

Horse and pasture in Inner Asian history¹

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The key role of the horse in the civilization of Inner Asia is universally recognized. Indeed, the picture of the mounted archer has come to symbolize, and rightly so, the force that created some of the greatest, if not the most lasting, states known to history. Until firearms came to dominate warfare, a well-disciplined, well-led Inner Asian cavalry force — provided it was sufficiently large and disposed of an important reserve of mounts — was virtually invincible by armies of sedentary populations. Much has been written, albeit rather superficially, on the cavalry tactics used by the great nomad armies, so I do not wish to discuss that subject now. My aim is to examine some of the economic factors that governed the rise or fall of the great nomad armies which, in their turn, caused the growth or decline of empires. If cannons of the Renaissance could bear with justification the inscription *Ultima ratio regis*, the horse was certainly that same *ultima ratio* of Inner Asian power. Referring to the Mongols the Yüan annals could reasonably state: "Yüan arose in the northern areas. By nature they are good at riding and archery. Therefore they took possession of the world through this advantage of bows and horse"².

The quality of the Inner Asian breeds and, in particular, their resistance to climatic extremes and their hardiness made them superior to any other warfaring horse, from Scythian times to World War II. The first recorded comment goes back to HERODOTUS. Describing the campaigns of Darius against the Scythians he stated (IV, 127): "In these combats the Scythian horse always put to flight the horse of the enemy." On the opposite end of Inner Asia, in the 2nd century B. C., the *Ch'ien Han-shu* pays a similar compliment: "... the territory of the Hsiung-nu and the skill it demands are different from those of China. In climbing up and down mountains and crossing ravines and mountain torrents, the horses of China cannot compare with those of the Hsiung-nu"³. When, in 1245, the Franciscan John of Plano CARPINI made preparations for his pioneering journey to Mongolia, the inhabitants of Kiev, more familiar with conditions there, warned him that were he to continue his journey with the horses he then had "they would all die, for the snow was deep and they would not know how to dig up grass from under the snow like the Tartar horses, nor would he be able to find anything else for them to eat since the Tartars have neither straw nor hay nor fodder"⁴.

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² S. JAGCHID — C. R. BAWDEN, "Some Notes on the Horse-Policy of the Yüan Dynasty", *CAJ*, X, 1965, 246—268, p. 246.

³ Cited by H. G. CREEL, "The Role of the Horse in Chinese History", *The American Historical Review*, LXX, 3, 1965, 647—672, p. 657.

⁴ Translation from *Mission to Asia*, edited by Christopher DAWSON, (Harper Torchbooks, 1966), p. 52.

The superiority of the Inner Asian horse over that used by the Chinese struck an outside observer, the Jesuit Matthew Ricci, in the late 16th century: "(The Chinese) have countless horses in the service of the army, but these are so degenerate and lacking in martial spirit that they are put to rout even by the neighing of the Tartars' steed and so they are practically useless in battle"⁵.

The quality of the Inner Asian pony, however well-suited to warfare, would not in itself account for the creation of the great nomad empires. The breeding of this race of horses was universal in Inner Asia throughout history and yet only a few of the horse-breeding peoples succeeded in creating a state of more than transitory importance. For Ssu-ma Ch'ien the country of the Hsiung-nu was that of "thieves and horses". For him and for countless Chinese historians, the Barbarian is essentially a nomad "moving about in search of water and pasture", having no cities or fixed dwellings nor any kind of agriculture⁶. Today we know that many of these "nomads" had cities and that all of them practised some kind of agriculture. But historical clichés are difficult to erase and scores of modern books dealing with Inner Asia, Turks or Mongols tend to describe these peoples as if they had, as it were by natural right, an inexhaustible supply of horses on which to roam the frontierless steppes. Such an idealized picture reflects neither historical nor military nor economic realities. The rulers of "nomad" empires had to contend with difficulties created by a shortage of horses and there is evidence to show that their armies included foot-soldiers.

The funeral stele erected in honor of the Türk prince Kül tegin (d. 731) described a battle in which the hero attacked on foot (East 32): *Kül tegin yadaγin oplayu lägdī*⁷. Describing another campaign of the Türks, the Tonyuq inscription states expressly (West 4) *iki ülügi allıγ ärti, bir ülügi yadaγ ärti* "two parts (of the Türk army) were mounted, one part was on foot"⁸.

