

HORSESHOEING IN MUGHAL INDIA

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(Received 9 August 1991; after revision 31 October 1991)

Medieval period in many societies has been looked upon as 'The Age of Cavalry' when horses played a great role in the making and unmaking of empires. Domestication of horses necessitated numerous equine accoutrements with the objective of controlling the horse as well as for the convenience of the rider. Bridle, bitted bridle, saddle, stirrup and horseshoe were the most significant equipment towards this objective.

To date no one has written on the technique of horseshoeing in India. This article seeks to make a modest attempt in this direction. First, we discuss why the horses need shoeing. Then, we briefly examine the date of beginning of the practice of horseshoeing in India, that is, whether this technique was known in ancient India or it came to the country in the wake of the Turkish invasions. Next, we give some details of this technique as practised in Mughal India, and also identify some basic tools employed in shoeing. This exercise is based on three main sources: a) Persian literature; b) one Mughal painting; and c) field work. We also take note of some stray but rare evidences for the number of times a horse needed shoeing, the cost of the shoes, the wages of the farrier and other tit-bits. At the end, we have appended two plates. Plate I is a reproduction of the Mughal painting depicting horseshoeing, and Plate II displays line-drawings of the tools portrayed in the above painting. Appendix A explains the tools and material used in shoeing. Appendix B is an extract from Thévenot relating to the shoeing of oxen in the Ajmer region.

For want of a nail
The shoe was lost,
For want of a shoe
The horse was lost
For want of a horse
The rider was lost

For want of a rider
The battle was lost,
For want of a battle
The kingdom was lost,
And all for the want
Of a horse shoe nail.

(*The Oxford Nursery Rhyme Book*, Assembled by Iona and Peter Opie, Oxford, reprint, 1977)

George Cansdale, who has been in close contact with animals for decades, once remarked that "Man alone among the higher animals brings other animals into his direct service by domesticating them"¹. Animal domestication² is thought to have taken place probably more than 10,000 years ago when Man was a nomadic hunter. But just exactly how it happened remains unclear³. If dog was the first animal to become friendly with Man, the second line of domestication included sheep and goats. This was followed by cattle, the most important of all domesticated animals, especially with the beginnings of human settlements based on agriculture. The horse may have been domesticated between BC 3,000 and 2,000. But true domestic horses are said to have developed later

from *Equus caballus* — the agglomeration of Eurasian wild horse races, only one of which, the Przewalski horse (*Equus caballus przewalski*), originating in Mongolia, survives today⁴.

But mere domestication was not enough. With the view of controlling the horse for riding, some items of equipment were called forth. Perhaps the earliest horse trapping was the bridle, followed by *bitted* bridles⁵ of various types along with saddles. The next important ‘technological breakthrough’ was the stirrup, starting with very simple devices and eventually culminating in the metallic stirrups in the shape we find them today. This stage was perhaps first achieved in China in the fifth century AD wherefrom stirrup got diffused to other culture-areas⁶. Nailed horseshoe was a latecomer.

Why do domesticated horses need shoeing^{6a}? The answer lies in the hoof, the most vulnerable part of the equine anatomy. The horse’s hoof is a constantly growing horny structure like the human nail, susceptible to breaking, splitting and shelling. In their original natural habitat, horses keep their feet worn down and, hence, trimming is unnecessary. Climatic conditions easily affect horse’s hooves; their exposure to moisture is invariably injurious. That is why horses bred in desert, where the ground is rough and stony, keep their hooves tough and sound, and they may go unshod; but hooves of horses of moist latitudes are greatly prone to getting easily worn and damaged, needing artificial protection. A horse with footsore will limp, and hence be of little use to the rider. Neglected feet are likely to become diseased and may cause quite a severe injury if the hooves are allowed to grow too long, or when the nail clenches rise up and protrude beyond the wall of the hooves. It has been aptly observed⁷:

‘A lame cavalry horse may often be worse than no horse at all, especially on active service, for he becomes a liability; he cannot take his place in the ranks, but he still needs feeding and ill afforded attention’.

