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It should become a classic.'

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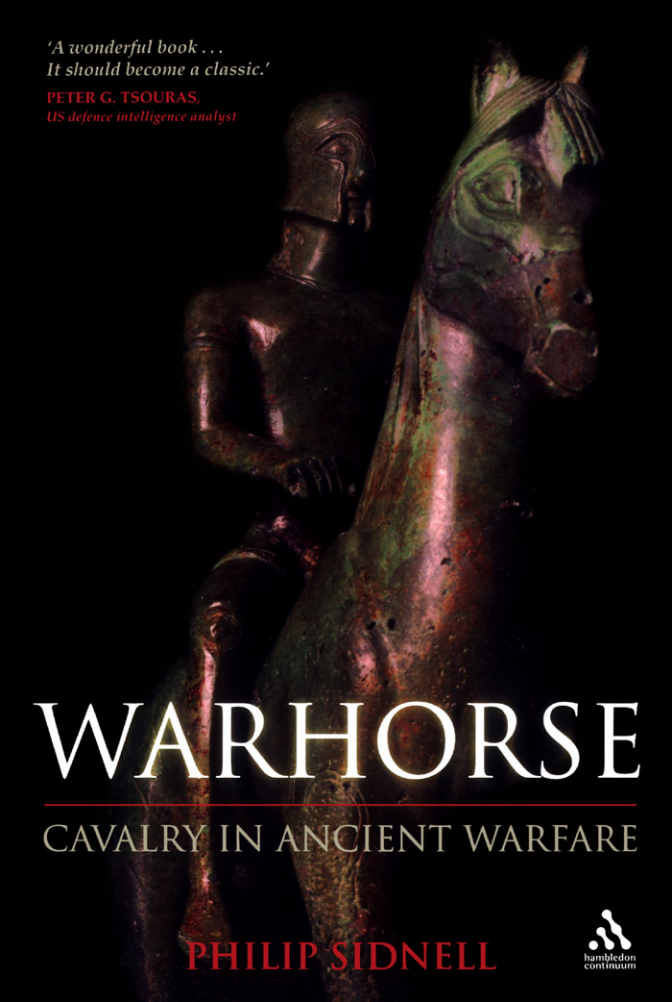
US defence intelligence analyst



WARHORSE

CAVALRY IN ANCIENT WARFARE

PHILIP SIDNELL

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WARHORSE

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Warhorse

Cavalry in Ancient Warfare

Philip Sidnell

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'Nothing else matters'.

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Introduction

What situation in military history could match a cavalry charge for sheer drama? From an early stage in the recorded history of human conflict, the thunder of approaching hooves struck fear into the hearts of the men who stood, or, very often, failed to stand in their path. Cavalry often proved decisive in ancient battles, yet most books on ancient warfare concentrate overwhelmingly on the infantry. This book aims to go some way to redressing the balance.

The historian Polybius, writing in the second century BC, concluded from his study of events in the previous century that it was better to enter battle with twice as much cavalry as the enemy and only half as much infantry than it was to be equal in both. Yet modern writers have often dismissed their role in battle as an irrelevance, even suggesting they served little purpose other than to display the wealth of horse-owning aristocrats. Although this function was indeed important, it is the argument of this book that they were used because they were the key to victory. The greatest generals of the ancient world such as Julius Caesar, Hannibal and, above all, Alexander would not have won their most famous victories without a proper appreciation of the battle-winning potential of cavalry.

The focus is deliberately on the shock or heavy cavalry role, since this is the most controversial and lies at the heart of the misconception that cavalry were of severely limited value on the battlefields of the period, particularly in contrast to the medieval period. It is virtually impossible to read a book on ancient warfare without finding some mention of the stirrup, which was not introduced until after the generally accepted close of that period. This is due to a widely held belief, popularized in the 1960s, that the stirrup made mounted shock combat viable for the first time. Even many of those who note the most obvious contrary classical examples, such as Alexander's cavalry, feel obliged to warn against exaggerating their effectiveness in light of their lack of stirrups. Ready acceptance of this view has allowed a general picture to emerge of the ancient horseman being limited to ancillary roles. In this view, they might undertake important scouting missions or harassing raids on

campaign, but once battle was joined, they were relegated to carrying messages and, at best, to some relatively ineffectual skirmishing while the infantry did the real fighting. This book argues that there is plenty of clear evidence in ancient sources that this is simply not true. Effective, decisive, shock combat was not an invention of the Middle Ages.

Warhorse does not claim to be a comprehensive survey of all cavalry in all places across the period covered. It deals predominantly with the Greek (including Macedonian) and Roman worlds, although the many peoples they fought against are also considered. This bias is shared with most books on ancient warfare. This was largely dictated by the availability of sources but in any case it serves to show that it is not necessary to seek out the hitherto unknown chronicle of some obscure and forgotten tribe to find examples of the potent potential of cavalry being realized on ancient battlefields. It is precisely the fact that the classical world is so well trodden by historians that makes it such a travesty that full praise of its horsemen has remained unsung.

This book is based, overwhelmingly and deliberately, upon those ancient sources for which translations are readily available. All authors build on and are influenced by the work of others. Rather than rely on a synthesis of modern works, however, my main aim has been to go back to the relevant ancient sources, albeit in translation, and present the evidence that I found there in a manner which is accessible and enjoyable not only to classicists but to the general reader. My interpretations of some ancient battles may be at odds with those of other authors, but I hope it will be clear that they are based firmly on the contemporary evidence viewed without a preconception about the limitations of ancient horsemen.

It was originally intended to carry the story right through the medieval period, to take in the apogee of the knight in shining armour, which is such a familiar figure in popular imagination. Had space allowed it, this would have had the advantage of allowing greater comparison and contrast to be drawn between the two periods. Instead it ends with the battle of Hastings. The choice of 1066 was not entirely arbitrary. Apart from providing a dramatic finale, the Battle of Hastings has been presented by more than one author as proof of a supposed tactical revolution that had recently rendered heavy cavalry, Norman knights in this case, capable of winning a decisive victory through shock action. By the time you read my interpretation of the battle the preceding chapters will, hopefully, have persuaded you that nothing happened at Hastings that would have surprised a general of a millennium or more earlier.

Even if one includes the accounts of Afghan Northern Alliance fighters charging Taliban positions on horseback in the early twenty-first century, the history of cavalry since Hastings is less than one thousand years. The period covered in this book is twice as long. The greater part of the story of cavalry, glorious and tragic in equal measure, but always exciting, has too often been unnecessarily neglected.

Most of all I have tried to write the kind of book I would enjoy reading. The subject combines my two enduring passions: military history and horses. The raw appeal inherent in the subject of warriors charging into battle on horseback, swords and lances in hand, is sufficient justification for writing this book. If the reader finds in it half the interest and enjoyment the subject has given me, then it has succeeded in its main aim.