Another great Turkic nomad empire, that of the Uighurs, also made use of foot-soldiers. An otherwise obscure passage of the inscription of Shine-usu (South, line 33), clearly refers to the five hundred foot-soldiers, *bis yüz kädimliγ yadaγ*, of the victorious kaghan⁹. Marco Polo mentions Mongol infantry in several passages of his book. When Nayan and Qaidu revolted against the great khan they are said by Marco Polo to have made "a great gathering of cavalry and of men on foot to go upon the great Kaan"¹⁰. To quench the revolt Qubilai "assembled quite 360,000 horsemen and quite

⁵ Cited by MORRIS ROSSABI, "The Tea and Horse Trade with Inner Asia During the Ming", *Journal of Asian History*, IV, 1970, 136—168, p. 139.

⁶ See e. g. *Records of the Grand Historian of China translated from the Shih chi of Sse-ma Ch'ien* by BURTON WATSON, (Columbia University Press, 1961), II, p. 255.

⁷ V. THOMSEN, *Inscriptions de l'Orkhon déchiffrées*, Mémoires de la Société Finno-Ougrienne V, (Helsingfors, 1896), p. 108.

⁸ Cf. S. E. MALOV, *Pamjatniki drevnetjurkskoj pis'mennosti*, (Moskva-Leningrad, 1951), p. 61.

⁹ Cf. S. E. MALOV, *Pamjatniki drevnetjurkskoj pis'mennosti Mongolii i Kirgizii*, (Moskva-Leningrad, 1959), p. 37.

¹⁰ A. C. MOULE — Paul PELLIOU, *Marco Polo. The Description of the World*, I, (London, 1938), p. 194.

100,000 footmen". Further in his description of the conflict Marco Polo again states that Qubilai "had the greater part of his men on horseback", i. e. not their totality, and explains the use made of foot-soldiers: "with each man on horse in the first squadrons was a man on foot behind at the crupper of the horse with lance in hand, for thus were all the footmen drawn up with lances in this way¹¹." The number of fighting men engaged in the battle was truly imposing: "on one side and on the other there were more than 760,000 horsemen without the men on foot, who were a great number¹²."

While there can be no doubt that the military strength of great nomad empires such as those of the Türks and the Uighurs rested on their cavalry, these passages show clearly that on occasion, infantry was made use of. These facts have to be adduced here to correct hasty generalizations leading to automatic identification of Turco-Mongols with horse breeders and also the assumption that all Turco-Mongol states had an ample, constant and virtually inexhaustible supply of horses. These facts do not weaken my previous statement that the military power of the great Inner Asian states rested on the supply of horses it could count upon^{12a}.

Plano Carpini was struck by the number of horses the Mongols possessed. Speaking of the Mongols he noted: "they have such a number of horses and mares that I do not believe there are so many in all the rest of the world¹³." "The horses the Tartars ride on one day they do not mount again for the next three or four days, consequently they do not mind if they tire them out seeing they have such a great number of animals¹⁴." Marco Polo sets the number of horses even higher: "of horses and mares there are about eighteen for each man, and when any horse is tired by the road another is taken in exchange¹⁵." In the first decades of the 16th century, Herberstein, imperial ambassador to the tsar noted that the Tatars of Russia set out on their marauding expeditions with two or three horses for each man¹⁶. Speaking of his grueling journey to the seat of the great khan Carpini reports: ". . . we started at dawn and journeyed until night without a meal and many a time we arrived so late that we did not eat that night but were given in the morning the food we should have eaten the previous evening. We went as fast as the horses could trot, for the horses were in no way spared since we had fresh ones several times a day, and those which fell out returned . . .¹⁷".

The Chinese were well aware of the military importance of the horses. In the words of a high official of the Sung: "The reason why our enemies to the north and west are able to withstand China is precisely because they have many horses and their men are adept at riding; this is their strength. China

¹¹ *ibid.* p. 197.

¹² *ibid.* p. 199.

^{12a} This statement also applies to the Jurchens who, originally, were not horse breeders. On their effective use of cavalry see Jing-shen TAO, "The horse and the rise of the Chin Dynasty", *Papers of the Michigan Academy of Science, Arts and Letters*, LIII, 1968, 183—189.

¹³ *Mission to Asia*, p. 8.

¹⁴ *ibid.* p. 47.

¹⁵ MOULE-PELLIOT, p. 173.

¹⁶ *Rerum Moscoviticarum Commentarii*, (Basel, 1571), p. 89.

¹⁷ *Mission to Asia*, p. 61.

has few horses, and its men are not accustomed to riding; this is China's weakness. . . . The court constantly tries, with our weakness, to oppose our enemies' strength, so that we lose every battle . . . Those who propose remedies for this situation merely wish to increase our armed forces in order to overwhelm the enemy. They do not realize that, without horses, we can never create an effective military force"¹⁸.

