

§.466, 24:6b) 5 different kinds of vehicles (wu-lu 五路) (note: the pearl chariot, the gold chariot, the elephant ivory chariot, the leather chariot, the wooden chariot)(end note) (...lengthy description of ~~various~~ the leather chariot follows, at the end of which Yu notes that the description of the ke-che p.467, 24:7a) or leather chariot is different from the description in the Shu (preface) of the Shu-ching, cited before this)

Indented section: I note that the ancient method of fighting with vehicles prescribed that every war vehicle had 3 armored soldiers, 72 infantry men, and in addition 25 men leading a heavy (baggage) cart in the rear--a total of 100 men. When on the march, they used the carts as defense, and when they were stopped, they used the carts to form a camp. Each cart also had an auxiliary vehicle as a back up in case of some unexpected incident.

-K'ao-kung-chi(考工記) section of the Chou-li (...more descriptions of types of carts, 6 varieties with different dimensions)

-the preface (shu) of the Shih-ching (book of poetry) cites the use of 10 chariots by King Hsüan of Chou in his attack against the enemy to the north; he set the ten chariots in the front to open up the route (path of the march)...

-next cites the Ch'in-feng hsiao-jung(秦風小戎) chapter of the Book of poetry citing the use of small carts to carry wood and other materiel

24:8a lengthy footnote on this by Chu Hsi

24:8b) -The Tso-chüan, 9th year of Duke Yin(隱公) (of the state of Lu), when the northern barbarians invaded the state of Cheng, the Earl of Cheng(鄭伯) defended himself against them. ~~The~~ Buthe was afraid of the barbarian army and said: They have infantry... and we have chariots. I am afraid they will make a surprise attack on us (ch'in-i 侵軼). A kung-tzu(公子:nobleman) named T'u(突) said: ~~No matter how brave you are, if you are not strong and try to attack~~ Send the brave but not strong men to try an attack; they will be driven off quickly. Then you(~~you~~ chün) ~~line~~ set 3 ambushes

*Classic tactic
push the enemy into an ambush!*

三覆

line
set 3 ambushes
三覆

p.467, 24:8b) in order to wait for them (note: Pok(覆) means troops lying in ambush (伏兵)(end note). ~~Six~~ The barbarian forces are light (fast) but not well organized, like to plunder and are not close (~~six~~ tightly knit); when they win a victory they do not yield (booty?) to one another, and when they suffer defeat, they do not help one ~~another~~ another. If the ones out in front. When the enemy who are out in front see they can capture (our ~~men~~ men), they will try to move forward, and when they do, they will encounter our ambush, and will definitely be quickly driven to flight. The ones who follow them in the rear will not help them and so they will not be able to continue (their attack). You can by this means win a victory (ch'eng 逞, literally, to relax) (note: that is, you will be able by this means to enjoy your will (get your way) with the northern barbarians)(end note).

The Earl of Cheng (Cheng po) approved this, and those of the barbarians who were in the front and encountered (the Cheng troops) ~~laying in~~ lying in ambush were scattered. Chu Ping(祝聃: the Ta-fu of Cheng) chased after them (chased them off) and hit the barbarian army in its midst (chung 中 Jung-shih 戎我師 (note: the soldiers lying in ambush attacked the Jung army in the middle)(end note), thus attacking them from the front and the rear. (note: The first ambushade attacked the enemy in the front; Chu Ping together with the 3rd ambushade attacked them in the rear, and then the 2nd group attacked them in the middle. The Jung armies sustained attacks in 3 places, front, rear and middle...)(end note). And they were all killed off (殪: 死 mean 死, to die 死) and the Jung army was routed.

--. In the 5th year of Duke ~~Hsüan~~ Hsüan of Lu (桓公), the king used the feudal lords to attack Cheng. The Earl of Cheng defended himself against them. The Earl of Man(曼伯) was made commander of the

p.468, 24:9a) right army (右拒) and Ts'ai Chung-tsu(蔡仲) was made commander of the left army, and Yuan Fan(原繁) and Kao Chü-mi(高渠彌) were put in charge of the central army. They defended the duke in a brilliant fish" formation (yü-li-chin 魚麗陣, (note: i.e. the central army did so)

