly heavy bronze. There is no indication from context as to how these were used, but there is a consistent linear arrangement, with one long strip placed on either end of a short plaque. One possibility is that the plaques formed a head decoration or protective element, as shown in Figure 12.

Several rings that could have been used to position straps and one fragment of a long, flexible coiled strip that might have decorated a rein also formed part of the group (Fig. 13). The function of the coils remains speculative, since although they are always found in areas where horse gear was housed at Hasana, they were not in close association with it and cannot be assigned to a specific part or type of gear. The same is true of bronze hobs that were found in large numbers in Burned Building IV-V. For the most part with the group of gear surrounding the decorated breastplate (Figs. 14-26; see de Schauensee and Dyson 1983).

Chariots

The carbonized remains of the only chariot found at Hasana are so fragmentary that its shape and structure cannot be determined in any detail (Fig. 19; see also de Schauensee and Dyson 1983). It is possible to say, however, that this vehicle was probably quite small and had a six-spoked wheel approximately 90 to 95 cm in diameter; no metal fittings for the chariot were found. In the absence of more complete archaeological evidence, the model for the chariot in our reconstruction (Fig. 16) is drawn from those on ivory plaques. These show chariots with a tall narrow box for one person pulled by a pair of stallions (Muscarella 1980: no. 7). The silver and electrum cup from Hasana shows a similar though less tall box and pair of horses, but two charioteers (see Marcus, Fig. 1, this issue).

In the reconstruction, we have given the horses yoke saddles with yoke saddle pommels. Although one can determine from representations on ivory plaques that reins went to an element at the back of the horse's neck before going to the driver's hands, the element itself is unclear, as it is yoke saddle on the withers of the horse. Yoke saddle pommels are clearly shown on the animals on the Hasana gold bowl (see Winter, Figs. 4.5). Several pairs of limestone initials, one of which was found in Burned Building IV-V next to the chariot remains, have been interpreted as yoke saddle pommels based on their similarity in shape to those on the bowl and to some found at Beth Shan in Israel, as well as in Egypt and Assyria.

Harness for Ridden Horses

A total of 16 reconstructable headstall for ridden horses were found, and, as may be seen in the reconstruction drawings, there was considerable variation in their decoration. Almost all had twisted and wrapped bits and all had separate bar cheekpieces. The cheekpieces almost always curved forward, although a few curved outward, away from the muzzle (Figs. 8, 17). The basic decoration for bridle appears to have been four buttons with solid projecting knobs placed at strap crossings, and a fifth large knob in the center of the browband (e.g. Figs. 7). Bridle straps were either plain or were decorated with small plaques, buttons, or beads (Figs. 19-20). In one case a second cheekstrap covered with a bowed bronze decoration is indicated (see Fig. 7). At least two other bridle used the same bowed rigid cheekstrap covers, but apparently not in conjunction with other cheekstraps (Figs. 22, 24), and at least one other bridle had straps decorated with beads as well as knobbled buttons at the strap crossings, but it lacked a second cheekstrap. The latter bridle was found on the floor, dropped by a man whose skeleton lay near that of a horse in Burned Building VI (Fig. 4).

Some bits with separate cheekpieces were found without accompanying buttons, so we may assume that their bridle were plain. This is always true for those with iron bits and antler tine cheekpieces, one of which was dropped by the same man who carried the bridle shown in Figure 6, lower right.

At least two bridle included forehead plaques as part of their 14a-c

Bronze rattle bells in a variety of shapes were found in association with horse gear, but it is not known how they were used. (a UM 73-5-545, L. 7.5 cm; b UM 73-5-544, L. 8.0 cm; c UM 73-5-542, L. 5.5 cm)
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Reconstruction drawing of a Hasanlu chariot with a pair of driven horses. The gear worn by the horses is based on the large group of artifacts illustrated in Figure 9. Shoulder rondels found with this group were decorated, but the form of the design was lost to corrosion. For purposes of reconstruction, an iron rounded with a winged horse has been substituted (see Figure this issue). (HAS 74-896, Musée Iran Bastan, with UM 65-31-1 [yoke saddle pommel], HAS 65-875, Musée Iran Bastan [shoulder rondels]).

The bridle belonging to the gear proposed for driven horses found in Burned Building IV East may have been decorated with both the large and small bosses, but their arrangement in our reconstruction is speculative since there is no discernible pattern in the way the bosses fell. Moreover, it is clear that there are more bosses than could fit on the bridle of two pairs of horses. Two other solutions are possible: some of the bosses may have decorated other parts of the harness, or it is possible that all of the bosses were used on harness rather than bridle straps. (Drawing by Marianne Feister-Externell)

Breastplates and Miscellaneous Gear

A large collection of horse gear was found in association with a bronze breastplate decorated with a mythological figure (Fig. 26; Winter 1960). No bit or cheekpieces were found with this material, but a group of four small and one larger buttons could be identified. As these are the type, size, and number so often found with bridle decorations, a decorated headstall for a horse that was led, probably in a ceremonial procession, may be proposed. There may also have been an elaborate decorative cover or caparison for the horse, given the relatively uniform spread of buttons, tubes, plaques, and other elements, but these were tumbled and the complete piece cannot now be reconstructed. Decorated caparisons were known to have been used by the Assyrians during warfare (Layard 1849).