This opinion had been and was to be that of many other Chinese soldiers and statesmen. However, to recognize a problem is but the first of many steps leading to the solution which kept eluding the Chinese. When put in simple terms the insolubility of the problem is easily recognizable. For a number of reasons, among which the lack of extended grassland was the foremost, the Chinese were unable to supply their own army with a sufficient number of good quality horses. Importation was the only remedy but the only potential suppliers were the steppe-nomads, i. e. the very people against whom the cavalry mounted on these imported horses would be used. The strategic goods essential for successful warfare could be obtained only through trade with the enemy.

Society in Inner Asia — as all other human societies — was organized to ensure the subsistence of its members by providing them with food, shelter, clothing and the tools necessary for their obtention, construction or manufacture. Owen LATTIMORE has pointed out that steppe life "is based on an economy which is capable of being entirely self-sufficient. Its own resources provide the essentials of food, housing, clothing and transport, even fuel (from cattle dung). Nor does it prevent the mining and working of metals on a small scale, as is known from archaeological evidence. The steppe-nomad can withdraw into the steppe, if he needs to, and remain completely out of contact with other societies. He can; but so rarely does he so that this pure condition of nomadic life can fairly be called hypothetical. For every historical level of which we have any knowledge there is evidence that exchange of some kind, through trade or tribute, has been important in steppe-nomad life"¹⁹.

Of the commodities coveted by the steppe-peoples, luxury articles are most often mentioned (silk, precious stones, jewelry, etc.) but, in my judgment, these played a relatively minor role when compared with trade in linen, arms, or grain²⁰. Whatever the goods imported by the steppe-peoples may have been, they produced but one commodity coveted by their sedentary neighbors: the horse.

¹⁸ CREEL, "The role of the horse . . .", p. 667.

¹⁹ "The geographical factor in Mongol History", *The Geographical Journal*, XCI, 1938, reprinted in *Studies in Frontier History. Collected Papers 1928—1958*, (Oxford University Press, 1962), 241—258, p. 253.

²⁰ The Inner Asian pastoralists' need for grain is very often overlooked. Famine — caused by great losses in the herds — was a constant threat in the nomads' life and accounts for many of the invasions undertaken by them. Some penetrating remarks on this subject can be found in Sechin JAСHИH, "Trade, Peace and War between the Nomadic Altaics and the Agricultural Chinese", *Bulletin of the Institute of China Border Area Studies*, National Chengchi University, I, 1970, 35—80. The catastrophic losses in cattle caused by weather-conditions still plague Mongol economy. In the winter of 1967—68 severe blizzards caused the death of about 3.8 million head of cattle in the MPR. (*Yearbook on International Communist Affairs 1969*, edited by Richard F. STAAR, Hoover Institution Press, 1970, p. 599.)

Chinese horse trade with the barbarians of the North and the West is well documented since Han times. For the most part of Chinese history, in Ying-shih Yü's words²¹ "The exchange trade between Chinese silk and barbarian horses . . . was probably the most important type of transaction . . . carried on at both state and personal levels, thus characterizing much of the Sino-barbarian economic intercourse not only in Han China but also in later times . . .". He cites²² an interesting attempt by Hsien-pi tribes to stop horse trade with China. The Chinese succeeded in running the blockade which must have had serious effects on their military forces. Hsien-pi horse and cattle exports to China were considerable, e. g. 70,000 head were sold by them to the kingdom of Wei in 222.

Horse trade with the Uighurs was very brisk though not without some problems. Since, generally speaking, the Uighur rulers were on relatively good terms with the Chinese, they were willing to provide them with horses — at a price. Casting themselves in the role of faithful tributaries the Uighurs kept sending embassies to the Chinese capital, embassies whose lavish maintenance put a heavy burden on the emperor's treasury. Towards the middle of the 8th century every year the Uighurs sought to sell several tens of thousands of horses to the Chinese asking up to forty pieces of silk for each horse²³. Not only was the price exorbitant, the quality of the horses left much to be desired and the whole trade was most disadvantageous for the Chinese caught in the trap of their own political fiction, viz. that these horses were brought as "tribute". In 929 the T'u-yü-hun and the Tanguts multiplied their embassies to the Chinese court and the chancellor called the emperor's attention to the fact that if the price of the silk given in exchange for the horses brought in "tribute" is added to the cost of the hospitality accorded to the ambassadors, the total amounts to more than the double of the real value of the horses received. But his argument fell on deaf ears. "His Majesty held the view that the nation was plagued by a constant insufficiency of horses and that merchants were permanently engaged in trying to secure them. Now that the Barbarians are bringing the horses of their own volition, how can one speak of expenses? When the outer Barbarians bring their tribute to the court, China rewards them. Such is the usual function of the emperor²⁴."