It is in this context that we can appreciate the worldwide axiom of horsemen: “No foot, no horse”. Therefore, tamed and domesticated horses, when in use, require shoeing. Shoeing offers two advantages: first, it gives a better grip on soft ground; and secondly, their hooves get protection on rough ground. It is interesting to note that horseshoe is the only equestrian accoutrement which does not have *direct* bearing on control of the animal like some other outfits,

According to Lynn White, there is no “present firm evidence of the nailed horseshoe before the end of the ninth century (AD)”⁸. Indeed, he is certain that there is no literary evidence that the Greeks, Romans, or Franks used (nailed) shoes. The Romans used *soleae* and hipposandals (iron-soled boots secured by leather thongs or wire), “either for ornamentation or to help the healing of a broken hoof”⁹. Obviously, they were not true horseshoes. Lynn White’s opinion on the dating of horseshoes runs counter to the popular view that the earliest iron shoes of conventional form date from AD 100 (a view based on excavations)¹⁰. But Lynn White warns us¹¹:

Of all archaeological objects, one should be most cautious about the stratification of horseshoes: a horse stepping into a rodent’s burrow easily deposits one which

the denizen of the burrow may draw still deeper; horses bogging in mud lose shoes 2 or 3 feet below the surface. In such circumstances the results of excavation must be subject to special control by information* from other sources .

Horseshoe has not been reported from any archaeological site excavated in India. Nor do the sculptural representations of horses display it. We do not even come across any Sanskrit or indigenous term for the same. In fact, Sanskrit literature on horses (*Sālihotra*) does not mention shoeing at all. It will be quite fair, then, to infer that horseshoe was a foreign importation, brought by the Turks to India.

The Arabic/Persian word for the shoe is *na'l* (the farrier is *na'lband* and the shoeing is *na'lbandī*). It is no accident that shoeing in the past was largely monopolized by Muslim artisans. It was only after the partition of India in 1947 that a number of Hindus took up this profession when numerous Muslim farriers migrated to Pakistan¹². (One is reminded of the profession of tincoating = *qala'igari* heavily dominated by Muslims in the past. Tincoating, too, was introduced into India by Muslims)¹³.

Perhaps the earliest mention of the word *na'l* in the Indo-Persian works is in the *Ādāb al-harb wa al-shujā't* (13th century AD)¹⁴. Near about the same period, Amir Khusrau alludes to shoeing by playing a pun in *I'jāz Khusrawī*¹⁵. It is unfortunate that the Persian veterinary works (*Farasnāma*) compiled in India (16th and 17th centuries), abstain from giving details of shoeing techniques, nor do they give us any idea of the tools used. One *Farasnāma* tantalisingly uses the phrase *ādāb na'l bustan* (Manner of Shoeing) but passes over to other things after offering just a simple tip¹⁶, while the other warns the horseman of the dangers of riding an unshod horse on stony and rough ground with suggestions for cure for injuries to hooves caused thereby¹⁷. But we are grateful to the latter source for the revelation that iron shoes (*na'l āhnī*) were used¹⁸. (Hans E. Wulff says that copper shoes were used in Persia before the introduction of the iron ones)¹⁹. It seems that the early Persian sources had taken shoeing for granted, as the horses too had taken them for granted! However, information contained in the later works (18th and 19th centuries respectively) help us greatly in reconstructing the shoeing technique²⁰. A 20th century Urdu lexicon of technical/professional terms is only of marginal help²¹. However, a rare Mughal painting, perhaps of Akbar's period (AD 1605), is a very important 'document' on horseshoeing in Mughal India that we have been able to lay our hands upon²². We will now endeavour below to interpret this precious painting (Plates I and II).

The very significant information which the above painting yields at the very first glance is the technique of cold-shoeing. None of our sources even hints at hot-shoeing — a practice perhaps unknown in Medieval India. (We cannot say whether Europeans introduced hot-shoeing during their colonial rule in India, but my limited field survey has convinced me that hot-shoeing was never indigenous.) This is in contrast to Europe where both techniques were employed. In hot-shoeing, red-hot shoe of appropriate size is held against the hoof 'amidst clouds of smoke'. This causes charring, exposing any remaining irregularities of the hoof surface calling for paring. The shoe is then 'beaten to shape and cool' and, finally, attached by hammering nails into the hoof through the holes in the shoes provided for this purpose²³.