p.468, 24:9a) In the front they formed a p'ien(偏 :formation), and in the rear they formed wu(伍) ranks. (note: According to the Ssu-ma fa(司馬法) in fighting with chariots, 25 chariots make up a p'ien, and 5 men make up a wu, you place the chariots in the front and the men in the rear.)(endnote) The men of the wu ranks then fill up the empty places (伍承彌縫) (between the chariots) (note; you use the wu ranks to fill the spaces between the p'ien chariots and fill up the ~~vacant~~ vacant spaces, and this is what is meant by the fish-brilliant formation method)(end note) They fought the battle at Yugal(繡葛) (note: name of a place in Cheng). The ~~Duke of Ch~~ Earl of Cheng ordered his two commanders (of left and right): "When the flag moves, then beat the drum (and advance)!" (note: explains that this is a flag that the great generals hold as a signal, and it means ~~is~~ that when the two commanders of left and right saw the flag move, then they were to beat the drums and advance their troops)(end note) The armies of Ts'ai, Wei and Ch'en(蔡衛陳) all fled. (note: these were the three armies following the king's army; they all were the first to run)(end note) And when the king's army were thrown into confusion, the Cheng armies launched a combined attack against them (note: That is the 3 armies of Cheng joined together for the attack), and the king suffered a great defeat.

--. In the 12th year of Duke Hsüan (of Lu), the states of Chin and Ch'u (晉楚) fought a battle at P'il (Pi 郟). Lan Mu-tsu(欒武子: a ta-fu of Chin) said: "The army of the lord of Ch'u (note: jung 戎 for army here means the personal troops of the ruler) are divided into two kuang(亢)(note: that is, divided into the left and right kuang) and each ~~kuang~~ kuang consists of 1 tsu(卒 :100 men) and the tsu are formed into (2) liang(兩 :of 50 men each). (note: 1 kuang had 15 chariots and every chariot had 100 infantry. According to the Ssu-ma fa, 100 soldiers made up a tsu(卒), 25 men made up a liang(兩). 15 chariots made up a ta-p'ien(大偏). At the present time (here) since

p.468, 24:9a) it says that a kuang had 15 chariots it means that (Cheng) was also using the old p'ien system, and they also had another unit of 25 men backing them up as reinforcements.

24:9b) (note continues: Chu Hsi says: In the Chou system, 15 chariots was a ta-p;ien; and 25 men was a liang. The state of Ch'u used 50 men per liang. If you regard this in terms of the old system, in addition to 1 tsu of 100 men, they also had this 50-man liang. In general 1 chariot of the state of Ch'u had the same number of men on it as did 2 chariots of the Chou system. 1 chariot of the Chou had 75 men, 1 chariot of the Ch'u had 150 men. For this explanation see the questions and answers of Li Ching(李靖); the commentary's explanation is mistaken.) (end note) The right kuang (右) ~~were the first to~~ moved out at dawn (note: Every morning at cock's crow, the right kuang were the first to mount their horses) (end note) At noontime, the left (kuang) relieved them (note...) and ~~at dusk (xxx)~~ (they continued their defense) until dusk. During the nighttime, the nei-kuan(内官 :close officials to the ruler of Ch'u) took responsibility for night patrol and defense)(note...) in order to prepare against the unexpected. One cannot say that they were not well prepared.

- . In the state of Ch'u, ~~a kuang of chariots consisted of 30 chariots~~ 30 ch'eng-kuang (乘) chariots were divided into left and right (note: i.e. 2 kuang of left and right with 15 chariots in each). At cock's crow each morning the right kuang would mount their horses; ~~in the~~ and would continue to defend (the ruler) until noontime before they stopped. The left kuang would then take over from them until dusk. Hsi Yen() commanded the right kuang and Liang T'ien-chi() commanded the left. (note:...the king of Ch'u alternated the 2 kuang ~~on~~ on duty (note...) etc...

indented section: Li Ching(李靖 :famous general of the T'ang) said: In the Ch'u, a ch'eng-kuang consisted of 30 chariots and a kuang consisted of one tsu(卒 :100 men?) and a tsu was organized into liang(兩).

p.468, 24:10a) The army proceeded along the right side of the chariot axle (yüan 輶: of the king?), and the axle was the method (by which they formed into line of battle), and therefore they fought around the axle. This was the Chou system. 100 men were called a tsu; 50 men were called a liang. This means that every chariot had 150 troops, which was ~~slightly~~ ^{very} different than the Chou system. Under the Chou system, 1 chariot had 72 infantry and 3 armored soldiers. 25 men were formed into 1 chia(甲), and 3 chia combined had 75 men. Ch'u was a state that was located in the mountains and marshes; they had few chariots ~~in~~ but many men. They divided (their forces) into 3 tui (units), so that (in this respect) it was the same as the Chou system.