Under the Sung, in the 12th century, a special Horse Trading Office (*Ch'a-ma ssu*) was established. Horses were to be paid for in tea, a practice that continued under the Ming. "Tea and horses were so inextricably related that officials repeatedly requested that the tea laws and the horse administration be supervised by the same man. . . . Government control of tea was, in Chinese eyes, the first step in the creation of a rational and effective horse policy²⁵." Thus in 1392, for instance, 300,000 *chin* of tea were exchanged for

²¹ *Trade and Expansion in Han China*, (University of California Press, 1967), p. 200.

²² *ibid.* p. 110.

²³ Colin MACKERRAS, *The Uighur Empire (744—840)*, The Australian National University, Centre of Oriental Studies, Occasional Paper 8, (Canberra, 1968), p. 56.

²⁴ James Russell HAMILTON, *Les Ouighours à l'époque des Cinq Dynasties*, (Presses Universitaires de France, 1955), p. 107.

²⁵ ROSSABI, *op. cit.* p. 142.

over 10,000 horses "which were immediately turned over to border officials for defense purposes" ²⁶.

Nomad conquerors of agricultural areas faced special problems. For example in the 10th century the formerly pastoral Sha-t'o were unable to maintain their cavalry. It was calculated — presumably because of insufficient grazing ground — that the cost of upkeep of a mounted soldier was five times that of an infantryman ²⁷. Of particular interest are the data on the provisioning of horses in Yüan China. Once established in China and deprived of the pastures that alone could sustain a number of horses sufficient to cover the needs of the army, the Mongols had to face the same difficulties as had other dynasties ruling before them. Compulsory purchase within China did not always yield results commensurate with the military needs. The very first decree of Qubilai's reign issued in 1260 ordered that "Excepting riding horses for officials on military duty, and regular soldiers on military duty, and persons going to court, all riding horses are to be registered and collected" ²⁸. But agricultural China simply could not provide horses in necessary numbers and the final requisition made by Qubilai produced only 70,000 horses instead of the 100,000 needed. Even the religious were not exempt from harrassment. According to a decree of 1287 "Horses have already been requisitioned from those Buddhist monks, Christians, Taoists, Mohammedan teachers who had them. Those south of the Yangtse have not yet been requisitioned. Now what need have the monks and Taoists, sitting in their temples, of horses" ²⁹? The results of this administrative measure proved to be dismal, only 1,503 horses could be found. The official explanation that "The monks, Christians, Taoists south of the Yangtse always ride in sedan chairs, when they go out, and there are few horsebreeders" was probably justified. The whole operation can be taken as further proof of the small number of horses used, particularly in the south of China, as well as of the desperate need of the Yüan to provide the army with horses. In view of the material adduced by JAGCHID and BAWDEN it seems perfectly clear that Marco Polo's reference to the great number of foot-soldiers in Qubilai's army set up against Qaidu is correct and that the use of infantry was dictated by necessity rather than by any military considerations. The imperial decrees show — in the words of Jagchid and Bawden "the difficulties of the Yüan emperors when faced with rebellion from the north, and deprived of access to Mongol horses and breeding grounds which were available to the enemy and aided his mobility. Secondly, they show that when the rebellious princes submitted, without their territories, they too lacked horses and were unable either to keep up opposition to the dynasty or to recover their own lost lands" ³⁰.

As mentioned earlier, the horse was the only commodity which, given favorable circumstances, the Inner Asian grassland economy was able to produce in surplus quantities. These could either be exported — and we have

²⁶ ROSSABI, *op. cit.* p. 145.

²⁷ Wolfram EBERHARD, *Conquerors and Rulers*, Second edition, (Leiden, 1965), pp. 152—153.

²⁸ JAGCHID — BAWDEN, *op. cit.* p. 256.

²⁹ JADCHID — BAWDEN, *op. cit.* p. 262.

³⁰ *op. cit.* p. 256.

shown that most of the time China was a potential customer — or they could be used for warfare. For the Inner Asian nomad war was not, as for Clausewitz, the continuation of diplomacy by different means; it was a form of barter aimed at obtaining essential or coveted goods. The success of both types of operations — peaceful exchange of goods or predatory expeditions — depended on the number and the quality of the horses. And the horses were dependent on pastures.

I cited Plano Carpini's remarks on the ability of Mongol horses to fend for themselves under adverse circumstances. Their independence of fodder is confirmed by a very great number of Chinese sources. Speaking of the way the Mongols treat their horses the *Meng-ta pei-lu* (1221) states " . . . they never feed them with fodder. . . . They pasture them on the steppe according to where the grass is green or withered. . . . They never give them beans or grain at all"³¹. Another source from the first half of the 13th century confirms that the Mongol's horses receive no fodder but graze on the steppe. In fact it is quite clear that provisioning in fodder an army having as many horses as did the Mongols would have been a sheer impossibility.