Plate I: Horseshoeing (17th century, Mughal) (Department of Oriental Antiquity, British Museum and Library, London) (No. 1942.1.24.01).

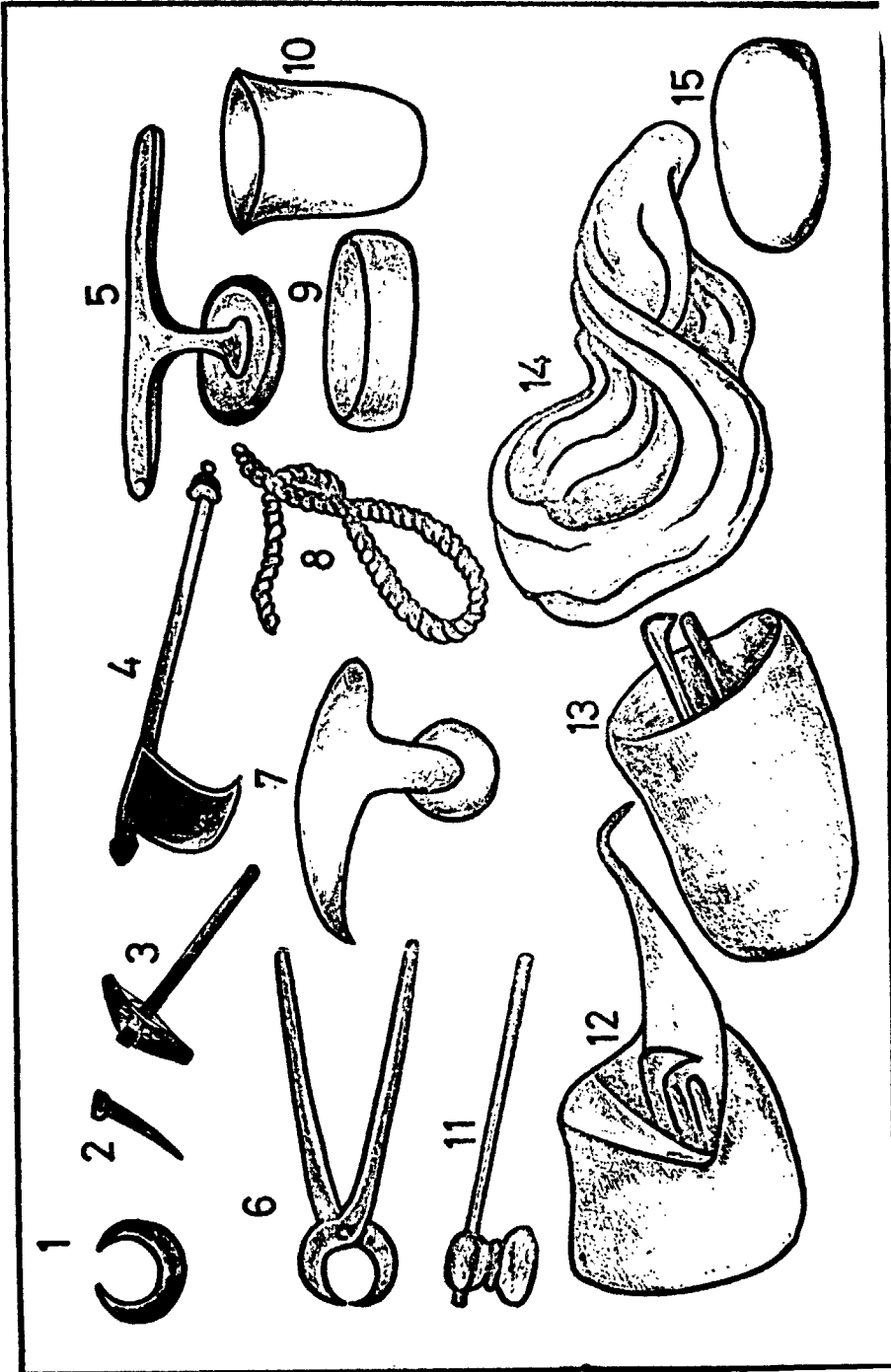


Plate II: Tools and Objects Depicted in Plate I (See Appendix A for identification).