司馬法
Gongyong 4,
p.396
classic
written by
司馬穰苴
Ssu-ma Jung-tzu?

---. In the 7th year of Duke Ch'eng (成公) (of Lu), Mu Ch'en (巫臣) of Ch'u (note: he first fled from Ch'u to Chin) was sent as an ambassador from Chin to Wu(吳). He formed 1 tsu with liang (sub units) when he went to Wu (note: Under the Ssu-ma fa, 100 men made up a tsu and 25 men made up a liang. Mu Ch'en took 1 tsu of 100 men when he went to Wu)(end note). He left 1 p'ien~~liang~~ there. (note: Under the Ssu-ma fa, 9 chariots made up a small p'ien; 15 made a large p'ien. He kept there a small p'ien of 9 chariots and 1 liang of 25 men and he had the people ~~in~~ of Wu train them.)(end note) He taught the Wu people how to shoot the bow and ride (chariots); he also taught chariot fighting tactics and military formations (battle formations). (note: At first the Wu people were self-complacent with their poor organization; they had never shot the bow, ridden horses, or rode chariots and they had no knowledge of battle formations, and so Mu Ch'en taught them these things)(^{instructed} end note) He ~~taught~~ them to rebel against Ch'u. ~~state~~ He left his son, Ho Yong (Hu Yung 狐庸 there (note...) and left to be a traveler in Wu. Wu then first attacked Ch'u, and then So and Hsü(巢徐)

24:10b)

p.468, 24:10b) indented section: Ch'eng Hsiang-tao(陳祥道) said: "According to military tactics as used in ancient times, in steep places men were the main force, and in flat places, chariots were the main force. It is not that they did not use chariots in steep places, but they put their main reliance on men. And it is not that they did not use men in flat places, but they put their main reliance on chariots. As for the use of chariots in fighting, when the army was on the move, they were used for attacking the enemy; and when the army was stopped, they were used to make a camp and (draw up a) defensive (line). They provided a place for the officers and man to take cover and a place to put the weapons and clothing, so that the use of carts (chariots) was of great advantage. In the past when Chou attacked Cheng, Cheng used the fish-brilliance formation (yü-li chih chin 魚麗之陣), putting the p'ien chariot units in front and the wu troop units in the rear, and the troops were used to fill the gaps between the chariots. When ~~the~~ Duke Hsüan fought the battle of Pi, the Ch'u armies were divided into 2 kuang, each one of which had 1 tsu; the tsu were organized into liang. When Mu Ch'en of Ch'u went as an envoy to Wu he took 1 tsu of troops ~~in~~ organized in liang and when he went to Wu he left 1 p'ien (of chariots) and 1 liang (of troops).

According to the Chou-li, 5 wu made ~~x~~ up a liang, and 4 liang made up a tsu(卒). According to the Ssu-ma fa, 25 men made up a liang p.469, 24:11a) and 100 men made up a tsu(卒). Tsu and liang were men (troop units)~~xx~~, and p'ien were chariot (units). Tu Yü(杜預) said that 15 chariots made a large p'ien and 9 chariots made a small p'ien. An even larger p'ien also had 25 chariots, thus the fish-brilliance p'ien of the state of Cheng had p'ien consisting of 25 chariots. The 2 kuang p'ien of the state of Ch'u had 15 chariots in a p'ien. The p'ien left (in the state of Wu) by Mu Ch'en consisted of 9 chariots. The p'ien (chariots) were lined up in front and the wu (troop unigs) in the rear, and the troops followed after the chariots. Tsu troop units were organized into liang,

p.469, 24:11a) and the liang followed behind the chariots. By putting ~~in~~ the chariots in front, they were able to meet the enemy; and by having the men in the rear, they were able to await any changes (incidents) in the situation. Thus one can obtain a rough understanding of the methods the ancients used in chariot fighting tactics.

--. In the 1st year of Duke Shao (昭公) (of Lu), ~~The~~ Chung-hsing Mu-tzu (中行穆子) defeated Mu-chung (無終) and a group of t'i (northern baebarians) at T'ai-yüan. (note: Mu Chung was a mt. barbarian, and Chung-hsing Mu-tzu was Hsün Wu (荀吳). When he gathered his troops together to do battle, ~~and then~~ Wei Shu (魏舒) said to him: "They have soldiers and we have chariots, and the place where we will meet them in battle is steep. If we increase the number of men assigned to each chariot by 10, we will be able to gain a victory; or if we can block the high places (defend the passes?), we will also win a victory.