According to the budget estimate of a Chinese expeditionary force operating in Chinese Turkestan in the second half of the 19th century, the daily grain consumption of a horse is calculated at 0.03 *tan*. While the epoch is different, it is safe to assume that the appetite of the same type of horse has not changed substantially over the elapsed centuries. As according to the same source the working load of a camel is 2 *tan*, almost fifteen hundred camel-loads of grain would have been needed to feed a hundred thousand horses for one single day³²! Even if our sources would not expressly so state, it would stand to reason that a cavalry force of the size the Mongols used in their major campaigns — and it should not be forgotten that each soldier had a number of spare horses — had to rely on pastures. To provide for them otherwise would have created logistical difficulties which even the Mongol military and organizational genius would have been unable to surmount.

The locating of pastures sufficient to provide subsistence for big armies was no mean task, and the Mongol quartermasters had their hands full. When in 1252 the great khan Mōngke prepared for his great campaigns of conquest, quartermasters, "*elchis* were sent on in advance — records the Persian historian Juvaini — to reserve all pasturage and meadowland wherever the World-King's troops might be expected to pass, from the Qanghai mountains between Qara-Qorum and Besh-Baligh; and all animals were forbidden to graze there lest the pastures might be harmed or the meadows injured. And all the garden-like mountains and plains were banned and prohibited and the teeth of the cattle were prevented from browsing thereon"³³. In 1303 the il-khan Ghazan had to postpone his attack on Syria because of the enemy having set fire to all fodder so that the Mongols' horses should find nothing to eat. And indeed, "in view of the fact that the horses would have found

³¹ JAGCHID — BAWDEN, *op. cit.* p. 248.

³² Wen-djang CHU, *The Moslem Rebellion in Northwest China, 1862—1878*, (The Hague, 1966), p. 183.

³³ John Andrew BOYLE, *The History of the World-Conqueror by 'Alaad-Din 'Ata-Malik Juvaini*, I—II, (Manchester University Press, 1958), II, p. 608.

nothing to eat, Ghazan decided to postpone his campaign until spring "when the young grass would begin to sprout". The Armenian Hayton, who recorded these events with a trace of patriotic bitterness, remarked that "The Tartars were more concerned with their horses than with themselves"³⁴. The destruction of pasture could embarrass even a relatively small group. On his way to China Evert Isbrand, ambassador of Peter the Great, encountered great difficulties when hostile Mongols set on fire the dried out pastures. "Each day we lost several of our horses who died for lack of food"³⁵.

Grass and water were the essential prerequisite of nomad warfare. Their presence or absence determined both the size of the "nomad" armies and the radius within which they could operate. The complaint of Napoleon's General Nansouty voiced during the Russian campaign "The horses are so unpatriotic! The men will march without food but the horses refuse to move without their hay" has a universal validity. In 943 Hugh of Arles, trying to get rid of some Hungarian auxiliaries suggested that they undertake a marauding expedition to Spain. Obliging, he even provided them with a guide. On their road to Cordoba they had to traverse a region without adequate water supply. Fearing lest their horses and themselves may perish, they killed their guide and returned to Italy³⁶. In March 1242, a Mongol detachment pursuing the fleeing Hungarian king Béla IV reached the city of Split in Dalmatia. The archdeacon Thomas of Split, describing the events, expressly stated that Qaidan, chief of the Mongol forces engaged in the operations arrived with only a fraction of his army "as there was not enough grass for all his horsemen; it was early March with heavy frosts"³⁷. Although it is probable that the shortage of grass was due not only to the frosts of March but also to the general bareness of the Karst mountains, this may be a suitable point at which to broach the discussion of the period of the year when Inner Asian armies were wont to set out on campaigns.

Mongol horses, as we have seen, were not only used to cold but were also capable of digging out from under the snow their food or living on twigs, tree barks or on any other vegetal substance. In the best range areas, in the fall, the tall grass gradually withers, bends to the ground, becomes tangled and matted. Covered with snow it constitutes a huge reserve of forage which the grazing animals can reach unless the snow is exceptionally hard³⁸. An examination of the dates on which the great Mongol campaigns were launched would probably show that autumn was the preferred season. My relevant

³⁴ *La llor des estoires des parties d'Orient*, in *Recueil des historiens des croisades. Documents arméniens*, II, (Paris, 1906), pp. 199—200.