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1

Origins

The horse in its natural state is not particularly warlike and tends to avoid danger where it can, but to the people of the Near and Middle East, which to the authors of the Bible was virtually the whole known world, the horse came to be almost purpose-built for war. Indeed, the earliest surviving representations of domesticated horses show them being used to pull chariots in the armies of the great biblical civilizations: Babylon, Egypt, Assyria and the Hittites. While this is the usual place to start any history of the horse in warfare, the peoples of the region were aware that the horse came from elsewhere. Many centuries later the travelling Greek writer, Herodotus, recorded an echo of this folk memory, relating how the prophetic importance of a strange event in the old Hittite lands of Lycia, now part of Turkey, turned on the fact that 'horses were beasts of war and not native to the country'.[1]

In the late 1960s archaeologists, excavating villages of the so-called Sredni Stog Culture in southern Ukraine, found numerous remains of horses. Examination of the bones and analysis of the age at death suggested that these horses had been used for their meat, either hunted in the wild or herded, and would have provided about 50 per cent of the inhabitants' meat intake. One, however, was different. The skull and some other bones of a stallion (stallions are distinguished by developed 'canine' teeth) were found in what appeared to be a ritual burial at the village of Dereivka. Not only did the teeth show the distinctive marks of wear from a bit, but curved pieces of antler which could be interpreted as the cheek-pieces of a bit were found with it. Replicas of these, tested with a rawhide mouthpiece, proved perfectly functional.[2] This is the earliest unequivocal evidence of a domesticated horse and it is dated, as securely as such things can be, to around 4000 BC.

It had long been assumed, on the basis of the copious archaeological evidence from the Fertile Crescent, that horses were first used militarily for pulling chariots rather than riding; this was said to be because they were then too small and weak to be ridden. The Dereivka stallion, however, was champing at his bit half a millennium earlier than the oldest known wheel. Clearly, horses were ridden before they were used to pull

chariots. What is more, the ritualistic nature of the Dereivka burial suggested to archaeologists that the horse had already risen to a position of high status beyond that of a mere working animal.[3] The horse's military potential may already have been being exploited in raids on neighbouring tribes.

The Dereivka finds indicated that the vast majority of the horses would have fallen in the range of 12.2 to 14 hands high, while the Dereivka stallion was approximately 14.1hh.[4] This range matches that of such modern breeds as the New Forest, Fell, Icelandic and Fjord, all of which are popular riding animals. This may be a good point at which to clarify something about horses and ponies and size.

There is a lot of confusion about the difference between horses and ponies; even horse owners sometimes state with absolute confidence that they have a different number of ribs and vertebrae. This is not so, as they are one and the same species, *equus caballus*. Certain breeds of horses are, however, designated as ponies, so all ponies are horses but not all horses are ponies. The criterion is not just size, but the relative lengths of back to legs, ponies being relatively shorter in the legs. It is not, as is widely believed, just a question of height. The tiny Falabella, averaging only 7.2 hands high, is a miniature horse, not a pony.

Modern readers, used to seeing long-legged Thoroughbreds performing at the races, and raised on the image of monstrous medieval chargers, may have trouble imagining how these much smaller animals could be of military use. Speed may be largely a function of leg length but weight-carrying ability does not correspond proportionately with height. Likewise, toughness and endurance, also vital requirements in a war horse, bear no relation to size whatsoever. Consider the following extracts from a work published in 1900 by Sir Walter Galbey advocating the use of *smaller* horses for the British cavalry:

> Granting that the saying, 'a good big horse is better than a good little one', is in the main correct, we have to consider that the merits which go to make a useful horse for campaigning are infinitely more common in small horses than big ones.
>
> All the experiences of campaigners, explorers and travellers goes to prove that small compact animals between 13.2 and 14.2 hands high are those on which reliance can be placed for hard and continuous work on scant and innutritious food.[5]

To support this view, Sir Walter goes on to quote the experiences of the traveller Captain Burnaby, whose locally purchased Kirghiz

pony 'about 14 hands in height was as fresh as possible after his march of seventeen miles. In spite of the weight on his back – quite twenty stone – he had never shown the least sign of fatigue'.[6] And this was in the particularly bad Central Asian winter of 1876/77. Another example cited is the more telling because it involves a large group of similar animals. In 1870, 210 horses made a forced march in 'Russian Tartary' in temperatures of up to 117° Fahrenheit, covering 266 miles in six days. At the finish only twelve were reported 'sick' and all of these were cases with sore backs caused by ill-fitting saddles. Of course none of this proves that the Dereivka horse was equally useful as a mount, but it demonstrates that there is no reason why it should not have been.[7]

The evidence of Dereivka makes it clear that the origins of the domesticated horse are to be found out on the Eurasian steppe. The domestication of the horse allowed the people of Dereivka and thereabouts to range deeper into the steppe in search of game, or to avoid enemies, and gave them a great advantage in mobility over rival tribes. In time it completely transformed life in this region and certain tribes developed a highly specialised semi-nomadic lifestyle that was almost completely dependent upon the horse. It is likely that such tribes developed the techniques of mounted warfare from an early stage.

Unfortunately, archaeological evidence in the steppe region is scarce for this early period and, as these early horse tamers left no literature of their own, we cannot pick up their story until they appear in writings of much later peoples. The earliest people from around this area to be known to us by name are the Cimmerians, who were driven out of their homeland by their northern neighbours the Scythians in the early seventh century BC. The Cimmerians, and the Scythians even more, who made their appearance as fierce mounted warriors, are widely believed to have been the inspiration for the mythical centaurs, half man and half horse. The study of cavalry should really start with these riders, but by the time they appear in the historical record others had already developed cavalry via the chariot and left written and pictorial evidence to prove it.

Although the new skills of horse domestication may have spread rapidly across the steppe, it was many centuries before they reached the farming and urban societies to the south. The earliest remains from the Mesopotamian cities date from around 2000 BC or a little later.[8] There are a few remains from Anatolia that have been dated to 3000 BC, but these may represent a first attempt at introduction there that failed.[9] They may even be evidence of an armed incursion from the

steppe. They do not reappear in the archaeological record in Anatolia until around 2000 BC. In any case, by the early centuries of the second millennium BC the horse was established in Mesopotamia, Syria and Palestine.

These horses must have arrived via the Caucasus Mountains and Armenia, which accounts for the Babylonians knowing the horse as the 'ass of the mountains', despite its steppe origins. According to genetic analysis, all modern domestic horses are almost certainly descended from the very first domestic herd – if not that of Dereivka, then very probably one not far removed from it in space or time.[10] Domesticated horses must have been exported by whatever means, either by trade, theft or conquest, and all later herds bred from these. Once it was thought that domestication of wild horses was achieved in more than one place, and for centuries equestrian experts attempted to trace the various modern breeds from distinct prehistoric ancestors. The effort put into explaining equestrian diversity by assuming at least four types of primeval horse – a hot-blooded desert horse to spawn the Arab, a heavily built forest dweller siring the 'cold-blooded' breeds of northern Europe, and others – seems to have been wasted.[11] Genetic science has also finally laid to rest the once common belief that Przewalski's horse represents the natural unaltered state of the horse as it appeared before domestication, revealing it instead as a distinct species.

All the evidence suggests that, south of the Caucasus, horses were used almost exclusively to pull vehicles rather than being ridden. The conventional reason for this, that the horses were too puny to be ridden, can no longer be accepted as we now know they were being ridden out on the steppe. Was the chariot seen as a superior weapon system to horse and rider? If so, it is hard to see why chariotry was eventually abandoned in favour of true cavalry. Those chariots that lingered into the period covered by narrative histories performed consistently badly against, or alongside, cavalry. The answer may well have more to do with the fact that learning to ride is a difficult, time-consuming and often painful process. It is not infrequently fatal. Modern tutors can draw on thousands of years of accumulated experience, not proceeding completely by trial and error. An analogy can be drawn with the adoption of the earliest firearms. These were inferior in almost every respect to the longbow they replaced, but anyone could use one with minimal instruction, whereas the longbow had to be practised daily from childhood for its potential to be realized.