24:11b)

I would like to have all the infantry organized as tsu (to follow the chariots), and I will begin in doing it." Then they broke up the (ranks of the) chariots in order to form (troop units). (took the troops off the chariots to use them as foot soldiers) (note....) 5 chariots made 3 wu (伍: ranks of foot soldiers). (note: There were 3 men riding on each chariot, so that 5 chariots ~~gave~~ provided 15 men. Now, they abandoned the chariots and took the men from them and formed them into 5-man wu and divided (the 15 men) into 3 wu) (end note)

A close friend of Hsün Wu (荀吳) :i.e. the Chung-hsing Mu-tzu) was not willing to abandon his chariots to use the men as foot soldiers, so he cut off his head and dragged him around (in front of the army), and formed the soldiers into 5 formations separated from one another.

(note: He organized the foot soldiers into 5 formatin which gave mutual aid to one another. In general, it is because it is difficult to use a large number of men where the road goes through steep mountains that as a temporary adjustment to the circumstances he organized 5 chin (陣: formations, units) and prevented them from begin connected with one another. This made

p.469, 24:11b) it easier for them to advance and retreat, just like the section below says.) (end note). He put two of them in the front (he put those called chin (陣) liang in the front) (note: Those placed in the front were called "liang") (end note), and he put the wu (伍) ranks in the rear (those put in the rear were called wu) (end note) Those chin called ~~chūan~~ (專) were placed on the right wing, and those chin called ts'an (參) were placed on the left wing; ~~ts'ien~~ and those chin called p'ien (偏) were placed in front (note: these names were all temporary ~~titles~~ names). When the enemy was lured in, they laughed at it when they saw it, but before they could get lined up in order of battle, he attacked them and greatly defeated them.

indented section: Li Ching (李靖) of T'ang) says: Hsün Wu used chariot tactics. Even though he abandoned his chariots, the method (he used) is found in (the way he used the troops?). He used one (chin, unit) on the left and one on the right, and one in the front, dividing them up into 3 units--all of this was chariot tactics. Even if you had thousands or ten thousands of chariots, you would still do it the same way.

24:12a)

I recently studied the Ts'ao-kung hsün-shu (曹公新書) :book written by Ts'ao Ts'ao of the time of Hsien-ti of the Eastern Han dynasty) which says: Attacking chariots have 75 men. You put one unit in front, (shou-che) and 2 units on the left and right flanks. You have 1 defensive chariot, with 10 cooks and 5 men in charge of equipment, 5 men to feed the horses, and 5 men to cut wood and draw water--a total of 25 men. 2 attacking chariots have a total of 100 men, and a whole army of 100,000 men uses 1,000 chariots, and the (two kinds of) light and heavy (chariots) makes 2,000. (1,000 light attack chariots and 1,000 heavy baggage chariots). This in general was the old method of Hsün Wu.

I also looked at the military system from the Han to the Wei dynasties and found that 5 chariots made a tui (unit) with 1 fu-she (僕射); 10

p.469, 24:12a) ~~chariots~~ carts made up 1 shih(師) with 1 shuai-chang(裨長).
1,000 carts had 2 Chiang-li(將吏), and no matter how many carts
were used, they followed this method(of organization).

In my opinion if ~~xxxxxx~~ we adopt this by adapting it to presently
used methods, then * (I find that) cavalry is used for an attack, a vanguard
unit consists of half infantry and half cavalry, and ~~when~~ units stationed
in camp could also have carts ~~and chariots~~. Which can be ridden on when you go out.
When I attacked the Turks
in the West I crossed over a mountainous area several thousand li in
distance, and (during that time) I never dared to make any changes in
this system. Generally speaking, the ancient methods or order and
organization (chölche 新制) are truly to be esteemed.

