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ARMOR
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ARMOR. In this article the following terms are used with specific definition: *Lamellar armor*—armor built up of small rectangular plates laced together both horizontally and vertically; *Laminated armor*—armor built up of metal strips. *Mail*—armor built up of interlocking metal rings. *Scalearmor*—armor built up of small metal scales laced to a backing material and horizontally to one another.

The earliest armor fragments yet found in Iran come from the western part of the country and date from the late 2nd and early 1st millennium B.C. From Čoḡā (Tchoga) Zanbīl come bronze scales from a suit of scale armor (R. Ghirshman, *Tchoga Zanbil*, Paris, 1966, pl. LV. 4), from Mārlīk and elsewhere come helmets of conical shape or of hemispherical form with a narrow brim, from Luristan an abdomen plaque of sheet bronze, from the west and northwest of the country sheet bronze discs probably used as body armor (R. Moorey, *Catalogue of the Ancient Persian Bronzes in the Ashmolean Museum*, Oxford, 1971, pp. 249-57), and from Ḥasanlū triangular pieces of bronze shoulder armor (R. H. Dyson, "The Death of a City," *Expedition* 2/3, 1960, p. 10). These various finds suggest that in the Zagros area armor probably consisted of heavy cloth with sheet metal pieces sewn on to protect the more vital parts of the body, and it is possible that some of the objects described by authorities as shield bosses were in fact breast plates designed to be attached in the same way, or perhaps to be worn on straps like Assyrian ones.

The main evidence for the form of armor used under the Achaemenids comes from Xenophon and Herodotus. Xenophon in his *Cyropaedia* (6.4.1; 7.1.2)

describes the guard of Cyrus the Great as having bronze breastplates and helmets, while their horses wore bronze chamfrons and poitrels together with shoulder pieces (*parameridia*) which also protected the rider's thighs. Xenophon gives a similar description of the cavalry guard of Cyrus the Younger in 401 B.C. (*Anabasis* 1.8.6) but Herodotus (7.61-88) in his description of the army of Xerxes which invaded Greece in 480 B.C. suggests that the Medes and Persians were more lightly armored, with iron scale armor for infantry and horsemen, iron helmets for the horsemen only and no horse armor. The *parameridia* mentioned by Xenophon has been identified by Bernard with the armor covering for a horseman's leg shown on a Lycian sarcophogus, and the use of scale armor has been confirmed by finds at Persepolis which included numerous iron scales, some large enough to have been used for horse armor, and a few bronze and gold-plated iron ones (E. Schmidt, *Persepolis*, Chicago, 1957, p. 100, pl. 77).

The most instructive evidence for the development of armor under the Parthians comes from Dura-Europos. There the excavators found depictions or remains of the following types of armor: laminated armor (vambraces and greaves of graffito horseman); splint armor (body armor of graffito horseman); scale armor (numerous iron scales found on site, three housings found in Tower 19, chest armor of graffito horseman and his horse's trapper); mail (corselet found on site). The depiction of the overthrow of Ardavān V by Ardašīr I near Fīrūzābād (ca. 225 A.D.) confirms that a wide variety of armor was in use at the time (Bivar, "Cavalry Equipment," figs. 6, 7, 10; Russell Robinson, *Oriental Armour*, fig. 9), see Figure 16. The Parthians wear laminated and scale armor, while the Sasanians wear mail body armor and vambraces, laminated greaves, and in one case a breastplate. The horses do not appear to have any metal protection but a description of an early 3rd-century cataphract given by Heliodorus (*Aethiopica* 9.15) confirms that the horses were often covered with an armored housing together with chamfron and estivals.

It is evident therefore that mail must have been introduced (from Rome) prior to 225 A.D., and it became more and more popular thereafter amongst the Sasanian cavalry. A cameo of Šāpūr I capturing Valerian shows that varieties of armor were still common in the later 3rd century, since Šāpūr here wears only a small breastplate, a short scale skirt, and laminated thigh armor, but Ammianus Marcellinus' description of the Persian cavalry encountered by Julian's army in A.D. 363 (*Persian Expedition* 25.1) suggests that mail was by

