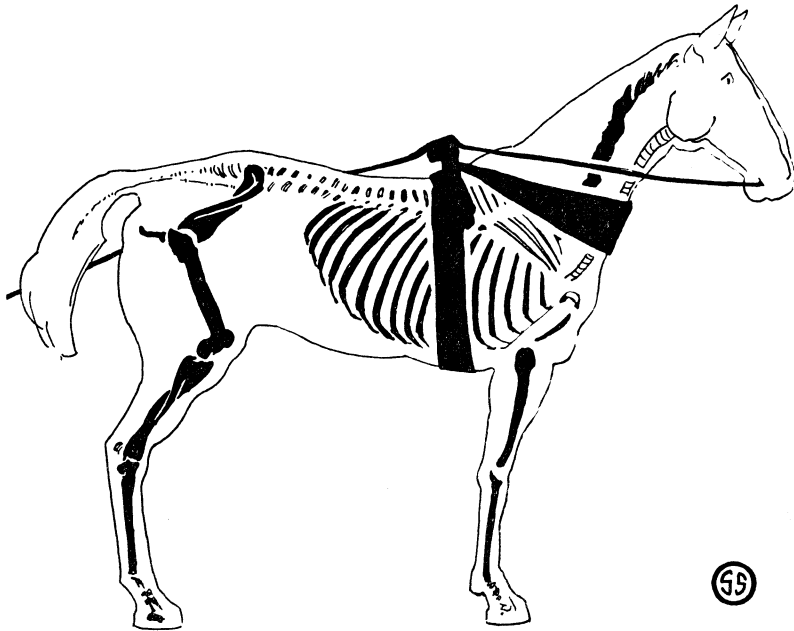


# Did Rome Fall for Lack of a Horse Collar?



*WHY THE FAMOUS ROMAN ROADS were avenues of pedestrian traffic. The weight of the vehicle fell chiefly on the collar band of the antique harness which pressed directly on the animal's wind pipe, so that a team was never capable of drawing more than half a ton*

By MARJORIE MACDILL

Did Rome fall because no public-spirited citizen had ingenuity enough to invent a horse collar? Lack of adequate transportation was a weak rivet in the armor of the fallen empires of antiquity that has been brought to light by the researches of a distinguished French savant. At a recent meeting of the French Institute of Anthropology at Paris, Commandant Lefebvre des Noettes made a complete survey of the history of the use of animal motive power from the early dawn of civilization down to the present time, pointing out many far-reaching social consequences.

The harness of the ancients had for its principal organ of traction a collar consisting of a leather band that went around the neck like a dog collar without touching the shoulders and which was attached to a wooden yoke just above the withers. This collar was so placed that it most effectively cut off the animal's wind by pressing on his wind pipe and large blood vessels in the neck. As soon as a team felt the weight of a chariot and its passengers exerting pressure on the collar they were forced to rear up their heads and dash off to save themselves from strangling. Hence the rampant attitude of all the horses depicted in ancient sculptures and papyri.

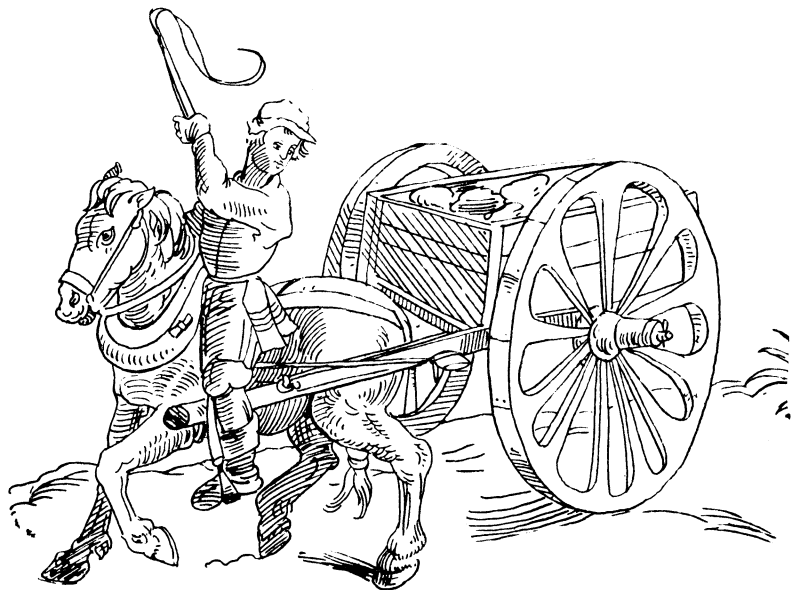
As a result of this drawback, declares Commandant des Noettes, the great civilizations of the past were never able to get more than a fraction of the potential motive power from their horses. Animals suffering from constriction around the neck were obviously not capable of drawing any great weight after them. Ox teams operating with a wooden yoke attached