The first individuals in the Middle East to buy or capture horses may

have tried to imitate the riding skills of the northern steppe dwellers, probably with predictable results in terms of broken bones. Unlike the first riders at Dereivka, these southerners had long since been using wheeled carts pulled by oxen and asses, and had even used heavy ass-drawn wagons in battle. It is not difficult to see how the idea of modifying the cart for use by the horse was seized upon as a less painful course of action. Had the people of Dereivka had this option when they first domesticated the horse, they too might have gone down this technological route, although they would have found driving less useful than riding for their everyday hunting and herding.

The horse nomads of the steppe had perfected their riding skills over centuries through constant use. Driving horses harnessed to a cart or chariot, while far from being easy or danger free, takes less time to learn and is far less likely to result in serious injury. A rider has to coordinate both hand and subtle leg instructions, or 'aids', to the horse while also keeping his balance as the horse moves under him; the charioteer had only to deal with his hands and balancing must have been much simpler. Compared to a rider without stirrups, a chariot driver with his weight firmly planted on his feet can exert much more pull on the reins to execute an emergency stop, if he finds his horses are running away with him; and if that fails he can bail out with less distance to fall. Also, only one of the chariot's crew (most commonly two men, but sometimes more) had to learn to control the horses, and he could concentrate on that alone, while his passenger or passengers gave their full attention to using their weapons. A rider of course had to manage the horse and his weapons simultaneously.

The chariot seems to have been developed in areas where the horse arrived after the wheel, and where the pattern of agriculture and economy meant that using horses was not all that their daily lives required of the inhabitants, which was almost true of the horse nomads. Logic suggests that the chariot was adopted first on the marginal farmlands between the steppe and the densely settled river valleys of the Middle East, where contact with both cultures gave access to the wheel and to the nomads' horses. The area south of the passes through the Caucasus Mountains is the likely site. Chariot-owning peoples then used their new weapon to expand into the areas occupied by the established urban cultures: the Hurrians, for example, moved westwards into Anatolia to establish themselves over the Hittites; and into Syria, further south, to establish the kingdom known as Mitanni. Where they did not conquer, they posed enough of a threat that existing states were forced to adopt

the new technology. There is now evidence to suggest that the horse had been introduced into Egypt before the subjugation of that country by the chariot-driving Hyksos, which was complete by around 1700 BC.[12] The horse-drawn chariot had by then become the dominant characteristic of warfare everywhere between the Sahara and the steppe, as it was for the next thousand years.[13]

Use of the chariot also spread around the Aegean coast to Greece, where the culture of the Mycenaean period was heavily influenced by the Middle Eastern states, and throughout Celtic western Europe as far as the British Isles. Britain was one of the last strongholds of the chariot, Julius Caesar encountering them during his invasions in 55 and 54 BC.

In each of these societies chariot warriors became an elite who could devote much of their time to hunting or training for war. Horses were relatively rare and very expensive, as was the chariot and other equipment associated with them, so ownership of them became both a sign and a privilege of nobility. In many of these great early civilizations, including Egypt, Babylon, Assyria and Mycenaean Greece, the state intervened and provided the necessary resources and effort required to build and maintain large chariot forces. At the battle of Kadesh in 1294 BC, the Hittites may have fielded as many as two and a half thousand chariots against the Egyptians' two thousand.

Horses were traded on a large scale and studs set up. The production of chariots, weapons and armour also became a major industry. High-ranking officials were appointed to administer the king's stables and ensure the supply of chariots and horses. Surviving letters from kings and pharaohs to one another often include requests or demands for horses. Around 1345 BC, Kikkuli wrote the oldest surviving manual on the training of horses; although from Mittani, he was in the employ of the Hittite king Suppiluliumas I. His tough training regime demanded a high standard of stamina and culminated in fast drives in excess of fifty miles. There is evidence of selective breeding of horses, which seems, to judge from various remains from Egypt and Anatolia, to have resulted in some increase in size. The most recent assessment of the evidence concludes that the horses of these and other regions were in the range of 14.1 to 15 hands.[14] The emergence of distinct regional breeds also began.

The many artefacts and pictorial representations show us in some detail how chariots were constructed and their crews equipped. Inscriptions have revealed much about the numbers involved, and the vast infrastructure required to support them, and a little about unit sizes.

Unfortunately, most inscriptions are administrative records or the propaganda of victory monuments and we lack good narrative accounts of battles that would allow us to examine closely the way they actually fought.

Just as the development of cavalry was later characterized by divergence into heavy and light types, so was chariot design. The light type, typified by Egyptian examples, was pulled by two horses, weighed under one hundred pounds and had a crew of two; the driver and an archer. This type was best used as a mobile missile platform, keeping its distance while showering the enemy with arrows. The heavier type was more solidly constructed and carried three or four men, the additional warriors being a combination of shield-bearers and spearmen. Hittite chariot crews appear to have been armed entirely with shields and spears from early on, which suggests these were expected to get in close to the enemy. Heavy chariot development culminated in the robustly built Assyrian vehicles drawn by four armoured horses and carrying a crew of four armoured men. The crew included at least one archer, but spears, shields and swords were also carried. The two types represent the same search for compromise between speed and mobility, on the one hand, and protection and close quarters fighting power, on the other, which later became a perennial feature of cavalry warfare.

It is easier to imagine the tactical role of the light archer chariot than of the heavier type. A very useful weapon system against an all-infantry army, it could simply be driven to within bowshot of the enemy, swarming around his flanks and rear if the terrain allowed enough room, and shooting at him. It is usually shown in action with the horses galloping, but against a slow-moving or stationary enemy it may well have stopped to allow accurate shooting. As the enemy tried to approach, the charioteer would drive away while the archer continued to fire. When they had opened up a safe distance again, he could pull up, allowing the archer to loose off a few more carefully aimed shots. Such chariots had to operate in a spaced-out line, or in small groups, so that there was enough room for each to turn and withdraw at speed without running foul of each other. The smallest tactical unit in Egyptian use was apparently of ten chariots, a handy size for rapid advances and retreats. A large force of chariots using skirmishing tactics could inflict morale-sapping casualties and sow disorder in the enemy ranks. There may even have been occasions when this alone was enough to make the frustrated opposing army withdraw or even collapse into panic-stricken flight.

At first sight, it is hard to imagine how a chariot force using only

these tactics could be dealt with, and indeed armies based on ridden cavalry using similar tactics, including the Huns and Mongols, were later among the most feared armies in history. But such tactics had their limitations: conditions were rarely ideal and few enemies were passive. Skirmishing tactics required plenty of space and time to be effective; space to keep a safe distance and time for the mental and physical attrition of the casualties to become critical for the enemy. Against infantry in close order and equipped with good shields, even if they didn't have body armour, the rate of casualties inflicted would actually be quite slow, and if the infantry were well disciplined they were sometimes able to put up with it for hours on end. The safer the distance maintained by the chariots, the less effective their fire. If they ventured in close to make sure their shots took their toll, they risked being rushed by the enemy before they could turn to withdraw, as chariots need a lot more space to turn in than single horses. The faster they moved, the larger the turning circle; the slower the speed, the more vulnerable to being caught. If their opponents kept them on the move, skirmishing chariots were rendered less effective, forcing them repeatedly to fall back. This might eventually trap them against a river or rough ground where they could finally be attacked. Even if it didn't achieve this it would have rendered their fire less accurate and effective while their supply of arrows steadily depleted and their horses grew fatigued with constant advances and retreats.