then becoming more general. It is certainly this form of armor which is depicted in such detail on the relief of Ḵosrow II at Ṭāq-e Bostān (Figure 17) Ḵosrow wears a coat of mail and a large veil-like mail aventail, which hangs from the round helmet to the upper part of the coat of mail leaving only the eyes visible. The horse on the other hand has its head, neck, and chest protected by lamellar armor, and its rear quarters quite unprotected. The great increase in the weight of armor carried by the Parthian and Sasanian heavy cavalry led to the introduction of a special breed of horse, but at the same time there were modifications to give greater mobility through reducing the armor where possible: hence the substitution of poitrel, crinet, and chamfron at Ṭāq-e Bostān for the complete horse barding. Alternatively the metal bardings were replaced by housings of leather or felt as depicted on the Bahrām II relief at Naqš-e Rostam. The continuing use in later Sasanian times of different varieties of armor is illustrated by the discovery of a number of 5th-8th-century gilt bronze cuirass lamellae at Qaṣr-e Abū Naṣr in Fārs (Grancsay, "A Sasanian Chieftain," figs. 13-14). The five Sasanian helmets published by Grancsay suggest that the most common form was a rounded cone shape with iron segments and browband, and other bands and rivets of bronze. They probably share a common Near Eastern ancestor with the *spangenhelm*s of the barbarian invaders of Europe.

The nature of the armor used in Iran in early Islamic times is by no means clear. According to Schwarzlose the Arabs at the time of the conquests wore a rather simple form of armor, either of leather or mail, and a full-length coat of mail evidently gave way to a shorter style early in the Islamic period. Two coats of mail were occasionally used for extra protection. Helmets were either of metal plates or mail. Mail was riveted. Early Arab authors mention both Persian armor, presumably that current in the late Sasanian period, and also armor from Sogd. The latter can be reconstructed from the Panjikent wall paintings and a silver dish in the Hermitage. According to the wall paintings the Sogdian soldier dressed in a long armor coat, sometimes totally of mail, but more usually lamellar, with mail armor on the upper arm and mail aventail. He also wore mail leggings, and plate vambraces, and the close-fitting helmet was topped by a long spike (A. M. Belenitskiĭ and B. B. Petrovskiĭ, *Skul'ptura i zhivopis' drevnego Pyandzhikenta*, Moscow, 1959, pls. VII, VIII, XVI; A. Yu. Yakubovskiĭ et al., *Zhivopis' drevnego Pyandzhikenta*, Moscow, 1954, pl. XXV). The two soldiers on the Hermitage dish, on the other hand (Figure 18) (I. Orbeli and C. Trever, *Orfèverie sasanide*, Moscow and Leningrad, 1935, pl. XXI), have mail vambraces, shorter lamellar coats, laminated leg and foot armor,

and plate hand guards. They also have round shields. A roughly contemporary shield fragment from Mug shows a horseman in a long coat of what must be lamellar armor with tubular plate vambraces (Yakubovskiĭ et al., op. cit., pl. V). Sogdian horses do not appear to have worn armored bardings, nor did the Arabs during the conquests, when mobility was at a premium.

Against this background the meager information on armor provided by texts and *objets d'art* of the early Islamic period becomes considerably more meaningful. For instance it becomes quite plausible to interpret the costumes worn by horsemen on Iraqi 9th-10th-century lustre pottery (*Survey of Persian Art*, pls. DLXXVII, DLXXIX) as coats of mail or lamellar armor and pointed helmets. In Iran there is one reasonably good surviving depiction of armor, on the late 12-century *mīnāʾī* dish in the Freer Gallery of Art (E. Atil, *Ceramics from the World or Islam*, Washington, 1973, no. 50) where the picture of the battle scene includes four sets of armor lying on the ground, evidently stripped from fallen warriors as loot (Figure 19). All are in one piece, with a short skirt-like lower half, and long sleeves, and the drawing of them suggests that two are of mail, the third is lamellar, and the fourth is probably quilted. The helmets (Persian *ḵūd*; Arabic *megḡfar*) depicted on this dish are fairly flat with a slight central point, similar to those on a *mīnāʾī* and lustre tile of the same period (*Survey*, pl. DCCVI).

A longer form of armor coat is mentioned by implication in a passage in Jūzǰānī, who relates that during a battle between the Ghurids and the Ghaznavids in 544/1149-50 two champions dismounted from their elephants and fastened up the skirts of their armor coats before starting to fight (*dāmanhā-ye zereh bāz zadand*) (Jūzǰānī, *Ṭabaqāt*, ed. Lees, Calcutta, 1864, p. 55). From this it seems clear that in eastern Iran in the 12th century the mounted soldiers' normal armor coat had a fairly long skirt which hampered the warrior when he had dismounted.