24:12b)

Li Ching also said: I have studied the fish-brilliance
formation (yü-li chin 魚麗陣) of the Spring and Autumn (period, annals)
in which they put the p'ien chariot units in front and the wu troop
units in the rear. This system used chariots and infantry, but did not
have cavalry. When it talks about placing units to the left and right,
it (the Spring and Autumn annals) are only talking about defense, and that
is all; it is not a method to be used in launching a surprise attack.
When Hsün Wu of Chin attacked the T'i (northern barbarians), he abandoned
his chariots and formed the men into infantry ranks. This is because he
regarded it s more advantages to have a lot of cavalry and he was only
trying to launch a surprise attack; he was not dealing in defensive tactics.
I have applied these tactics ~~as~~ equally. When 1 man is mounted on a horse,
he is equivalent to 3 men. Chariots and infantry should be mixed together
and used as one. ~~It depends on the man~~ How the methods are used depends
on the man (using it).

-~~2~~- In the Han dynasty, the Marquis of Hsia, Ying(嬰) destroyed
the army of Li T'ien(李田) at Yung-chiu(雍丘). He used
~~infantry and~~ war chariots to move quickly and his fighting forces were
fast (moving) and he destroyed (the enemy).

p.469, 24:12b) --. In the time of Han Wu-ti, Wei Ch'ing(衛青) went out to defend a frontier over 1,000 li in length. He attacked the Hsiung-nü. He saw that the Shan-yü(單于 :hsiung-nu chief) had his troops in formation waiting for Wei Ch'ing (to attack), so he then used his strong war carts to form a circle and make camp. (note...) Then he sent out 5,000 cavalry which attacked and defeated the Hsiung-nü.

--. Li Ling(李陵) went out to the frontier and attacked the Hsiung-nü. When he arrived at Chun-chi-shan(? 峻稽山) he confronted the Shan-yü. The hsiung-nü forces surrounded Li Ling's army. Li Ling was situated in between two mountains and he used his large chariots to form a camp. He led his forces outside the camp to form a line of battle and conducted several battles (this way).

p.470, 24:13a) indented section: Ma Tuan-lin said: The system of chariot fighting was still being used in the Han dynasty, Nevertheless, but if you study the texts closely, then it seems that they used carts to load provisions and equipment. When the army stopped, then they drew up the carts in a circle to make camp, and that was all. As for the so-called ~~xxxxxxx~~ 3 armored soldiers holding a bow in their left hand and their shield in the right with a flag (banner) in the middle, this system seems not to have been preserved (into the Han dynasty).

--. In the Chin dynasty(晉), Ma Lung(馬隆) attacked the Hsien-pei(鮮卑). Their chief, Shu Chi-nung(樹機能) used a mass of troops numbering several ten thousands to defend the high places and reject (Ma Lung's attack). Ma Lung, ~~because of the steep~~ when the terrain was steep and precipitous would form p'ien-shang-che(偏箱車) and when the terrain was broad and flat, he would organize pi-ke-che(鹿角車) type camps. When the road was narrow he would build wooden houses (turrets) and place them on top of the carts and continue to advance while fighting. For over 1,000 li, he killed and wounded many of the enemy and finally pacified Liang-chou(涼州).

p.470, 24:13a)

indented: Li Ching (李靖) said: The p'ien-hsiang (偏箱) and pi-ke (鹿角) formations are very important tactics in the use of the army. In the first place, it enables you to use military power; in the 2nd place, it enables you to use forward units well; and in the third place it enable you to control your troop units. The three things are to be used in alternation and mutually--so profound was Ma Lung's use of ancient methods.

24:13b)

Chiu Chün (丘眷) said: The system of chariots in ancient times was such that they used 4 horses and they had 3 armored soldiers and 72 infantrymen riding on them. This system was exceptionally good for defense but of no advantage on the attack. It was easy to use on flat fields, but difficult to use on high mountain passes, except for Ma Lung of the Chin dynasty's so-called p'ien-hsiang-che (偏箱車). When the land was broad and flat he formed his carts into a pi-ke-che-ying (鹿角車營) type camp. When the road was anrrow, then he built wooden turrets on top of the carts and attacked and advanced with them. These so-called pi-ke-che camps used carts to make camp and the men lived inside it and they kept their spears and swords inside the cart which looked like deer antlers. Even though there is no way to see what this system was like at the present time, nevertheless since ancient times carts (chariots) always had two "boxes" (hsiang 箱 :turrets), but these carts (of Ma Lung's) only had one turret on the side, and that's why they were named "side turret" (p'ien-hsiang 偏箱), and you can judge the purpose of them by the fact that they had 1 turret on the side. In general, those with two turrets were large chariots; those with one were small chariots. It was only because the carts were small that they could proceed through the mountainous terrain and fight while advancing.