The enemy might also include foot archers or slingers. If the chariot archers were to achieve anything at all they had to stay within missile range (slings were comparable to ancient bows in range and hitting power) where they and their horses would be vulnerable.[15] Although both crew and horses were sometimes armoured, and each chariot carried a greater supply of arrows than any one foot archer, the foot archers had the advantage of being able to aim with their feet planted firmly on the ground. Operating in closer formation than the chariots, they could return a much greater density of fire over a given area.

Finally, of course, the enemy might have chariots of their own. If so, light chariots would find themselves using up time, their arrows and their horses' energy in a stand-off with the opposing chariots. The infantry battle, in the meantime, might have been won or lost before anything had been achieved by the chariots. We can understand the need for a chariot force to be able to drive the enemy machines away quickly so they cannot direct their long-range fire onto our infantry, and so that the enemy infantry is in turn quickly exposed to this

treatment. As a result, chariot forces developed that were trained and equipped to close rapidly with their opposite numbers to reach a rapid decision.* Here at last we come back to the question of chariot shock combat.

Rather than stand and waste time with long-range sniping, a chariot force could also try to rush the enemy and defeat them at close quarters. This was the fundamental attraction of mounted shock action, whether in chariots or on horseback: it offered the prospect of a quick decision and the ability to sweep an enemy off his chosen ground. Imagine the charioteers had advanced into bow range of the enemy and the onboard archers had started to loose off their first shots. If the enemy chariots came on fast and did not look like stopping, what were their choices? They could turn and flee, in which case they needed to make a decision quickly, unless they wanted to be overtaken while the drivers were still trying to turn the horses. Even if they did manage to run it was difficult, if not impossible, for the archers to keep up an effective fire behind them; and if the enemy pursued them at all closely they might never get the opportunity to stop and turn to fight again without once more risking being overwhelmed while turning or still disorganised. Moreover, they would have been driven off from whatever position in their army's array they had been holding, exposing the flank of their own infantry to attack. Alternatively, chariots could meet the enemy charge. If they had been skirmishing, they were probably more spread out (to allow turning space) than the enemy, who was already prepared to charge, so those meeting the main point of the enemy's attack would be outnumbered as well as less able to offer mutual support in the

* There is a parallel with the introduction of aircraft in the First World War. They were first employed to help defeat the enemy infantry by directing long-range artillery fire onto them. But airmen increasingly found themselves being obstructed in this role by enemy airmen, at first in an improvised way. Opposing aircraft would come across each other while performing their spotting or observation missions and attack each other with pistols and rifles, all the while using up time and fuel and without achieving their initial purpose. It soon became clear that the best way to stop the enemy spotters fulfilling their crucial role was to send up specialised aircraft to destroy them or drive them from the skies. This led to the development of machines designed primarily for the destruction of their own kind, being more robust and well-armed for a dogfight. Alongside the 'scouts' there were now 'fighter', 'hunter' or 'pursuit' squadrons. Likewise, back in the second millennium BC there must have been chariot 'dog fights'.

ensuing 'dog fight'. In the mêlée there were obvious advantages for the force that had the most men armed for close-in fighting; not that the bow was completely useless, but it is impossible to reload a bow while someone is stabbing at you with a spear.

The actual mechanics of what happened when chariots engaged in shock combat is more difficult to imagine than the skirmishing action. What actually happened when one line of chariots tried to charge at another, or at a unit of infantry? How could the warriors, even if spear-armed, actually get at each other with the length of the horses in front of them unless the enemy had already allowed the chariot to enter their ranks? How could the horses be made to ride into the mass of an opposing unit? Similar questions are fundamental to the story of heavy cavalry and are a recurring theme in what follows, where surviving accounts of riders in battle can help us answer them with some confidence.

Much of what applied to shock cavalry must have applied to chariots too. One of the fundamental assumptions that dominates any detailed discussion of horse-borne warfare is the simple fact that horses, being intelligent animals, cannot be made to run into a solid object. This observation has led many to conclude that the glorious charge that culminates in two bodies of steeds colliding at speed is nothing more than a product of artistic imagination and poetic licence. The pacific instincts of horses can, however, be overstated. Life in a hierarchical herd involves biting, kicking and barging other horses. If the situation demands it, hooves, and teeth to a lesser extent, can also be turned on predators with lethal effect, although flight is the preferred option. Domesticated horses can also be trained to do many things that go against every instinct, jumping through hoops of fire or even through hoops of opaque paper (the latter being more difficult). They can be made to push against objects to move them as police horses learn to do as part of their crowd control training. Still, it remains generally true that horses will not run nose first into things. So how could one line of chariots charge into another?

When such was attempted, one of three things must have happened. First, it is possible that the two sides stopped short, either because the horses baulked or the charioteer, equally naturally, quailed at the thought of the impending collision and reined them in. In this case any fighting in the centre of the line must have been done over two sets of intervening horses with bows and or javelins, or perhaps by some crewmen dismounting and fighting between the chariots, perhaps

immobilising the enemy by cutting the enemy's traces.* This would have resulted in a stand-off along most of the opposing lines, while those on the ends attempted to outflank the enemy.

The second possibility requires us to realize that the advancing line of chariots did not constitute a single solid object. Even when closing ranks for a charge it is unlikely that a line of chariots advanced wheel to wheel, for to do so over anything less than a perfectly smooth surface would have resulted in collisions, maimed horses and overturned chariots. As the two groups of chariots came together, some chariots on each side would have found gaps in the enemy line into which to drive. It is even possible that both sides, because both sought to come to blows, adjusted by tacit mutual consent to allow the two lines to interpenetrate in this way. As they passed alongside each other, the chariot crews could then take a tilt at each other, rather as in jousting. We know this sort of thing happened between cavalry forces during the Napoleonic Wars as we have eyewitness accounts such as this one from an officer of the British 13th Light Dragoons at the battle of Campo Mayor in 1811:

> The crash was tremendous, both parties passed each other, and some short distance in the rear of the enemy, the 13th came about; the enemy did the same, and a second charge took place with equal violence, when the conflict became personal with the sabre.[16]

Another witness of the same incident said the dragoons 'rode through' the French 'again, and again a third time, when the enemy's cavalry went off in confusion'.[17]

If one force had bigger gaps in it than the other, perhaps because it was charged while in open order for skirmishing, it would be at a disadvantage. Quite apart from the psychological factors, more of them would find themselves attacked on both sides simultaneously if the enemy were able to pass through the gaps in twos or threes. Casualties to drivers or horses, or even the inclination to finish off an enemy hand to hand, might make some chariots stop alongside each other and engage in a mêlée on the line of meeting. Most of them probably kept moving and passed right through to the rear, before turning to

* Despite their obvious vulnerability in a static fight, it was probably rare for horses to be deliberately injured in close combat (rather than by indiscriminate showers of arrows). Such was their value that capture would be a much better option, besides which they are hard to kill quickly close up without the risk of being kicked or crushed by the dying horse.

come back for another pass. Here, the side that was fastest to turn and regroup for another rush would have had a big advantage. The third possible outcome, and this may well have been the most common result, was that one side turned and fled before any contact was made. This was most likely if one side was more spread out (each driver in the line of the enemy charge feeling more isolated and outnumbered), or if one side had fewer warriors or crews that were less well equipped for such close combat.