³⁵ Adam BRAND, *Relation du voyage de Mr. Evert Isbrand . . . en 1692, 93, 94*, (Amsterdam, 1699), p. 83.

³⁶ Liudprandus episcopus Cremonensis, *Antapodosis*, Liber V, 19 in *MGH.SS.* III, p. 332.

³⁷ Thomas Spalatensis archidiaconus, *Historia Salonitarum*, 39, ed. A. F. GOMEOS, *Catalogus Fontium Historiae Hungaricae*, (Budapest, 1938), p. 2242: *venit Caydanus cum aliquante parte sui exercitus, quia non erant herbe pro toto equitatu sufficientes; erat enim principium Marci asperis irigoribus inhorrescens.*

³⁸ Cf. S. A. PLETNEVA, "Pečenegi, torki i polovci v južnorusskikh stepjakh", in *Trudy Volgo-Donskoj arkheologičeskoj ékspedicii*, I, edited by M. I. ARTAMONOV, *MIA.* 62, 1958, 151—226, p. 187. — I use the word "range" in the sense current in America, i. e. as a tract of land used for grazing cattle and other livestock.

data are insufficient to make the point definitely. The fact is that the horses of the Mongols, and presumably that of other Inner Asian armies were "ready for war" in the autumn. Speaking of the horse breeding methods of the Mongols a Chinese scholar of the first half of the 13th century states: "From the beginning of the spring they (the Mongols) stop fighting. All the good horses used in the war they let go free to water and grass, and do not allow them to be ridden or moved. Only when the west wind is about to blow (i.e. in the autumn) do they take them and tie them up. They tether them around the tents and feed them with a very little water and grass. After a month the fat drops away and they ride them. They will not sweat over several hundred *li*. For this reason they can bear long distances and campaigns"³⁹. A memorial presented to the emperor in 814 by a minister illustrates the point. Speaking of the Uighurs, it says: "The northern barbarians are covetous and grasping. All they care about is profit. This is the second year that their normal yearly consignment of horses has not arrived. Can it be that they have become satiated with the profit of silken fabrics? I suspect that what is happening is that they want [to wait till the autumn when] the wind will be strong and their horses fat, so that they can make a sudden invasion of China"⁴⁰. Incidentally this passage shows also the alternative use of horses for either trade or warfare.

The economy of pastoral nomadism is extensive and necessitates the relative dispersal of the population engaged in it. The number of horses that a square mile of steppe can support depends on a number of factors and also, from year to year, on the weather conditions. But, whatever the absolute figures may be, it stands to reason, that for every given year there was an optimum number of horses the steppe land under the control of one given political power could raise or support. If we consider the horse a commodity — which it undoubtedly was for Inner Asian economies — we find that it had a few very marked characteristics.

First, there was no substitute for the horse. Of the five categories of domestic animals, *tabun qosiyun mal*, on which pastoral economy rests (horse, camel, cattle, sheep, goat) only the horse was used for warfare.

Secondly, the utility of a horse remained constant for a number of years, more years than were needed to raise a substitute horse. Thus, unless external factors such as famine, disease, war reduced their numbers, a herd of horses would multiply rapidly. Man, however, could control this process by gelding, an operation which also produced better steeds.

Thirdly, the internal demand for horses had only a limited elasticity and the saturation of the home market was easily achieved. For the Inner Asian nomad the horse was, to use modern terminology, a durable consumer good and its "value in use" did not increase in direct proportion with its numbers. However useful and valuable the furnace of a central heating system may be, few, if any, would want to possess half a dozen of them within the same dwelling. There was no direct advantage to be had through the unlimited increase of horse herds, unless the surplus horses could be used to obtain

³⁹ JAGCHID — BAWDEN, *op. cit.* p. 249.

⁴⁰ MACKERRAS, *op. cit.* p. 98.

goods not produced within the Inner Asian pastoral economic system. Thus the "value in exchange" of horses was very great not only because they could be bred in great numbers — after all so could sheep and cattle — but also because from the buyer's point of view, there was no equivalent substitute for the horse in one of the principal human endeavors: war.

In order to remain self sufficient on a subsistence level, the Inner Asian pastoralists had to remain dispersed⁴¹. If, for political or economic reasons — such as the desire to obtain goods not produced by themselves — the pastoralists decided to create a strong, centralized state of some dimension, the pasture could no longer provide for the resulting increased density of their herds. Overgrazing quickly reduced the carrying capacity of the range. Because of its non-diversified economy the new steppe-state either had to export the animal surplus⁴² so as to reduce the herds to a size commensurate with the grazing grounds occupied, or it had to make use of the war potential created by the surplus in horses. An Inner Asian nomad empire could be compared to a hypothetical modern country whose entire industrial output consists in tanks. Such a country could ensure its continued existence only by either exporting them or by using these tanks to obtain by force the goods not produced by its own economy. While a horse is more versatile than a tank and its uses are more diversified, beyond an optimum number, horses cannot be profitably employed within the producing state. If the possibilities of trade were insufficient and success in war eluded the leaders, the steppe nation had to disband in order to ensure the survival of the individual. The concentration of horses necessary for large scale operations could not be maintained in conditions of peace, but scattered groups of horse breeders could always maintain themselves on what the pastures and the woods had to offer.