A group of bronze crescent-shaped and deep lunate breastplates (Fig. 27) were found in Burned Building IV-V, along with two small crescent-shaped pendants with end loops for suspension (Fig. 28). Comparison with Assyrian reliefs and the Salamis horses resulted in the identification of the deep lunate breastplates as horse gear, and a similar function has been assigned to the crescent-shaped ones. The pendants seem too small to have served as breastplates.

Comparison to the crescent-shaped element on the forehead of a head-covering or chamfron and to crescentic decorations on bridle found far away in the frozen tombs of Pazyryk in Siberia (Rodensko 1970) suggests that they could have been used on the foreheads of horses, where they fit very well (Fig. 29). The chamfron came from Burned Building II, where it had fallen from a second floor storage area. It is made from a sheet of bronze, hammered to a box-like shape that would fit over the horse’s head (Fig. 30).

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Bronze bit cast in one piece with its cheekpieces. The canna were cast to imitate rotating. The cheekpieces, each decorated with a pair of snake heads, curve outward from the horse’s mouth. L. of canna 12.0 cm; overall L. 19.0 cm. (UM 69-20-171; 10633 Musée Iran Bastan, Tehran. Photo courtesy of the Hasanlu Project)
18. On this bridle, the straps are covered with knobbled bronze buttons, with larger knobbled buttons at the strap crossings and in the center of the forehead. The forehead plaque has a rolled suspension loop at the top. (HAS 72-223, Musee Iran Bastan, Tehran. Drawing by Marianne Fenner Estournel)

19. The ornaments on this bridle consist of overlapping bronze plaques, with knobbled buttons at strap junctions. Some plaques were corroded together, showing the manner in which they overlapped, and others, corroded to one of the buttons, indicate the position of straps at right angles to each other. The forehead plaque here is a flat and cary thin piece of undecorated metal. The iron bit is shown with outer cheekpieces found near the bridle, but not definitely associated with it. Found with the bridle were four identical objects (Fig. 21) whose function and placement cannot be ascertained and so are not included in the reconstruction drawing. (UM 60-20-198 [bit]; UM 60-20-261, Metropolitan Museum 60.20.584-1; 60.20.724a-b, Rogers Fund, 1960 [headstall elements]; Metropolitan Museum 60.20.67, 68, Rogers Fund, 1960 [outer tree cheekpieces]; Drawing by Marianne Fenner Estournel)

20. Reconstruction drawing of a bridle and decorative harness. The bridle consisted of an iron bit, the only iron three-hole bar cheekpiece found at the site, and three iron rods, which may have served to assist in stabilizing the bridle. Around the horse’s chest is a double strand of beads made of glazed terracotta or faience; bronze pendants are suspended from these strands by iron loops. The headstall straps are decorated with small centrally domed buttons, and larger knobbled buttons have been placed at the strap crossings and forehead center. (UM 73-5-57; 650 [pendants]; UM 73-5-390 [iron bit, cheekpiece, and rod]; Metropolitan Museum 79.233.10, The Adelaide Milton de Groot Fund, 1976 [beads]; HAS 72-116, Musee Iran Bastan, Tehran. Drawing by Marianne Fenner Estournel)

21. Bronze object associated with horse gear shown in Figure 19, but of unknown placement and function. Ht. 3.5 cm, W. 7.0 cm. (UM 63-5-195)

Conclusion

Because almost all the horse gear was found inside buildings on the Citadel Mound, in locations where it seems to have been stored, we may assume that the excavated material was actually used at the site and does not represent equipment discarded by those who attacked the site. Evidence for local manufacture of at least some elements is provided by a mold for a button with a tall central knob of the type used at strap crossings. This, along with a mold for a plain button shape also found with horse gear, was recovered through excavation in the “Artisan’s House” at the base of the Citadel Mound (de Schauensee 1988).

This does not necessarily mean that all the horse gear was made at the site. The use of elaborate horse gear of the type found at Hassuna during period IVB was very much a custom common to the period, as illustrated by contemporary Assyrian reliefs. There are also clear stylistic similarities to gear from Assyria, Syria, and Urartu, as well as from other sites in Iran (de Schauensee and Dymon 1983). Nevertheless, there is also a strong local element that in some cases results in the reinterpretation of exotic styles—a pattern seen throughout the archaeological assemblage from Hassuna.