The psychological aspect becomes even more critical when contemplating how chariots might attack infantry formations. A densely packed group of infantry more closely approaches a solid object than an opposing line of chariots and is more daunting to charging horses, not to mention to charioteers – especially if they are carrying shields and spears. Unless the infantry had already begun to break formation, opening up paths for the chariots to drive into, it must have been very difficult for the chariots to press home a charge.

Of course the mental state of the infantry was also vital. It is hard now to imagine what it must have been like to face such a charge. The terrifying aspect and deafening noise of a line of chariots bearing down out of a cloud of dust must have been unnerving. A determined rush at the infantry might itself be sufficient to cause the footmen to panic and their formation to break up, as each man sought to get out of the way of the contraptions rumbling recklessly towards them. The terror projected by such an attack, and its chances of success, would be multiplied if it came from the flanks or rear. With enemy ranks already starting to fall apart even before contact was even made, chariots could more easily get in amongst them and bring their weapons to bear.

Chariots are often depicted careering victoriously over a layer of fallen foot soldiers and an Assyrian inscription describes the wheels of chariots 'bespattered with blood and filth'.[18] In reality, chariots would have had great trouble physically going over such obstacles at any sort of speed without risking flipping over, but the fact that they could wreak great slaughter among an infantry force whose nerve and discipline had failed need not be doubted. As was the case throughout the rest of the horse's military history, 'shock' combat should be thought of mainly as the psychological trauma of being ridden at by a mass of heavy animals, rather than the physical impact of colliding bodies or weapons.

Some chariot crews wore heavy and expensive armour. This typically consisted of a helmet and a coat of scale armour (called a *girpisu* and *sariam* respectively in Mitanni, and variants thereof in neighbouring

states). Such armour was made up of many metal scales (bronze in this period), laced to each other and to a fabric backing so that they overlapped like the scales of a snake. The most complete ones reached to mid calf and had elbow-length sleeves, contained a thousand scales and weighed over 24 kilograms; others reached only to the waist.[19]

In Mycenaean Greece, a different style of armour, made up of large shaped sheets of bronze, was used circa 1300 BC. A more or less complete specimen, known as the Dendra panoply, is an extreme example of a charioteer's armour and could not have been worn by anyone who had to ride or walk around much.

Heavy armour was generally a characteristic of shock cavalry that intended to close with the enemy, cavalry relying upon missile weapons tending to be more lightly armoured. Nevertheless, even the crews of light two-man chariots, where the only offensive weapon was the bow, are sometimes depicted wearing scale body armour. The reason behind this was that armour required a trade-off between balance and protection. For a charioteer, balance was not too much of a problem and so the more protection the better, being as helpful in warding off enemy arrows and sling stones as blows from hand weapons. By contrast, for a horseman balance and ease of movement was much more of an issue, so the trade-off only really became worthwhile when he was intending to indulge in shock combat where such protection was obviously a massive benefit. One of the benefits that stirrups would bring much later was that they made it easier to shift weight and correct balance, compensating for, or allowing, the top-heaviness of heavier body armour. There was also the issue of the weight carried by the horse. Although horses were strong enough to be ridden, any animal can pull much more weight than it can carry (that was the whole point of the wheel). Increasing the weight of the rider starts to have a detrimental effect on a ridden horse's speed and endurance sooner than on a driven one.

In many Near Eastern armies the horses themselves might also be armoured with trappers that covered their chests, shoulders, backs and flanks, just as modern horse rugs do. These could be of thick felt or hair and called a *parashshamu*, with a neckpiece, or *milu*, of the same material; or these could be of scale, when it was called a *sariam* as for human armour. Most early ridden cavalry horses, however, were not armoured, horse armour gradually becoming more common again over the course of several centuries. Horses in heavy work can overheat easily, and in severe cases this can lead them to 'tie up', becoming effectively

paralysed, and even leading to their death. That expensive horses were exposed to this risk by the addition of armour suggests they were expected to be right in the thick of battle. The burden of armour would have reduced the horse's endurance. It was therefore more useful to units called upon for one or two short, but potentially decisive, charges than those used in the continuous manoeuvring of skirmishing.

The transition from chariots to true cavalry was a gradual and uneven one. Occasional depictions of ridden horses have survived from early in the second millennium BC, but most seem to represent single messengers or scouts, ill-equipped for combat, or charioteers fleeing on team horses cut loose from wrecked chariots. Written references can be ambiguous as some of the terms equivalent to 'horsemen' may refer to chariot crews. It seems, however, that by the late second millennium BC units of cavalry may have been making their appearance on Middle Eastern battlegrounds. A twelfth century BC plaque from Ugarit in Syria may be the earliest depiction of an organized unit of horsemen, although only one is definitely armed.

The transition is easiest to follow in Assyria from the ninth century BC, due to the surviving record of relief carvings and inscriptions. Assyria had by then become the dominant power in the region, the Hittites and Egyptians having been severely weakened by migrations and invasions of the 'Sea Peoples'. Over the next two centuries a succession of aggressive Assyrian kings carved out the largest empire yet seen, at its height incorporating all of Mesopotamia, Syria, Palestine and Egypt. Although the Assyrians are often credited with being the first to field an organized cavalry force, what can be seen in the surviving evidence may well be a response to developments in the regions beyond their expanding borders.

Urartu, modern Armenia, was a regular target of Assyrian campaigns in which many horses were taken in the form of booty or as tribute payments. Urartu was in direct contact with the steppe peoples to the north and it seems likely that this region was the conduit for the adoption of cavalry in the Middle East, as it had been for the initial introduction of the domesticated horse. An inscription of Menua of Urartu (810–785 BC) lists his forces for one expedition as 1600 chariots and 9174 cavalry.[20] Even if the numbers are inflated, the ratio of cavalry to chariots indicates that conversion was well advanced.

The development of Assyrian cavalry was heavily influenced by their charioteering experience and traditions. Bas-relief sculptures from the palace of Asurnasipal II show riders working in pairs, one armed with

a bow and the other with a spear. Most strikingly, while the archer concentrates on shooting, his partner holds his reins for him, continuing the specialization of archer and driver. Both horses and riders are unarmoured. One of the key advantages of this type of unit over chariots was that they were better able to cope with rough terrain, an advantage that would have become immediately obvious in the rugged terrain of Armenia. At least as significantly, they were cheaper as the chariot, which required a lot of skilled labour, was not required.

Asurnasipal II's riders still had a lot to learn from their neighbours, however, as they are shown sitting well towards the rump of the horse. This not only makes good balance and control difficult but risks bruising the horse's vulnerable kidneys. The rearward seat had been used on donkeys and asses because it is the only position on them that is not akin to riding a bread knife, but trying to transfer the same method to horses must have retarded Assyrian riding prowess. It may cause wonder that correct riding techniques took so long to develop, but let us not forget they didn't have approved riding schools and manuals to go by. It was only in the nineteenth century, after all, that Federico Caprilli (1868–1907) popularized the practice of leaning forward over jumps in western Europe, something now so widely accepted as the correct technique that it seems mere common sense.