The comparison suggested between the horse and the tank can be widened to include the provisioning. Just as a supply of fuel is essential for the tanks, the horse cannot exist without food. I have given above some instances showing the preoccupation of mounted warriors with the problem of adequate grazing grounds. Even in our days grass is more easy to come by than gasoline, yet pasture sufficiently large to feed the horses — and the other animals — of a nomad empire or to provide for the needs of its army cannot be found everywhere. The range of activity of the great Inner Asian armies was severely limited by this factor and, I submit, that a number of ill-explained facts pertaining to Inner Asian history become more understandable if consideration is given to the logistical limitations imposed upon Inner Asian cavalry by nature itself.

Thus it would appear to me that Chingis Khan's often quoted intention to raze the cities of north China and transform the land into pasture was dictated by an accurate assessment of the military needs rather than by sheer

⁴¹ Owen LATTIMORE, *Inner Asian Frontiers of China*, American Geographical Society Research Series No. 21, (New York, 1940), p. 331 enlarges on this subject.

⁴² In this sense things have not changed too much in modern times. In 1957, live-stock and animal by-products made out 95% of the exports from the Mongolian People's Republic to the Soviet Union. Cf. George G. S. MURPHY, *Soviet Mongolia*. (University of California Press, 1966), p. 195.

destructive barbarism. The advice given by his Kitan counsellor Yeh-lü Ch'u-ts'ai, who is reported to have said that a country can be conquered but not governed from the saddle, was dictated by humanitarian as well as by political considerations⁴³. Ultimately, as we have seen, it weakened the Mongol hold on China.

The Mongol invasion of Hungary provides a telling example of their armies' dependence on adequate pastures. The Hungarian campaign was a major one, even by Mongol standards, and its execution was a strategic masterpiece. The invasion took place in the spring of 1241, Hungarian resistance collapsed almost at once and the Mongol armies regrouped on the left bank of the Danube which they crossed on Christmas Day, 1241. West of the river, in Transdanubia, the Mongols pushed on to the Austrian border and, as we have seen, in a southwesterly direction, to the Adriatic. Although undefeated and virtually unopposed, the Mongols suddenly evacuated Hungary in the spring of 1242, an operation for which no satisfactory explanation exists⁴⁴. The troops that left Hungary settled in the South Russian steppe where they were to remain for centuries and where there were grazing grounds vast enough to support their herds. In my view the Mongol evacuation of Hungary was motivated by Batu's logistical difficulties and his recognisance of the fact that the Hungarian pastures were insufficient to provide for his army's needs.

The Hungarian Plain (Alföld) is rightly considered the westernmost part of the great Eurasian steppe belt but it is separated from it by the barrier of the Carpathians. The Cisdanubian part of the plain, the so-called Nagy Alföld covers approximately 100,000 km², i. e. 24,710,400 acres. The Mongols' homeland, the present day Mongolian People's Republic has a surface of 1,565,00 km², $\frac{1}{5}$ of which, 1,252,000 km², is grazing land⁴⁵. In 1918 — i. e. before the introduction of modern livestock production methods — this Mongol range supported 1,150,500 horses, 1,078,400 cattle, 228,700 camels, and 7,188,000 sheep⁴⁶. Both in Mongolia and in the U.S.A. five sheep or goats are considered the equivalent of one "animal unit", i. e. one head of cattle, horse or camel. The Mongol livestock of 1918 counted thus approximately 3,895,200 animal units. If for the sake of simplicity we estimate the size of the Hungarian range as being $\frac{1}{12}$ that of Mongolia we must reckon that it had a carrying capacity of about 322,933 animal units. This figure is highly inflated as in no time during history was the whole Alföld suitable for grazing. Forests, marshes occupied considerable areas and so

⁴³ See the fine essay by Igor de RACHEWILTZ, "Yeh-lü Ch'u-ts'ai (1189—1243): Buddhist Idealist and Confucian Statesman", in *Confucian Personalities*, edited by Arthur F. WRIGHT and Denis Twitchett, (Stanford University Press, 1962), 189—216, p. 201.