Although horse-armor (*bargostovān*) was not popular, elephant armor (*bargostovān-e pīl*) was widely used in eastern Iran under the Ghaznavids and Ghurids (Bosworth, *Ghaznavids*, pp. 116-19; Jūzǰānī, op. cit., p. 55). The animals were covered with armor except under their bellies and wore metal head pieces known as the *āyīna-ye pīl* which not only served as protection in battle but could also be hit or clanged to alarm the enemy.

The existence of certain other pieces of armor may be surmised. Thus, the word *ǰowšan* occurs regularly in the literature, often alongside *zereh* and *deṛʿ*,

showing that breastplates continued to be manufactured and used. The same is probably true of greaves, called by Ṭabarī *sāqayn* and by Baḷʿamī *sāʿedayn* (Bivar, "Cavalry Equipment," p. 291), though the latter strictly speaking means vambraces, and vambraces proper, *sāʿedayn* (Jāḥeẓ, *al-Bayānwa'l-tabyīn*, ed. Sondūbī, Cairo, 1947, III, p. 15).

The general dearth of illustrations of armor prior to the Mongol invasions is due firstly to the lack of illustrated manuscripts, and secondly to the fashion of covering armor with a colored surcoat. This fashion may date from 544/1149-50 in which year Jūzǰānī records that ʿAlāʾ-al-dīn Ḥosayn, the Ghurid ruler, put a crimson surcoat over his armor and thereby caused much amazement among his courtiers—though it may have been the color that caused the surprise (Jūzǰānī, op. cit., pp. 55-56).

Following the Mongol invasions and the influx of large numbers of Mongol warriors the fashion in armor changed. Mongol armor, according to the mid-13th-century Papal ambassador to the court of Güyüg Khan, Carpini, consisted of a steel helmet, leather neck and throat guards, and leather or more rarely iron armor. The latter consisted of large numbers of strips about six inches by three inches held by leather thongs and arranged one above the other (*The Texts and Versions of John de Plano Carpini and Wm. de Rubruquis*, ed. C. R. Beazley, London, 1903, p. 124). Such lamellar armor is common in miniatures of the 14th century, notably in the surviving illustrations to Rašīd-al-dīn's *Jāmeʿ al-tawārīḵ* (D. Talbot-Rice, *The Illustrations to the "World History" of Rashīd-al-dīn*, Edinburgh, 1976), and was evidently the standard form in Iran under the Il-khans (Figure 20). Lamellar coats were sometimes fastened all the way up the front, sometimes only up to the waist; and the skirt had two slits at the back to make a back flap for comfortable riding. Rašīd-al-dīn gives some interesting information about the organization of the armor industry under Ḡāzān Khan (r. 694-703/1295-1340) though there is unfortunately no earlier or later description of the industry with which it can be constructively compared (A. C. M. D'Ohsson, *Histoire des Mongols*, The Hague and Amsterdam, 1834-35, IV, pp. 431-32).

During the rest of the 14th century the Mongol fashion was gradually modified and other forms of armor became more popular. The now dispersed Demotte *Šāh-nāma*, for instance, contains miniatures depicting various soldiers or heroes wearing combinations of the following: plate helmets, lamellar, plate or mail aventails, plate greaves and shoes, long lamellar coats, and lamellar cuirasses. Plate vambraces also appear in manuscript illustrations in the

second half of the 14th century. Fashion in the provinces may have varied somewhat from the metropolitan model—for instance Shiraz manuscripts of the Īnǰū (8th/14th) period indicate the use of short mail and lamellar coats.

No horse armor appears in any of the published miniatures of the Il-khanid period, although both Carpini and the Armenian historian Haithon claim that Mongol horses wore armor. If it was not common during the early 14th century it certainly returned to popularity in the later 14th century, being depicted in Shiraz manuscripts from the 1390s and in Tabrīz *Šāh-nāma* fragments of the 1370s. Lamellar barding with a plate chamfron was apparently the norm. In early 15th-century Shiraz manuscripts laminated, studded, and mail bardings are also shown, and the former appear in the Solṭān Jūkī *Šāh-nāma*, illustrated in Herat in about 1440, now in the Royal Asiatic Society (Figure 21). The elephants shown in the latter are not armored.