By the reign of Tiglath Pileser III (745–27 BC), Assyrian reliefs show us horsemen armed only with long thrusting spears, maybe seven feet long, and swords. Some are armoured with helmets and sleeveless scale vests that come only to the hips, allowing the riders to bend freely at the waist. These may be the first confirmed heavy cavalry, for their one-spear armament was obviously only of use in close combat, while their body armour was an unnecessary encumbrance and expense for mere scouts or messengers. Significantly, although they are still depicted in pairs, which may be merely artistic convention, they are all managing their own horses and sitting much further forward, just behind the horse's withers.

Cavalry did not suddenly replace chariots in Assyrian armies; chariots were still used alongside them until Assyria's destruction. The fact that chariots continued to be used may seem surprising to the modern mind used to thinking in terms of linear technological evolution, with each technology being rapidly replaced in turn by a superior one. It may be significant that these last Assyrian chariots were of the heavy, four-horsed type with four armoured crewmen, which may indicate that the shock role was the last to be taken over by cavalry. Here chariots may

have retained some advantage due to their imposing bulk and noise, which would have increased their psychological impact on the target.

Probably more significant in the slow disappearance of chariots was the fact that they were symbols of prestige and had been the most obvious distinguishing feature of an elite for a thousand years. They were almost certainly at the centre of a web of tradition, custom and value that would not be quickly thrown away, even if they were being outperformed in a purely military sense. That the prestige value of chariots was greater than that of the ridden horse is demonstrated by the fact that they continued in use as transport for kings and generals long after all their other battlefield roles had been usurped by ridden horses. No doubt ancient grandees felt the chariot more befitting to their dignity, just as modern ones are more often seen in chauffeured limousines or staff cars than walking or bicycling.

When Sargon II launched a campaign against Urartu in 714 BC, the terrain was so rough that the chariots were the first sent home, while the king continued with the infantry and cavalry. The king's chariot was retained, however, even though it had to be dismantled and carried in places. Eventually the weary Assyrians found Rusash's Urartian army, also containing both cavalry and chariots, deployed for battle across their path, ready to fall upon them as they straggled along in column. Caught at a massive disadvantage and with no time to deploy, Sargon in his lone chariot seized the initiative and led the vanguard of cavalry in a pre-emptive attack.

> The unhappy troops of Assur [Assyria] who had marched by a distant route, were moaning and exhausted ... I did not look back, I did not use the greater part of my troops, I did not raise my eyes. With my chariot alone and with the cavalry who march at my side, who never leave my side in a hostile and unfriendly land ... like a mighty javelin I fell upon Rusash [21]

The Urartians broke and fled with heavy casualties inflicted upon infantry archers and spearmen as well as their cavalry: 'his destruction I accomplished, I routed him ... His warriors who bore the bow and the lance before his feet, the confidence of his army, I slaughtered. His cavalry in my hands I took and I broke his battle-line'.[22] Rusash and the chariots meanwhile took refuge in their camp, but when Sargon brought up archers and javelinmen, the Urartian king abandoned his chariot and fled on horseback.

The account is from an inscribed tablet bearing a letter from Sargon II to the Assyrian god, Assur, presumably intended as an offering of

thanks for the victory. While not as detailed as might be wished, it does at least demonstrate that one of the fundamental principles of the use of shock cavalry (which presumably applied also to heavy chariots) had been grasped by some. Because the physical and psychological impact of cavalry upon an enemy is multiplied by speed, and because horses make vulnerable targets when stationary, it was one of the fundamental principles of cavalry tactics up to the early twentieth century that cavalry should always attack rather than wait to receive an attack. The author of this advice from a typical nineteenth-century tactical manual would certainly have approved of Sargon.

> Its action is confined to shock action. Hence it should always attack; at the moment of doing which it should attain its maximum speed. As it is powerless at the halt, it should, to defend itself, always advance to the attack.[23]

Moreover, Sargon's cavalry were not merely protecting themselves. By using their speed to fall upon the enemy before they had time to formulate a response, Sargon was able to wrest the initiative and save his army from disaster.

As Assyria expanded its borders, direct contact with nomadic riders increased. In the same year as Rusash's defeat by Sargon, Urartu lost part of its territory to the Cimmerians, who had already moved through the Caucasus and overrun large parts of Anatolia. The Cimmerians had been driven off their pastures on the southern steppes around Dereivka by the Scythians. Through the early part of the seventh century BC, large numbers of Scythians also rode southward off the plains, seeking new pastures, plunder or perhaps adventure and employment as mercenaries. It is of these warriors that the biblical prophet Jeremiah was warning when he declared:

> Behold, a people shall come from the north, and a great nation, and many kings shall be raised up from the coast of the earth. They shall hold the bow and the lance: they are cruel, and will not shew mercy: their voice shall roar like the sea, and they shall ride upon horses, every one put in array, like a man to battle, against thee, O daughter of Babylon.[24]

By the 670s BC the Scythians had obliterated the Cimmerians as an identifiable people, completed the destruction of Urartu and become such a threat to Assyria that Essahardon bought the alliance of the Scythian ruler, Partatua, with the hand of his daughter in marriage. For a while this alliance shored up the failing Assyrians. Partatua's son and heir, Madyas, Essahardon's son-in-law, even led a Scythian host

against Egypt. The Egyptians only managed to save themselves from devastation by payment of a large sum of money. When the Medes, from what is now western Iran, rebelled, defeated the Assyrians in battle and besieged the capital, Nineveh, Madyas's Scythians crushed them and saved the city.

The Scythians went on to conquer Media and, according to Herodotus, ruled there for twenty-six years. The period of Scythian dominance may be the root of the reputation for equestrian excellence that the Medes later enjoyed. It seems the Medes had already been using some cavalry, although the instigator of their rebellion was said to have been the first to reorganize their warriors into proper units of spearmen, archers and cavalry, which had previously 'been all mixed up in a mob', again according to Herodotus.[25] A generation of close interaction with the Scythians taught them much about horsemanship and cavalry warfare and it was for their cavalry that they were later renowned.

In 614 BC the Scythians, with their Median vassals in tow, turned on their former allies and destroyed Nineveh and the Assyrian empire. Two years later, the Median leader, Cyaxares, lured the Scythian leaders to a banquet, killed them and rebelled. Deprived of leadership, the bulk of the Scythians returned north, trekking back over the Caucasus Mountains to their old homeland.

The Scythian armies that swept into the Near East fought predominantly as mounted archers, or horse archers as they are usually referred to. Typically they utilized the same hit and run tactics of the light archer chariots already described, only even more elusively due to cavalry's greater suitability for rapid changes of direction. It would be all too easy to conclude from their apparently easy domination of the Near East that such light cavalry enjoyed a clear superiority and that the Scythians had need of nothing else. Such an impression might be reinforced by the fact that the composite-bow-armed horseman remained the characteristic weapon system of steppe-dwelling races for a further twenty-five centuries. The Median and then Persian armies that dominated the whole of the region, after the Scythians were driven out, indeed relied heavily on bow-armed cavalry, but the influence was not all one way. Some Scythians had always carried hand-to-hand weapons, spears and axes, as well as the bow, and when they returned to the north they took with them something that would further enhance their potential for shock action: Assyrian scale armour and the knowledge of how to make it.

Scythian tombs on the steppe have yielded a wealth of artefacts. Most date from the period after their return from the south and many

of them contain scale armour. While most Scythian warriors continued to be lightly equipped and to depend mainly on the bow, it is clear that those who had the option, that is the wealthier ones, fought as heavy cavalry, well protected by heavy armour. Although they too possessed bows, they also carried swords, spears and a type of axe called a *sagaris*. Surviving examples of the latter are well adapted for punching through armour. The spears found in tombs were initially identified as short javelins, it only being realized later that they were so long, over ten feet, that they had been broken in half to fit into the tombs. Such long spears could only have been used in shock combat.