to the horns, not greatly different from those in use today, did not wear the oppressive collar and in consequence did more heavy hauling, and the agricultural work like ploughing. Both horses and oxen had to undergo the additional impediment of being unshod and so were of little use in rough ground.

Data obtained from translations of the Greek historian Xenophon and from the Theodosian code about 1,000 years later, according to Commandant des Noettes, indicate that no team of oxen in ancient times was ever considered capable of transporting a load of over a half a ton. Since a modern horse can draw from a ton to a ton and a half by himself alone, the practical value of horses and oxen to the ancient peoples from the Babylonians down to the Romans was proportionately curtailed.

The first harnesses of which there is any known record date back to around 2500 to 3000 B. C. The earliest ancestors of the modern flivver that we know about were little more than stools or seats on wheels and very crude ones at that. There was a seat and a high dash with a groove on which the reins rested and not much more. These rolling chairs, however, were all the thing around the Euphrates and the Persian Gulf some 6,000 years ago, but only a few have survived to our time in an occasional museum in Europe. Several

*(Just turn the page)*



*AN ARTIST OF THE FIFTEENTH CENTURY sketched this horse drawing a heavy peasant's cart. It was 1000 A. D. before some inventive genius conceived the idea of a horse collar that would not choke the horse*

## Horse Collar

(Continued from page 245)

were dug up by the Morgan Expedition at the excavation of the Acropolis at Susa.

Almost simultaneously there sprang up another model in the vehicular family tree that looks rather like a one-man saw horse on wheels. Imagine a saddle with the back and front considerably heightened to hold the rider in place, and conceive of it as mounted on wheels instead of a horse, and you have the Rolls Royce of the Chaldean nabobs in 2500 B. C. Several samples in bronze can be seen at the Louvre in Paris.

This awkward arrangement which looks so bizarre to us now, and the rolling stool were probably the first vehicles that man constructed after the invention of the wheel. A tablet in the Louvre dated approximately 2700 B. C., shows Naramsin, the son of Sargon, marching out to battle at the head of his troops on foot, while in all such scenes that have come down to us after this time the king is represented as riding in a chariot. This is a pretty definite indication that previous to this date the horse, either for driving or riding, was very little known.

The remains that have come down to us from the period between 2000 and 3000 B. C. show plenty of these small horse-drawn cars, but almost no mounted horses. This leads Commandant des Noettes to believe that in those far-off times man began his conquest of the horse by harnessing him to a wheeled vehicle rather than by mounting his back. This hypothesis is borne out by the fact that at a much later period the Greeks and Trojans had no cavalry, and among the Egyptians cavalry did not come into use until the comparatively late period of the Ptolemys.

Oxen were used to till the soil of the fertile Nile valley thousands of years before horses made their appearance in Egypt. Egyptians got along as best they could with their native oxen and asses until the period of the invasion of the shepherd kings in XVIIIth dynasty, when horses begin to show up more frequently in the wall decorations and papyri that have survived. Oxen were evidently used somewhat in transporting building materials, but by far the most of the immense amount of transportation involved in the great constructive period of Egyptian history was done by slave labor. The thousands of poor devils tugging at cables hauling colossal blocks for the pyramids depicted in

wall paintings bear obvious evidence that in such an age man power was more plentiful than inventive brains.