22. Reconstruction drawing of a horse with rider based on a low-relief ivory plaque excavated at Hassuna. The bridle is decorated with rigid bowed cheekstrap covers like those shown in Figure 7. Domed buttons with two small knobs on the flange are placed at the strap crossings. (UM 73-5-530 [bridle]; UM 63-3-197 [bronze and iron strappiece]; see Mauerherr, Fig. 2b, this issue. Drawing by Marianne Fenner Estournel)

23. Bronze strap crossing buttons of the type shown in Figure 22. (UM 63-5-194, 195; HAS 62-531, Musee Iran Bastan, Tehran. Photo courtesy of the Hassuna Project)
IV. This is particularly apparent when one looks at certain decorative elements and details, such as snake heads on the cheekpieces of a unique bit (Fig. 17), and the decorated breastplate (Fig. 18). The reconstruction drawings also show that the kind of equipment used at Hasana was slightly different from that in Assyria. For example, Assyrian horses often wear blinkers, but none of the Hasana depictions of horses show them, nor were any blinkers excavated there.

In this article, I have described some of the horse gear found at Hasana. I have attempted to identify its function, and to define its possible arrangement through the use of reconstruction drawings. The latter give an idea of what the Hasana equipment might have looked like when in use almost three thousand years ago. What is very clear from the reconstructions is how richly decorated the Hasana horse must have been. They must have looked very handsome indeed as they moved through the town and across the plain with their ornaments and gear glittering in the sun.

A bridle shown as it was found during excavation, fallen from its storage area. Decorated with rigid housed cheekstrap covers and knobbled strap crossing buttons, it has a wrapped- and twisted-wire jointed snaffle bit made of bronze, and separate cheekpieces (HAS 72-50, Musée Iran Bastan, Tehran. Photo courtesy of the Hasana Project).

A cluster of bronze deep lanceolate and flat crescent-shaped breastplates as found in Burned Building IV-V. (UM 73-S-553, 365, 431, 432; Metropolitan Museum 1976.233.44, The Adelaidia Milon de Greco Fund, 1976; HAS 72-146a-b, HAS 72-146a-c, Musée Iran Bastan, Tehran).

Bronze decorated breastplate found in association with a mass of horse gear. Although buttons to decorate strap crossungs were found in this mass, bit and cheekpieces were absent, suggesting that these ornaments may have been placed on a horse led in ceremonies or processions. Traces of red pigment were also found with this group. L. 42.5 cm, Ht. 20.2 cm. (HAS 74-241, Musée Iran Bastan, Tehran. Photo courtesy of the Hasana Project).

A cluster of bronze deep lanceolate and flat crescent-shaped breastplates as found in Burned Building IV-V. (UM 73-S-553, 365, 431, 432; Metropolitan Museum 1976.233.44, The Adelaidia Milon de Greco Fund, 1976; HAS 72-146a-b, HAS 72-146a-c, Musée Iran Bastan, Tehran).

Small bronze crescent-shaped pendants were found with a group of deep lanceolate and flat crescent-shaped breastplates. The placement of such pendants is suggested in Figure 20. (UM 73-S-533)

The use and placement of deep lanceolate breastplates is documented on Assyrian reliefs. At Hasana, small crescent-shaped pendants were found in association with breastplates; one way in which these pendants could have been worn is suggested here. (UM 73-S-533 [breastplate]; UM 73-S-533 [pendant]. Drawing by Marianne Fester Estornell).

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Bridle: means of controlling horse by the head; composed of headstall, with or without bit, and reins

Minotaur: anything that is used in a horse's harness, both on the body of the horse and on the equipment that is fastened to it.

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straps; throatlash (running from side to side under horse's throat); sometimes a browband running across the forehead; and a noseband. These straps need not all be used at all times.

**noseband:** one of the straps of the headstall; it usually encircles the nose and jaw, but may merely run across the nose from cheekstrap to cheekstrap.

**poll:** crown of horse's head.

**yoke saddle pommel:** the central projection of a yoke saddle. The yoke is seated in front of it and lashed to it.

**yoke saddle:** inverted Y-shaped element for adapting the yoke to the conformation of equids; its "handle" was lashed to the yoke and its "legs" lay along the animal's shoulders.

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30a,b
A bronze head covering or chamfron found in Burned Building II, and a drawing showing how it might have looked on a horse's head. (HAS 64-460, Musée Iran Bastan, Tehran. Drawing by Marianne Fente Estorrell. Photo courtesy of the Hasanal Project.)

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Maude de Schauensee received her B.A. from Wellesley College in 1955. She has held the title of Keeper of the Iranian and Mesopotamian Collections since 1979. She is currently preparing for publication a catalogue of the horse gear excavated at Hasanal. She participated in 6 Hasanal Project excavations between 1959 and 1974. She was also a member of the 1967 Euphrates Valley Expedition to Selenkabeh, Syria, sponsored by the University of Chicago.