The painting under study displays a number of tools for shoeing, some of which could not be identified even by professionals of long standing. At any rate, putting together the evidences at our disposal, we can reconstruct the shoeing processes which we present below²⁴.

The foremost skill and merit of the farrier lie in proper and accurate paring, clipping and rasping of hoof. In reshoeing, before the extraction of old nails and shoes, hooves must be 'softened' (*narm kardan*) with some chemicals (hoof-oil) three days earlier. Softened or 'wet' hooves make the task of extraction and paring easier. But if shoeing was required urgently, it is advised to cauterize (*dāgh*) the hooves, searing them with red-hot iron plate or rod. This should not be confused with hot-shoeing: the purpose here is merely to soften the hooves. After extracting old nails (and shoes) with a pincer (*zambūr*), trimming is carried out with a hoof-knife (*sumtarāsh*) with extreme care: the hoof must not be cut back *too much* or *too little*. In either case, the victim is the horse or the horseman. The first fault may result in the animal's legs getting injured due to protruding nails; nay, there is a danger of shoes coming off on stony roads with crevices. The second fault could impart sudden and severe jerks to the running horse owing to his long hooves, thereby endangering the horseman's stability in his seat. Thus, hoof paring is not an easy or simple task: the farrier learnt proper paring after gaining experience by working on horses of different sizes for long. The next step is the rasping of hoof with a file (*sohān*) along with cleaning off dirt and gravel, etc. that may have settled into hoof through cracks (*shigāf*). Paring and rasping are done while the horse's foot is resting on a small footboard. It is only now that the farrier makes preparations for fixing the shoes.

The shoe is given shape for 'exact fit' by beating it with a hammer (*mitraqa*) on a special anvil (*sandān*). Nails too are taken care of in the same manner, if necessary. Next, the shoe is attached to the hoof by driving in six iron nails (*mekh*) with a light hammer through the six holes in the shoe, three on each side. (In Europe, sometimes eight nails are used)²⁵. Thus, each horse required four shoes and twenty-four nails. The points of nails coming out at the sides of hooves are 'bent over' with *zambūr*. This done, filing may be needed again to align hooves and shoes more accurately. And, finally, hoof-oil is smeared over the shod hooves. Before leaving the horse, the farrier must satisfy himself that there is no 'depression' or empty space left between the shoe and the hoof; if so, he should squeeze in a piece of leather of appropriate size and thickness to cover it up.

Some precautions are taken during shoeing. Not all horses approve of shoeing; according to our sources, some are habitually recalcitrant (*sarkash*). For such a horse (*bad na'l*), a psychological approach has been recommended: he should be brought to the place where one or two 'well-behaved' (*khush na'l*) horses are being shod to impress upon him that no harm will come to him if he, too, allowed himself to be shod. If this trick is of no avail, then, in order to keep him under control, *pozmal* is used. *Pozmal* (or *lawāsha*) is a rope made of animal hair, attached at one end to a wooden stick or bone rod. The mouth and lips are fastened with it, while the farrier's assistant holds the other end. This restrains the restive horse from interrupting the farrier's work

with his mouth. For a really vicious horse, more stringent steps are advised, that is, to bind his legs with *shikil* or horse-tether (to spare the farrier from kicks) and also to put a cover (*jul*) over his eyes, so that he may not observe shoeing. At any rate, not to take any risk, it was a common practice to put the foot to be shod in a belt-loop or sling (*randak*) held by a helper in such a manner that the upturned hoof faced the horsesmith for the nailing of shoe.