The Scythians' influence on cavalry warfare did not end when they passed back over the Caucasus. Fighting mostly as horse archers, their prowess as light cavalry is beyond question, but their contribution to the development of heavy cavalry has received less attention. It was the combination of the swarms of horse archers with smaller numbers of heavily armoured cavalry made up of the nobility that was to prove so potent to their many opponents over the ensuing centuries, allowing these horse herders to defy the might of great 'civilized' empires.

When the Persian Cyrus the Great had overthrown the Medes, formerly the Persians' overlords, and had quickly conquered all of the former Assyrian empire and Anatolia, he turned his attention to the Massagetae, one of many Scythian offshoots. According to Herodotus, this hitherto invincible conqueror enjoyed some early success through the use of a ruse. But his first pitched battle with them soon followed when Cyrus ignored the warning of Tomyris, queen of the Massagetae, that if he continued his bloodthirsty aggression she would show him 'more blood than you can drink for all your gluttony'. The battle began with a prolonged exchange of archery, but a decision was only reached when the opposing forces closed to slug it out in a fierce mêlée in which neither side was prepared to retreat, the Massagetae fighting with spear and *sagaris*. The day ended with Tomyris immersing Cyrus's severed head in a skin full of blood and declaring: 'see now, I fulfil my threat: you have your fill of blood'.[26]

Similarly, when Cyrus's successor, Darius I, invaded Scythian territory to the west of the Black Sea, around 514 BC, the initial Scythian response was simply to pack up their wagons and move away, refusing to give battle. This application on a strategic scale of the evasive tactics of the horse archer avoided defeat at the hands of the far more numerous Persians, but it could not decisively defeat them. The retreating Scythians started to run out of space as the neighbouring tribes

refused to aid them or let them pass. Insulted by continued Persian suggestions that they were afraid and that they should acknowledge Persian mastery, they adopted more aggressive, confrontational tactics. The Scythian cavalry started to attack the Persian cavalry patrols and vanguard. 'On every occasion', wrote Herodotus, 'the Scythian cavalry proved superior to the Persian', sending them galloping back to the protection of the main body of infantry, whereupon the attack was broken off.[27] The wording of Herodotus's account strongly suggests that the Scythians were actually charging and chasing the Persian cavalry off rather than merely sniping at them from a distance.

The Scythians are credited with the invention of the 'wedge' formation, later adopted by the Persians and Thracians and also put to devastating effect by Alexander the Great's Macedonian cavalry. This formation was particularly suited to shock action because its narrow frontage made it easier to manoeuvre at speed in close formation and because, according to the Greek tactician Asclepiodotus, it 'made it easiest for them to break through'.[28]

The Scythians may well have led the way in the improvement of horse breeds. Stronger, and incidentally bigger, horses were a general, if very gradual, trend. Although size alone, it must be reiterated, is not the most important characteristic of a cavalry horse, greater bulk increases the intimidating effect upon an opponent, while height can confer an advantage in close combat with hand weapons such as the sword or *sagaris*. Buried in the frozen soil below the Ukrainian steppe, archaeologists have found Scythian tombs containing remarkably well-preserved horses, sacrificed that they might carry their noble masters across the hunting grounds of the afterlife. Typically red bay in colour and standing between 14.2 and 15.1 hands high, these were high-quality horses which have been likened to today's highly prized Akhal-Teke breed, noted for extraordinary feats of endurance. Not all Scythian horses would have been of this quality, but even the more common type were noted for their toughness and endurance.

The Scythians' most significant contribution to cavalry warfare was probably the beginning of the development of the saddle. All previous riders had, at most, sat upon a flexible blanket or animal skin that shielded the rider's legs from chafing and horse sweat but had no real structure. The earliest structured seats for riders found to date come from Scythian tombs and date probably from the early or mid fourth century BC. These consist essentially of two leather cushions attached front and back by a wooden arch, one cushion resting either side of the

horse's spine when in use. These would have offered the rider improved comfort as well as distributing his weight either side of the horse's spine to prevent damage. Over the centuries that followed, the spread and improvement of saddles greatly increased the ancient horsemen's security of seat, enhancing their already-ample ability to give and receive blows, and reducing the damage to their horses' backs caused by increased weight of armour. While also adopted by skirmishing cavalry, the advantages of the saddle had particular relevance to shock cavalry. It must be emphasized, however, that development was gradual, not an overnight revolution, and we shall see that many of the finest glories of ancient cavalry were accomplished without saddles.

Unsurprisingly the Scythians and Massagetae were at the forefront of the return of effective horse armour, which had been common on chariot horses but was not much used on early ridden cavalry. When Herodotus was writing in the middle of the fifth century BC, the wealthiest Massagetae were already using bronze chest protection for their horses, probably in the form of a scale apron.[29] The Persians followed this trend through the fifth century BC and into the fourth, and they in turn influenced Greek ideas on the matter. In the fourth century BC, Massagetae and related Bactrian cavalry fighting as allies of the Persians provided the toughest challenge to Alexander the Great's Macedonian cavalry. Some, at least, of these were riding horses protected with trappers covered in iron scales.

Suitably impressed, Alexander's Successors continued the development of armoured heavy cavalry, producing shock troops heavier than anything the Assyrians had dreamt of. In the mid third century BC the cycle came full circle when the Parthians, a Scythian people who had infiltrated southwards over many generations, overthrew Macedonian rule and took most of the former empire of the Assyrians, Medes and Persians for themselves. Heavily armoured lancers formed the core of the Parthian armies that for three centuries thwarted the might of Rome.

From the first domestication of the horse onwards, the influence of steppe peoples upon the development of cavalry was enormous. With regard specifically to heavy cavalry we can see the influence of the steppe was greater than has often been appreciated, but it remains true that light cavalry remained more characteristic of those cultures, while heavy cavalry was more often associated with urbanized ones. This is partly a question of the resources required for large-scale production of metal armour and weapons. Perhaps more significant is the

confrontational form of warfare forced upon settled communities tied to specific territories. Forced to protect cities and farms and without the space or means for prolonged evasion, civilized peoples settled their wars with pitched battles in which a quick and definite decision was at a premium. Finally, there is an artificial bias due to the nature of the surviving evidence which comes mainly from the more settled, 'civilized' cultures. In the following chapters we must concentrate on those cultures where surviving accounts allow us to follow the role of heavy cavalry in action.