For the next century or so our knowledge of Persian armor fashion is dependent on further miniature paintings. This raises problems since the illustrations may have followed earlier styles rather than contemporary fashions. However, the following features seem reasonably certain. By the end of the 14th century handguards had become part of the arm defense, attached to the vambrace, and by the early 15th century armor for the knee joint had become more complex, with plate discs for the knees set in mail surrounds (e.g. illustrations in the *Šāh-nāma* of Ebrāhīm Solṭān in the Bodleian Library) (Figure 22). Mail aventails with plate ear-pieces attached to the plate helmets were also standard pieces of equipment by now, and surcoats commonly hid the body armor. Long mail coats are occasionally depicted. From manuscripts from Herat of the early 15th century one might summarize standard as follows: plate helmet, mail Timurid armor aventail, plate ear-pieces, plate vambraces with handguards, short lamellar coat, plate knee plates and greaves with mail joints, and plate shoes.

However, one important variety of armor unrecorded since pre-Islamic times also makes its reappearance in the early 15th century: laminated armor. This is depicted in the Solṭān Jūkī *Šāh-nāma* where men are portrayed with plates encircling their bodies from armpits to waist, with mail above and below, the plates sometimes forming a coat, at other times a cuirass. Armor of this sort became widespread in the Islamic Near East and was particularly widely used in the Turkish and Mamluk states. In Iran it continued to be popular well into the 16th century (see f. 279 in the Tabrīz *Ḵamsa* of Neẓāmī of 1525 in The Metropolitan Museum, in B. Gray, *Persian Painting*, Skira, 1961, p. 128, and the

Houghton *Šāh-nāma*, f. 671), and laminated horse bardings were also used (see miniature from 1529 *Ẓafar-nāma* in Stöcklein, pl. MCDIX D, E). The origin of this style is by no means certain, and a Persian source can not be proved.

The next important change in fashion probably occurred during the 16th century—the introduction of the *čahār-āyīna*, literally four mirrors, which was a cuirass of four large curved plates which was buckled or hinged round the wearer's body. It derived from the age-old use of breast plates. These are very rarely shown in manuscript illustrations but were sometimes probably sewn into a soldier's clothing. Russell Robinson has suggested that the circular plate shown in 16th century miniatures is a convention representing the central plate of a cuirass, just as the rectangular or hexagonal plate shown in 17th-century miniatures represents the full *čahār-āyīna* which was by then standard (Figure 23, Figure 24). The earliest dated example of a cuirass of four rectangular plates so far published is that in the Royal Scottish Museum dated 1114/1702. The continued popularity of the style is indicated by the *čahār-āyīna* in the Wallace Collection, which bears the name of Fatḥ-ʿAlī Shah Qāǰār and the date 1224/1809.

A wide variety of helmets are depicted in Il-khanid miniatures but from the late 14th century all are basically conical. Warriors' faces are almost without exception shown unprotected but there is evidence to indicate that a mail veil, part of the complete aventail, was often used. Surviving 17th-century helmets with their characteristic quadrangular spikes and plume holders often retain their original aventails which include a mail band round the upper face. Such helmets are also equipped with nasals. The reduction in helmet size at this period may have led to the fashion of tying a scarf around the outside of the helmet to help defray the heat of the sun, replacing the greater quantity of internal padding possible on the larger, earlier models.

From the late 14th century onwards the usual shield was circular, with a slightly convex profile, and made of cane. This was ideal for horsemen, and was only replaced by a stronger material, namely steel, with the introduction of firearms, from the 16th century onwards. It was probably firearms which led to the abandonment of horse armor at about the same time, since the amount of steel needed would have made the movement of horsemen in battle quite impossible.

As regards production, early texts suggest that in the pre-Mongol period most Persian armor was produced in Khorasan (Ebn al-Faqīh, p. 316; Ḥamdānī,

Ketāb al-ǰawharataynal-ʿatīqatayn, ed. and tr. C. Toll, Uppsala, 1968, fol. 25a; Jāḥeẓ, *Ketāb al-tabaṣṣor be'l-teǰāra*, ed. H. H. ʿAbd-al-Wahhāb, *La Revue de l'Académie Arabe* 12, 1932, p. 345; *Ḥodūd al-ʿālam*, p. 110), and Transoxiana (Moqaddasī, p. 325), and the important role of Gūr in armor production is emphasized by Jūzǰānī (pp. 40, 47, 59). Under the Il-khanids Rašīd-al-dīn's description of the industry already cited seems to indicate widespread manufacturing on a small scale, while recentralization, in the northeast, was evidently the policy of Tīmūr. During the Safavid period, at least from the time of Shah ʿAbbās, Isfahan became the key city for the production of both armor and arms.

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