I notice that at the present time there are what are called single-wheel carts (tu-lung-che 獨輪車), and they are used by the people for transporting goods. One man pushes them. Sometimes one or two men are used to pull them from the front. It seems they also can be used as fighting equipment.

p.470, 24:13b) However, since this system also had two square boxes (turrets) on one
24:14a) side, the cart turned over, and it was very slow going when it was being
pulled. I once went to the Ling-nan area where they made a small cart with
a single wheel and no boxes (turrets). If it is done in accordance with
this system, and ~~ix~~ changes are made to convert these carts into war carts,
then in the 1st place they can be used to fight; in the 2nd place they
can be used in front (as a vanguard?); in the 3rd place they can be
used to form a camp; in the 4th place they can be used as a spearhead
on the attack; in the 5th place they can be used to carry military equipment;
in the 6th place they can be used to transport sick soldiers. Moreover
it wouldn't cost much to make them--1,000 cash or less to make 1 cart.
And if they might happen to be damaged on the road, you don't need a
carpenter to repair them. If you happen to come up against a mountainous
terrain with many obstacles, you can push them over it. And if you meet
up with an urgent and difficult situation, then you can abandon them
and run off. Generally speaking, 1 cart can ^{use} ~~hold~~ 5 soldiers; 1 man
will push and 2 men will pull, 2 men will hold the weapons and lend
assistance. The food, clothing and equipment for the 5 men can all be
carried in the cart. At night you can use them to form a circle to
make a camp and thus be able to avoid the worry involved in having the troops
building palisade walls and turrets every night. The regulations for these
~~ix~~ carts are contained in the attached footnote. (lengthy footnote, pp.
470-1, 24:~~ix~~ 14a-15a on dimensions of the carts...)

p.471, 24:15a) --. In the Ta-li era of the T'ang dynasty (766-780), Ma Su (馬燧) was
appointed Ho-tung chieh-tu-shih. He made war carts. They were shaped
like lions (with a leather cover over them) with spears lined up in the rear.
On the move they carried weapons, and when the army had stopped, he used
them to make (camp) formation. In narrow places in the mountains he used
them to block the path of the enemy. In battle all his equipment was strong
and sharp (weapons?)

p.471, 24:15a)

indented: I note that according to the histories that these carts made by Ma Su were used by Ke Shu-han (哥舒翰) when he recovered the chiu-chu (黄河九曲) of the Yellow River. Fan Chung-yen (范仲淹) once also recommended to his court (Sung) that these carts be made.

--. In the chien-p'ing (咸平 :998-1004) era of the Sung dynasty, Wu Shu (吴淑) submitted a memorial in which he requested the restoration of the method of using carts in warfare, ~~xi~~ (He said that): generally speaking during peacetime man must still be careful to build walls and make strong gates and keys (locks) in order to defend against unfortuitous happenings. How much more ~~xi~~ when a country is facing the attacks of the Hu-lu (胡虏: ~~Khanlu~~ northern barbarians?) and has to defend against the flying attacks of cavalry; can he be without protective cover? The reason why people wear armor is to protect their bodies, and the reason why they use ~~xi~~ carts in battle is also to provide armor (protection).

24:15b)

Thus whether you are on the march or stopped, you can use carts either to make camp or to form an order of battle. When the enemy comes, you can collect the weapon and put them in the carts as a means of defending against their attack, and when the enemy retreats, then you can get on the carts, take ~~xi~~ advantage of the opportunity to win a victory and send out the troops to attack them, and at times you can ~~xi~~ use them to launch a surprise attack. When you advance, you can use them as a rear base to which you can return; and when the troops come back, you can use them as houses in which the troops can live. If the minds of the men have something to rely on, they will not be afraid of the fierce cavalry attacks of the barbarians.