2

Classical Greece

The generally accepted view of classical Greek warfare accords little significance to the role of cavalry. While numerous books discuss every possible aspect of the heavy infantryman, or hoplite, in the minutest detail, the horseman usually gets a couple of picture captions or a paragraph explaining why he was largely restricted to the secondary roles of scouting and raiding. The cavalry's role in battles is dismissed, at best, as a bit of skirmishing with javelins or maybe cutting down a few fugitives after the battle had been decided by the infantry. Almost invariably the following passage from Xenophon, recording events in 401 BC, is used to show that the hoplites had nothing to fear from cavalry whose seat was 'precarious' and who were too busy just staying on to do much harm to anyone but themselves:

> You must remember that ten thousand cavalry only amount to ten thousand men. No one has ever died in battle through being bitten or kicked by a horse; it is men who do whatever gets done in battle. And then we are on a much more solid foundation than cavalrymen, who are up in the air on horseback, and afraid not only of us but of falling off their horses: we, on the other hand, with our feet planted on the earth, can give much harder blows to those who attack us and are much more likely to hit what we aim at. There is only one way in which cavalry have an advantage over us, and that is that it is safer for them to run away than it is for us.[1]

This, however, overlooks the fact that Xenophon made his speech to the 'Ten Thousand', a group of tough, experienced mercenaries, precisely because they *were* afraid of the enemy's cavalry. And with good reason because, although faced with Persian cavalry in this instance, the Ten Thousand were mainly veterans of Greece's recently concluded Peloponnesian War and had seen there what Greek cavalry could do. For, although it cannot be disputed that the hoplites were still the dominant arm in Greek warfare, by the end of the fifth century BC cavalry were already playing a much more significant role on Greek battlefields than is often appreciated. They went on to assert themselves even more in the following decades. Moreover it can be shown that the increasing

success of Greek cavalry was achieved by greater enthusiasm for closing with the enemy and settling the issue at close quarters.

Several things limited the role of cavalry and subordinated it to the hoplites. The first was the terrain. Much of mainland Greece consists of rugged, rocky mountains with little rainfall for much of the year. Those areas of good fertile ground that existed were needed for agriculture, so there was little good pastureland for the grazing of large numbers of horses. With agricultural land at a premium and the need to feed the human population, the necessary supplementing of grazing with grain feed was expensive. There were significant exceptions, including Thessaly and parts of Boeotia, where there are large open plains. Unsurprisingly, these were also the areas that produced the best cavalry. 'Classical Greece' included not only modern Greece, but also those areas colonized by Greeks. Many of these areas, in Southern Italy, Sicily, Asia Minor and Thrace, had good grazing land and produced good cavalry. Contact with neighbouring peoples who had strong equestrian traditions would also have reinforced this, not least because it allowed the introduction of 'new blood' to produce improved breeds of horses.

Apart from discouraging horse rearing, unsuitable terrain also provided a disincentive to cavalry's actual use in battle, depriving them of their greatest assets, their speed and mobility. To fight most effectively cavalry needs plenty of open space. On rough or obstructed ground horsemen are less able to manoeuvre into an advantageous position for an attack and make slower, more vulnerable targets. It is true that the hoplite phalanx was also best suited for combat in close order and was even more dependent on cohesion for its survival, and for this reason hoplites also preferred to fight on good level ground. But in mainland Greece, and many other areas, it was easy for them to form up in one of the many narrow valleys, their vulnerable flanks protected by steep slopes, rivers or some other obstacle, and advance straight ahead to attack the enemy head on. Cavalry's best chance against hoplites was an attack from the flank or rear, so the cavalry was far more disadvantaged if the nature of the ground did not allow room for manoeuvre.

The second limiting factor, partly deriving from the first, was the great expense of raising horses and developing suitable breeds for war. To give some idea of the financial constraints, the average price of a cavalry horse at Athens in the mid fourth century BC was around five hundred drachmas; the average price of a house was a little over four hundred.[2] Another good indicator of the relative expense of maintaining cavalry compared to other troops is the money required by the

Spartans from allies who did not provide the agreed number of troops, each cavalryman carrying the same tariff as eight light infantrymen or four hoplites.[3] As citizens had to provide their own equipment for most of the period, clearly only the wealthiest could afford to serve in the cavalry. This purely economic factor alone was enough to ensure that most Greek cities could only field a very small number of horsemen.

Finally we must consider how social and cultural factors led to an emphasis on hoplite warfare and placed constraints upon the employment of cavalry beyond those imposed by purely practical and economic concerns. In many Greek states a powerful belief seems to have existed that the tactics of the hoplite phalanx, the close-packed block of heavily armoured spearmen, was the only truly acceptable way to fight. Because economic factors meant that only the very richest had access to horses, there was an inevitable link between cavalry and aristocracy, while hoplites were drawn from a much broader base. As a result it has long been fashionable to describe the supremacy of the hoplite in class terms. The phalanx, the close-packed body of spearmen, each protecting the man to his left with his shield, can be seen as the embodiment and reflection of the relatively egalitarian and democratic values often associated with the Greek city state, or *polis*, which emerged from the Dark Age as the dominant form of society throughout most of the Greek world.

Mycenaean civilization had collapsed in the twelfth or eleventh century BC. The centralized monarchical authority which had provided the organization and resources for large-scale chariot production and horse breeding was destroyed and replaced by isolated, impoverished communities struggling for survival. The warfare of the early Dark Age, whilst endemic, was on a small scale and probably largely a matter of local raid, counter-raid and ambush between small war bands. Such fighting would be easily dominated by the local aristocracies who could afford bronze weapons and armour, and under whose protection and leadership such communities slowly began to recover. Archaeology suggests at least some of these chieftains fought as cavalry. Vase paintings portray horsemen with breastplates, helmets and spears; and there are grave finds such as one at Athens that contained a long sword, spears and horse bits. There is some evidence, such as a fresco from Mycenae itself, that the Mycenaeans had started to experiment with true cavalry before the collapse. Quite apart from any purely military considerations, the great financial benefit of replacing a chariot and two horses with a single horse would have hastened the transition, although chariots remained for sporting and ceremonial purposes.

Trade with the Near East resumed by the ninth century, allowing the importation of iron-working skills. Iron was cheaper than bronze because the ore was available locally, whereas bronze required tin imported over great distances, and meant cheaper and more efficient weapons and agricultural tools. Population growth, iron tools and a general recovery of stability boosted a return to agriculture. This allowed further population growth and, in the Peloponnese and Attica at least, created a growing class of independent farmers and artisans who could afford armour and iron arms for their own security. These came to expect a stake in society in keeping with their growing contribution in labour and defence. Village farming communities coalesced into groups around leading market centres, dictated by the pattern of increased local trading as surpluses grew. These developments set the stage for the reordering of society around the *polis* (plural *poleis*) or 'city state', recognizable from around 750 BC and exported through colonisation round the Aegean coast to the east, and to Sicily, Italy and Spain in the west.

These city states were relatively egalitarian societies, based upon the equality of all free citizens before the law. Although many might still be ruled by narrowly based oligarchies or even monarchies, most executive magistrates were elected and thus dependent upon the will of the hoplite class, whose interests could not be ignored.[4] In return for full citizenship, with voting rights and the possibility of office, men were obliged to equip themselves with the necessary armour and weapons to serve in the phalanx. At a minimum this would mean spear, helmet and the characteristic large, round shield that distinguished the hoplite, but preferably also body armour. While the poorest residents might be called upon to serve as lightly equipped skirmishers, and the wealthiest might choose to accept the extra expense of serving on horseback, the hoplites could expect to outfight the former and outvote the latter. It was the hoplites that formed the backbone of the army as they did of the economic and political life of the polis.

As citizens had to equip themselves, and only the wealthiest could afford to keep horses, there was an obvious link between cavalry and the aristocracy. As the egalitarian ethos of the hoplite class developed alongside the tactics of the phalanx, the horsemen were increasingly suspect. Generals were most often elected by the hoplite class from the hoplite class, and were expected to take their place in the front rank of the phalanx. The horse-riding aristocrats, or *hippeis*, literally setting themselves above the phalanx, were often suspected of putting their personal status before the interests of the polis. This mistrust can still