Our painting (Pl. I) portrays three persons involved in shoeing. In Continental Europe, the shoemaker is helped by one assistant who holds the animal's foot, whereas the British and North American smith works alone²⁵. At any rate, our painting shows the farrier on the right, in the act of nailing the shoe. On the left, his assistant is holding the horse in check. The person in the middle, too, is helping the shoemaker by grasping the animal's foot. This person might not be farrier's 'assistant' in the usual sense. Since he is carrying a dagger by his waist, it is likely that he is the *sawār* (trooper). Alternatively, he might be an equerry or groom (*sā'īs*) of a Mughal noble. (However, sporting a dagger was not a privilege of some particular persons to the exclusion of others.) In India nowadays small horses for wheeled carriage are shod by the farrier alone, since he cannot afford the expenses of an assistant, unless his child helps him.

All our sources recommend that a horse in hard work or intense active service needs trimming of hooves within 30 or 40 days, and shoes replaced either with the old set (if not much worn out) or a new one. Referring to the imperial (*khāssa*) horses of Akbar, Abūl Fazl says that new sets of shoes were fixed up twice a year²⁶. Removal of the old set after the long period of six months is somewhat astonishing, unless we accept that the special imperial horses enjoyed the luxury of not being put to excessive use, or that they served the Emperor in relays. However, the danger of shoes coming off prematurely was there: one of the sources reveals that the duration of retention of shoes by the horse depended on the skill of the farrier.

In view of the huge number of horses maintained by Mughal Emperors and their *manasabdārs*, as well as by other regional rulers and their officers, apart from horses kept by private persons, it is fair to assume that the demand for shoes and nails must have been enormous. Undoubtedly, then, iron industry in India must have received a pretty fillip. As for the manufacturing of shoes, we do not know whether they were cast or made in moulds, or fabricated by beating a red-hot iron plate into the conventional form of horseshoes.

We possess only one evidence on the cost of one set of shoes (including nails) by the end of sixteenth century: 10 *dāms* = ¼ of a rupee (Akbar's period)²⁷. We do not know whether the cost increased during the seventeenth century on account of silver influx and 'Price Revolution'. The farrier of Akbar's stables was given 160 *dāms* per month, equivalent to Rs.4 per month of those days²⁸. This can be compared with the wages of the sweeper (*khākṛub*) of Akbar's stables which was 65 *dāms* per month, equivalent to one rupee and 25 *dāms*²⁸. (An unskilled domestic servant got Rs.3 per month during the seventeenth century.)²⁹ Once, in a very abnormal situation (famine in the Deccan due to Shah Jahan's military campaigns and natural calamity), we are told

that farriers demanded ten rupees for shoeing one horse³⁰. Most probably, this amount included the cost of shoes and nails too. In any case, one can imagine the tremendous cost involved in keeping a large contingent of horses in active service on their shoeing alone, even if we concede that they needed a new set every three months, if not once a month. And whoever heard of horseshoes made of gold and silver? Only in fairy tales? But, no, this could happen in India, and you guessed it right: only the Mughal nobles would perform such an incredible 'feat'. Raja Todar Mal and Raja Bhao Singh (son of Raja Man Singh) are reported to have shod their horses (how many we are not told) with gold and silver shoes³¹! Obviously, some of their personal (*khāssa*) horses only could have been shod so generously, albeit temporarily and not for battlefield. It is a case of perverse whim or a crude exhibition of wealth.

Considering the importance of shoeing in the 'Age of Cavalry', low wages of farriers are indeed surprising. Was it due to the swelling of the numbers of horseshoe-smiths, since they were in great demand throughout India? In 1678, the English factors at Bombay expressed the "urgent want" of a good smith to shoe horses, as one was not procurable at Bombay and those at Surat were disinclined to go to live there³². On the other hand, large demand might have encouraged entry into this profession of raw persons with indifferent skills, leading to deterioration in the art of shoeing. We quote below at length the observation of an English Chaplain at Surat in 1689³³:

In Journeying, or in taking the Air, the Moors are not only accommodated with delicate Horses bred in India, but have convey'd hither from Persia and Arabia Horses so well turn'd and of such admirable Shapes, that a Thousand Roupies is easily sunk in the Price of one of the more ordinary that are brought hither. Some of them are train'd up, and excel in Management as well as Shape; but their care of them is equal to neither of these Excellencies; *for in the shoeing of them, 'tis commonly done so inartificially, that they easily batter their Hoofs, and expose them to surbating [becoming footsore] with a very moderate Journey* (emphasis ours).