The Egyptian chariot was a light openwork affair that might almost be called a streamline model usually shown with the driver alone. The Assyrians had heavier, more elaborate cars that carried two and sometimes a third person.

When one considers that a horse in the classic days of Greece could only carry one man on his back or draw after him only 500 pounds, it follows that he must have been something of a luxury. There is little wonder then at the Athenians' choice when Pallas Athene and Poseidon, god of the sea, were contenders for the honor of becoming the patron saint of the newly founded city of Athens. Of the two gifts, the olive and the horse, tendered by the rival deities, the Athenians chose the former as the more useful, and named their city for the goddess of wisdom. The four-horse teams in the famous chariot races of the Greeks and Romans might just as well to all intents and purposes have been pulled off with two horses instead of four, according to Commandant des Noettes. The two inner horses were the ones that did the work of pulling, while the two outer ones were for show or to give the charioteer an opportunity to display his horsemanship. Since the divided rein used on modern teams was unknown and there were two reins to each horse, there can be no doubt that plenty of horsemanship was needed.

When Alexander the Great died an elaborate escort brought his golden sarcophagus from Babylon to Alexandria. Four long wagon poles with four yokes of four mules each, making 64 in all, were necessary to pull the gem encrusted coffin of the dead hero. This was one of the few occasions in antiquity of which we have record that horses were used in file. This particular arrangement was evidently too unwieldy and too costly for any one to emulate even on state occasions. Fifty years later when Ptolemy Philadelphicus wished to throw a dionysian party, the car of Bacchus was drawn by a band of 180 men and another cortege was horsed along by 600 others.

The ancients were by no means satisfied with what they were getting out of the horse. Many attempts were made by different nations to remedy their defective harness without avail. An Egyptian bas relief shows several teams of oxen on alternate sides of a cable hauling a block for a pyramid.

It is a fan-wise arrangement not particularly efficacious and evidently was not imitated. Marble blocks were rolled to Ephesus for the temple of Diana in great wooden cylinders. The Greeks devised an extra trace for the outside horse in the chariot fours and a sort of false breast collar was tried out in India and Byzantium, but all these attempts came to nothing. The antique harness remained weak and ineffectual under Pericles, Trajan and Charlemagne, in whose time harnesses still followed the lines of those in vogue in the reign of Rameses II. Even the practical Romans did not improve them any.

An interesting experiment was conducted by Commandant Des Noettes at Paris in 1910 to put to a practical test the inefficiency of the ancient harness. He had a careful reproduction of an old harness made and used it to hitch up a team of horses that in this accoutrement were found quite incapable of drawing any weight that we consider a normal load.

For 600 years the water mill for grinding corn failed to bring great benefit to the Romans simply because it took numberless animals to draw enough grain to supply its needs. Where grain could not be transported in ships the arduous labor of hand grinding continued to be the order of the day. The lack of adequate transportation or raw products and the consequent dependence on slave labor, declares the French scientist, constituted the great weakness of the civilizations of the past. For this reason wonderful organizers though the Romans were, the saw mill and mineral resources such as coal remained undeveloped mysteries in the great empire. The pomp of the Pharaohs and Cæsars rested on the unstable foundation of slavery.

Not until the first kings of the powerful Capet family in France achieved power in western Europe about 1000 A. D. did some inventive genius devise a horse collar that did not choke the poor beast it was intended for. Horseshoeing developed, then the arrangement of one team behind the other, something the ancients never seem to have been able to manage successfully. Thus at last, says Commandant des Noettes, the world had a motive force, more powerful and economical than slavery that became a potent factor in the great building development of the Middle Age.

Science News-Letter, April 16, 1927

Many blood-sucking insects once had wings, some scientists believe.