--. Li Kang (李纲) said: "Infantry is not sufficient to win a victory over cavalry, and cavalry is not enough (sufficient) to win a victory over carts (chariots). I ask that cart manufactories be placed on the eastern and western roads (outside) the capital so that carts can be made there, and that ~~the people~~ (the ~~people~~) should be instructed and

~~the people~~
soldiers

use

p.471, ~~25x~~ 24: 15b) trained (in how to ~~make~~ them). ~~with oxen and mules~~ Then

they drew pictures (of the carts) and presented them to the emperor, ~~who~~
The type of cart used was that of ^{created by} ~~showing the machine of mules~~ The T'ung-chih-kuan (統制官), Chang Hsing-
chung (張行中), ^{proposed} ~~which he created~~. It had two poles and two wheels above
which were carried bows and ~~cross-bows~~ cross-bows. It also had a leather
cover to defend against arrows and stones. And below it had iron skirts
to protect the legs of the people (soldiers driving it). Long weapons
were used to ~~to~~ defend against people who attacked it, and short
weapons were used to defend against horses (cavalry). Along the side
there was an iron rope. When they were on the move they walked along
(~~pushing~~ ^{pulling} it) to form into a line of battle, and when they stopped, then
they connected them together to form a headquarters (camp). Every cart
used 25 soldiers. 4 men pushed the poles in order to drive the cart.

25:16a)

1 man mounted the cart in order to shoot arrows; and the rest carried
weapons and flanked the cart on both sides. If one army had 2,500 men,
~~in~~ 1/5 of them were in charge of carrying military supplies (tzu-chung
impedimenta) and guarding the weapons, and the rest were assigned to
the carts. 80 carts (chariots) were used to make ^{a square} ~~the~~ camp with 20 carts
^{armory, storehouse cart?}
on each of the four sides, and the baggage place was located in the middle.

The generals all thought that this system (of carts) could be used.

(see other volume of Pyongyang transl)

-Wei Seng (魏勝) / created the Ju-i-chan-che (如意戰車)).

On the top it looked like the face of a beast. It was equipped with
about a dozen wooden shields and large spears. It had a blanket for a
screen (圍幕) and a flexible shield (軟牌). Every cart had 2 men
who pushed it (推轂), and it could protect 50 men. On the move
it carried the baggage and weapons, and when the army stopped, it was
used to form a camp, lining the carts up like a wall of double thickness.
Neither man nor horse could come near them, and if you met the enemy,
they also could be used to defend against arrows and arrowheads.

When (the army) was drawn up in battle formation, then the Ju-i-che carts were

p.471, 24:16a) put on the outside and their banners hid the order of battle (of the troops).

Crossbow carts were used to form the gates of the line of battle. Above them they placed a box (wooden bed, sangja 床子). Its crossbow arrows were as big as a chisel--one arrow could shoot several men (at once), and if you shot 3 arrows, you could ~~hit~~ send them several hundred paces. The artillery carts (p'ogŏ 砲車) were in the middle of the line of battle, and they shot hwasŏkp'o (火石砲: flint cannon balls?) also for a distance of 200 paces. When the two battle lines came close together, then they shot bows and crossbows/arrows and cannon balls from the midst of the line (when they) of battle. ~~when crossbows and stones~~ came close to the gate of the line

24:16b)

out to attack. When (the enemy) engaged the line of battle, then they sent out the cavalry to launch a surprise attack on both flanks (yen-chi 掩擊). Also to gather up your line of battle and launch an attack in pursuit (拔陣追擊), or when you retreat slightly and (your troops?) come into the line of battle (reform into a line of battle?) to take a little rest--both in advancing and retreating, (the carts) are of advantage and convenience. Whether you are waiting for an opportunity or going out to attack, if you ~~thing~~ are worrying about obstacles, you have a plan to alleviate the difficulty in advance (by using these carts?).

-indented section: Chiu Chiün said: The carts devised by Wei Sheng is a system we can no longer see (study) today; nevertheless, in general there were 3 (types of carts), called the ju-i chan-che (如竟戰車), the nu-che (弩車: crossbow carts), and the p'ao-che (炮車: cannon carts). At the present time we do not have to copy this system completely. We can sincerely investigate the causes (main principles) and use our will to adjust it and combine the 3 (types of carts) into a single system and build a cart that men can push and that several men can pull?(manage). These will have wooden shields, hanging blanket & covers, spears lined up, and cannons on them, and every cart should be able to protect several

p.471, 24:16b) dozen men, in general (roughly) like those made by Wei Sheng.

~~Along~~ At every border walled town we should provide ~~3x~~ 300 to 500 carts, and every year during the period when the land is cultivated, you can move the carts to the fields and leave them there, to protect the officials while they cather in the crop. And ~~it~~ during wartime they can be used as ^{frontline} ~~camp~~ living quarters ~~where they can~~ or be used to make a camp, or when the crop is being harvested, they can be used to load it.

~~There~~ There is nothing you do in which they won't be of advantage.

(note: ~~this ends~~ this ends the section on military carts)