We cannot be definite whether this sort of bad shoeing was an all-India phenomenon or was confined to Gujarat only. However, it must be pointed out here that hot-shoeing in any case ensured 'exact fit', while cold-shoeing demanded extreme dexterity to do so.

Some scholars of Medieval India have underscored the military advantages of stirrup as a contributory factor to the series of military successes which the Turks achieved in India, at least in the initial stages of their invasions. But horse-shoe has been treated as a poor cousin. We can genuinely appreciate the significance of horseshoe and proper shoeing only in the context of the maxim: 'No Foot, No Horse', to which we may add, 'No Horse, No Kingdom'

An incident narrated in a contemporary Persian work gives an idea of the importance of shoeing. The march of a whole force was once called off when it was

found out that a number of horses had thrown off their shoes (*na'l afgandan*): march was resumed only after the horses had been shod³⁴.

ACKNOWLEDGEMENTS

First of all, I am heavily indebted to the 80-year old farrier Janab Qamaruddin Sahab (Gali Matia Mahal, Old Delhi) who so kindly identified many tools and objects depicted in Plate I, and who very patiently explained to me their respective functions. I also thank the middle-aged shoemaker Muhammad Qadir Sahab (Mahalla Sarai Sultani, Aligarh) for offering me adequate guidance by shoeing a horse in my presence.

I am also extremely grateful to my friend and colleague, Professor S.P. Verma, who very carefully did the line-drawings for Plate II.

Last, but not the least, I express my gratitude to the Trustees of the British Library and Museum, London, for providing me a copy for our Plate I for academic purpose.

Apart from the sources cited in the text and notes, I have consulted Munshi Tek Chand Bahar, *Bahār-i 'Ajam* (Nawal Kishore, Lucknow, 1916) and F. Steingass, *Persian-English Dictionary*, 1st Indian edition, New Delhi, 1973.

NOTES AND REFERENCES

1. Cansdale, G, *Animals and Man*, London, 1953, p. 84.
2. Domesticated animals have been defined as: "those animals which form part of household, which are under the domination of a master to whom they give their produce and services, which reproduce themselves in their state of voluntary captivity, and produce young which, like themselves, are attached to the household and become servants of the master". *Tamed* animals may not be necessarily *domesticated* (for example, lions). In terms of utility, the motive for *true* domestication is purely material, e.g., meat, dairy products, fat, hides, bones, horns, dung (as fertiliser and fuel), transport and ploughing. The practice of keeping pets is at another level, that is, Man's emotional involvement with animals.
3. One suggestion, among many, is that Man, the hunter, might sometimes have spared cubs who were easily tamed and gradually became domesticated.
4. Cf. *The Living World of Animals*, ed. L. Harrison Matthews and Richard Carrington, Reader's Digest Association, London, 1970, p. 362. Also, J.M. Brereton, *The Horse in War*, London, 1976, pp. 6-9.
5. For iron bits in ancient India (circa BC 1100-800), see S.B. Deo, *Mahurjhari Excavations, 1970-72*, Nagpur, 1973, pp. 51-2 and plate xxvi.
6. Cf. Lynn White, *Medieval Technology and Social Change*, Oxford, 1962, pp. 14-9. Also see P.K. Gode, 'The History of Stirrup in the Indian and Foreign Horsemanship-between BC 852 and AD 1948' in the anthology of his essays, *Studies in Indian Cultural History*, Vol. II, Poona, 1960, pp. 71-81.
- 6a. Cf. *The Encyclopaedia Britannica*, Vol. 11, 1966, p. 704; Lynn White, op. cit., p. 56; J.M. Brereton, op. cit., p. 52.
7. Brereton, p. 52.
8. Lynn White, p. 56.
9. *Ibid*, p. 58.
10. For example, see Brereton, p. 53. Also Lynn White, p. 57.
11. Lynn White, pp. 57-58.
12. I owe this information to Janab Qamaruddin, the eighty-year old farrier of Gali Matia Mahal, Old Delhi. (See Appendix A for identification of tools by him).