⁴⁴ Plano CARPINI's statement (cap. IX, 36, ed. VAN DEN WYNGAERT, *Sinica Franciscana*, I, Firenze, 1929, p. 121) that troops were withdrawn from Hungary because of Ögödei's death would make sense only if these troops, or at least Batu himself, would have returned to Mongolia to participate in the election of the new khan. However invaluable CARPINI's account may be, many of his statements are blatantly inaccurate.

⁴⁵ Cf. the collective work *Mongol'skaja Narodnaja Respublika*, (Moskva, izd. Nauka, 1971) p. 164.

⁴⁶ *ibid.* p. 169.

did, in an ever increasing measure, land used for agriculture. A fairly productive grass range has a grazing capacity of 10 acres per animal month or, in other words, a range area of 120 acres is needed to support one horse for one year⁴⁷. On this basis Hungarian Alföld could support no more than 205,920 animal units as compared to over 2,500,000 of the Mongol grazing lands. Counting only three horses per Mongol horseman, the Hungarian range could provide for the mounts of only 68,640 warriors on the impossible condition that no other animals were using the pastures. There are too many variables and too many unknown elements involved in such a computation for it to lay claim to accuracy. Yet it is safe to say that these figures and a little additional common sense will show that the Hungarian range was unable to provision a nomad "superpower". Contemporary sources describe not only the famine in Hungary that followed the Mongol invasion but also the care the invaders took to secure for themselves and their animals the necessary food⁴⁸. The grazing capacity of Hungarian pastures could not sustain the Mongol army for a prolonged period and it was the recognition of this basic fact that prompted Batu to withdraw east of the Carpathian to a rangeland at least five times the size of Hungary.

The limited carrying capacity of the Hungarian range can be deduced also from the fact that unlike the nomad "super powers" of Mongolia, the Hungarian tribes settled on the Hungarian Plain launched their military campaigns in the late winter or early spring⁴⁹, i. e. at a time when forage was in low supplies in Hungary and when the marauders could make use either of the accumulated winter forage of the populations to be attacked or of the fresh spring grass. Neither Italy nor Central or Western Europe had pastures sufficient to provide for any length of time for the needs of important "nomad" forces⁵⁰. Unlike the nomad "super powers" centered in Mongolia, the Central Eurasian nomads settled in Hungary have never constituted a real menace to the very existence of the sedentary powers of Europe. While China, or at least great parts of it, were repeatedly conquered by the nomads, neither Byzantium nor Rome have succumbed to their attacks nor have they ever conquered the Germanic tribes of central or western Europe. All things considered the Huns or the Avars could not muster forces comparable to those of the Hsiung-nu, the Türks or the

⁴⁷ Marion CLAWSON, *The Western Range Livestock Industry*, (New York, Toronto, London, McGraw-Hill, 1950), p. 55. Estimates of grazing or carrying capacity of ranges vary between two and more than sixteen acres per animal month. On the specific carrying capacity of the Mongol steppe, see Herold J. WIENS, "Geographical limitations to food production in the Mongolian People's Republic", *Annals of the Association of American Geographers*, XLI, 1951, 348—69, p. 358—62. There is a considerable discrepancy between the figures given by WIENS and those quoted by CLAWSON.

⁴⁸ ROGERIUS, *Miserabile Carmen super destructione regni Hungariae per Tartaros*, cap. 36, ed. SZENTPÉTERY, *Scriptores Rerum Hungaricarum*, II, (Budapest, 1938), p. 582.

⁴⁹ Cf. Cs. BÁLINT, "Honfoglalás kori sírok Szeged-Othalmón", *A Móra Ferenc Múzeum Évkönyve*, 1968, 47—89, pp. 80—81.

⁵⁰ A late source reflects well the Germans' awareness of the Hungarians' need of pastures. The *Oesterreichische Reimchronik* written around 1300 by Ottokar von STEIER, referring to events that took place in the middle of the 13th century remarks that the Hungarians had no other need "wan daz ir phert haben gras". Ed. GOMBOS, *Catalogus fontium historiae Hungaricae*, (Budapest, 1938), p. 1793.

Mongols. Attila's armies were in more than one respect Germanic and, even when victorious, they did not display that uncontested military superiority that is the hallmark of nomad powers disposing of a virtually unlimited supply of horses. But then, and here is my point, the pastures of the Carpathian basin simply could not provide for such a force. Nomad peoples who settled on this westernmost stretch of the Eurasian steppe land could not maintain themselves without switching their economy from pastoral nomadism to agriculture. Here as elsewhere, the economic infrastructure of nomad military power rested on vegetation patterns beyond the control of political leaders.