13. See P.K. Gode, 'History of Tincoating of Metallic Utensils in India (Between AD 1330 and 1900)', in *Studies in Indian Cultural History*, Vol. iii, pp. 113-17.
14. Fakhr Mudabbir, *Ādāb al-harb wa al-shujā't*, ed Ahmad Suhaili Khwansari, Teheran, p. 191. The term used is *bad na'l shudan*.
15. Amir Khusrau, *I'jāz Khusrawī*, Vol. I, Nawal Kishore edition, Lucknow, 1876, p. 171. He means *na'lbandi* when he uses the phrase *mekh doz(i)*, that is, 'fastened to a peg'. He says that the horse is a strange animal (*asp turfa jānwar ast*) as he runs better when his feet are fastened to a peg. (The pun is on *mekh* = nail used for shoeing horses).
16. See Zabardast Khan, *Farasnāma*, ed. D.C. Phillot, Calcutta, 1911, pp. 26-7.
17. Cf. Hashmi, *Farasnāma*, ed. D.C. Phillot, Calcutta, 1910, p. 104.
18. *Ibid*, p. 105.
19. Wulff, Hans E., *The Traditional Crafts of Persia*, Massachusetts, 1966, p. 53.
20. The first is the *Farasnāma* (AD 1767) of Muhammad bin Muhammad, lodged in the library of the School of Oriental and African Studies, London, Ms. no. 46524, chapters 33 and 34, ff. 44a-46a. The second work is the Urdu translation of a Persian work on crafts and professions, etc., written by Munshi Wajid Ali Khan in 1845 (*Matla'ul 'uloom wa Majma'ul funūn*). It was translated by Zainul Abedin, and published by Nawal Kishore, Kanpur (1893), in two volumes. For horseshoeing, see Vol. ii, p. 231.
21. Maulvi Zafarul Rahman, *Farhang Istalāhāt-i Peshawarān*, Vol. v, Delhi, 1941, pp. 64-7. It also carries a sketch of horseshoeing (p. 67), albeit drawn hurriedly.
22. This painting is preserved in the Department of Oriental Antiquity, British Museum and Library, London, No. 1942-1-24-01. To my knowledge, it has been reproduced only once in Jessica Rawson (ed.), *Animals in Art*, London, 1977, Figure 56 (on p. 35), but without any attempt at identifying and describing the tools depicted in it.
23. See *The Encyclopaedia Britannica*, Vol. 9, 1966, p. 102. Also Brereton, p. 52.
24. What follows is based on the works described in notes 16, 17, 20, 21, and 22. Also Wulff, *op. cit.*, pp. 53-4. See Appendix A for comments on Plates I and II.
25. *The Encyclopaedia Britannica*, Vol. 9, *op. cit.*, p. 102.
26. See *Ā'in-i Akbari*, Vol. i, Part 2, Text edited by Blochmann, Calcutta, 1867-77, p. 143.
27. *Ibid*. (Taking 40 *dāms* equivalent to one rupee of Akbar's period).
28. *Ibid*, p. 144. The status of the *na'lband* was that of an infantry 'soldier'.
29. Cf. J.Ovington, *A Voyage to Surat in the year 1689*, ed. H.C. Rawlinson, London, 1929, p. 228.
30. See Farid Bhakkari, *Zakhīrat-ul Khawānīn*, ed. Moinul Haq, Vol. ii, Karachi, 1970, p. 45.
31. *Ibid*, Vol. i, p. 212, and Vol. ii, p. 387.
32. *The English Factories in India (1678-84)*, New Series, ed. Charles Fawcett, Vol. ii, pp. 15-6.
33. Ovington, *op. cit.*, pp. 150-51.
34. *Salih Kamboh, 'Amal-i-Sālih*, ed. Ghulam Yazdani, Vol. ii, Calcutta, p. 130.

APPENDIX A

Tools and Material Used in Horseshoeing

The following list is with reference to Plate II wherein line-drawings of the tools depicted in Plate I have been made. The numbers correspond to those in Plate II.

1. *na'l*: (iron) horseshoe

Horseshoes in Plate I do not show any holes. In modern times we will find six holes — three on each side, so that the nails pass through them. Is this absence of holes in the painting a lapse on the part of the artist? Or does it indicate that holes were to be made by the farrier on the spot before shoeing? In the latter case, can we infer that this was done keeping in view the requirement of 'exact fit' since the size of the hooves could not have been the same in all horses?

In a portrait of Prince Dara Shukoh's horse *Dil Pasand* (Heart's Favourite), we can easily spot out three nails inserted into the right side of the hoof of the right foreleg which is upturned. The other set of three nails should be on the left side which obviously cannot be depicted. But this does not resolve the issue raised above. (For the portrait of Dara's horse, see Toby Falk and Mildred Archer, *Indian Miniatures in the India Office Library*, London, 1983, Fig. 55 on p. 372.)

2. *mekh*: (iron) nails

No nail has been shown in the group of tools in Plate I. It is also not clearly visible during the act of shoeing, except a very small part. The sketch in Plate II is based on modern nails for shoeing.

3. *mītraqa* (Hindi: *hathora*): hammer

4. *sumtarāsh*: sharp and curved hoof-knife

5. *sandān/sindān* Hindi: *ghan*; *akwāi*: anvil (see No. 7 for note)

6. *zambūr*: pincers/nail extractors

7. Same as No. 5

It is difficult to explain why there were two types of anvil.

8. *randak*: belt-sling or rope-loop to lift up horse's foot for shoeing.

9. footboard

Note the right foreleg of the horse on footboard in Plate I. It was used while paring the hoof.

10. cup for hoof-oil

11. ladle to take out oil from No. 10.

12. *kharīta/tobra*: farrier's bag to keep tools

Three tools are visible in this bag, but only one could be identified. The topmost one in the bag is *singūti* (horn-like object) to clean hooves before shoeing.

13. open tool-kit (?)

Out of the two tools in this object, only the topmost one has been identified. This is once again *singūti*, as in No. 12.

14. Unidentified object
15. *sohān/sohan*: file (?)

There were three other articles which have not been shown in Plate I:

- i) *pozmāl/lawāsha*: rope of animal hair, sometimes with pincers or barnacles to close the mouth of a restive and vicious horse.
- ii) *shikīl*: horse-tether of goat-hair
- iii) *jull/jall*: horse-cloth for covering the horse. Here, cloth covering the face or eyes of the horse.

APPENDIX B

Incidentally, we may mention here that besides the horses, oxen and bullocks, too, were shod, especially when the latter were used in rough and stony territories. This practice still continues in certain parts of India like Rajasthan and Uttar Pradesh, but not in Bihar or Bengal. Unlike the horses, oxen's shoe is not one single object but it consists of two separate but equal parts. This is so because of the cleft hoof of the oxen and bullocks. However, the number of nails is six as that in horseshoeing. Tavernier observed the shoeing of oxen in the Ajmer territory when he visited it in the seventeenth century. He wrote:

“The ways of this Country being very stony, they shoe the Oxen when they are to Travel far on these ways. They cast them (down) with a Rope fastened to two of their legs, and so soon as they are down, they tye their four Feet together, which they put upon an Engine (frame) made of two sticks in the form of an X; and then they take two little thin and light pieces of Iron, which they apply to each Foot, one piece covering but one half Foot, and that they fasten with three nails above an Inch long, which are clenched upon the side of the Hooffs, as Horses with us are shod”.

(*The Indian Travels of Thévenot and Careri*, tr. and ed. S.N.Sen, New Delhi, 1949, pp. 72-73)