

THE STUDY
OF THE MAUSOLEUM
OF QIN SHIHUANG

王学理 著

秦始皇陵研究

陵墓工程的营建

长达三十七年的修陵史·设计和施工

丽山园和陵园围墙·酈山陵墓·陵区的地面建筑·从葬坑·陵区陪葬墓·陵园与陵墓结构述要

陵墓和陵园建筑的规模

关于历史上的破坏·立庙和守陵·近现代的调查和保护

陵园文物的重大发现

丰富瑰丽的文物·秦陵铜车马和秦俑兵器的科技成就



The Study
of The Mausoleum
of Qin Shihuang

王学理 著

秦始皇陵研究

上海人民出版社

(沪)新登字101号

责任编辑	虞信棠
封面装帧	孙宝堂
提要英译	周建铤
英文校订	范佳毅

1997.7.8
考
100-232178

秦始皇陵研究

王学理 著

上海人民出版社出版、发行

(上海绍兴路54号)

新华书店上海发行所经销 祝桥新华印刷厂印刷

开本 787×1092 1/16 印张 18.5 插页 11 字数 308,000

1994年12月第1版 1994年12月第1次印刷

印数 1—3,000

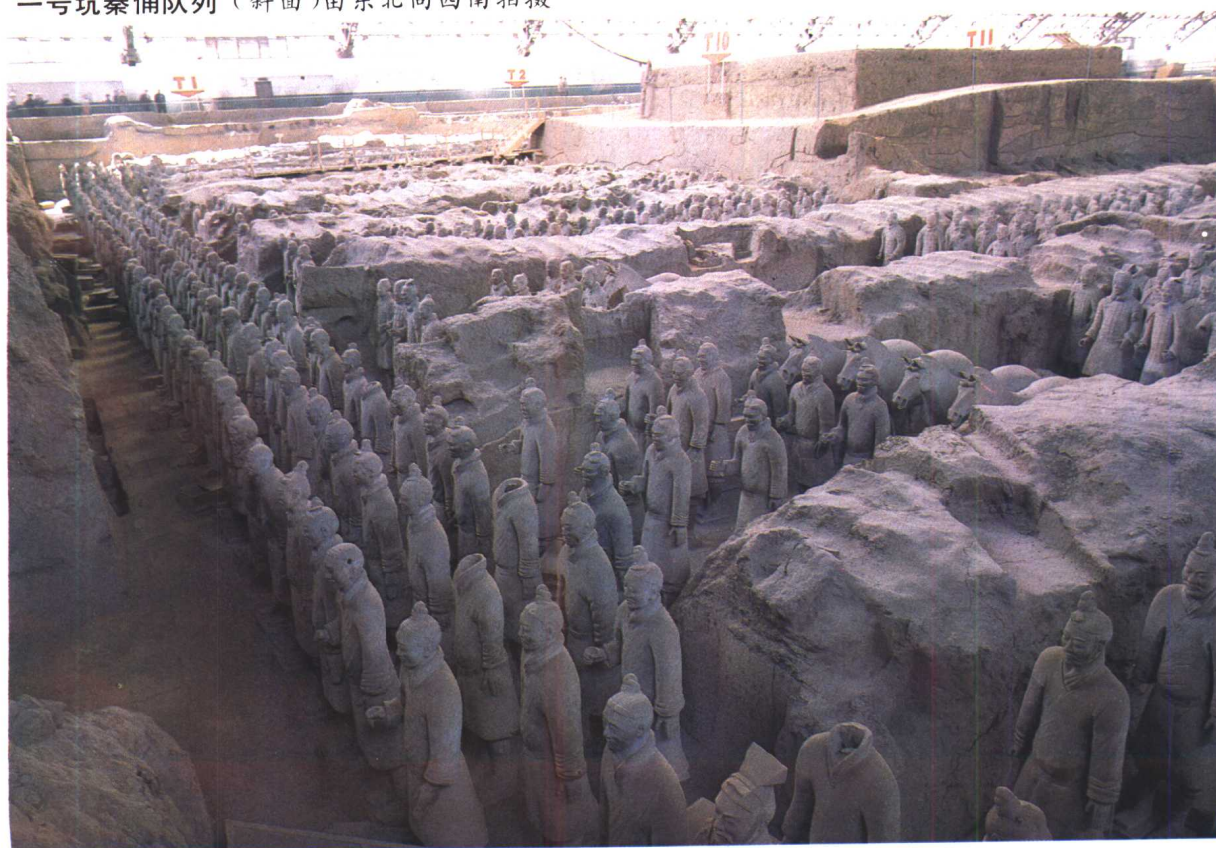
ISBN 7-208-01669-0/K·393

定价 35.00元



秦始皇陵

一号坑秦俑队列（斜面）由东北向西南拍摄





骊山之“望峰”（由始皇陵顶南望）

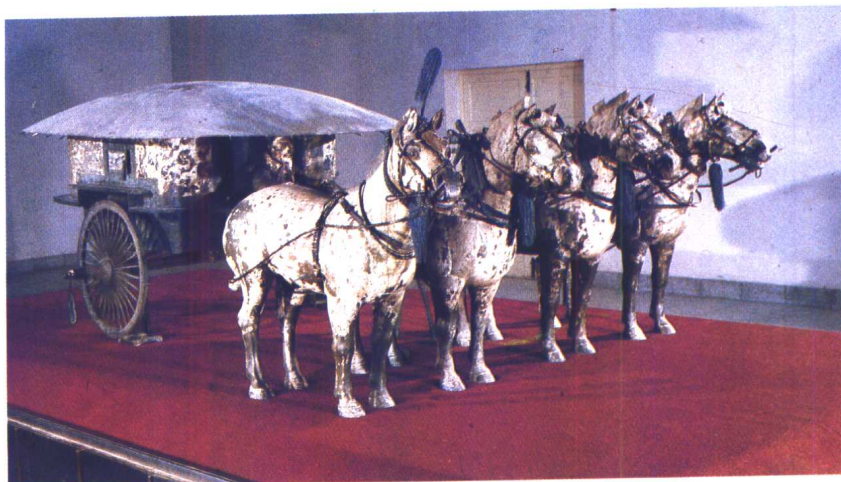


一号坑俑群（正面）



彩绘铜立车

彩绘铜安车



秦始皇陵一、二号
彩绘铜车马全景



错金银“乐府”铜编钟



两诏铜权

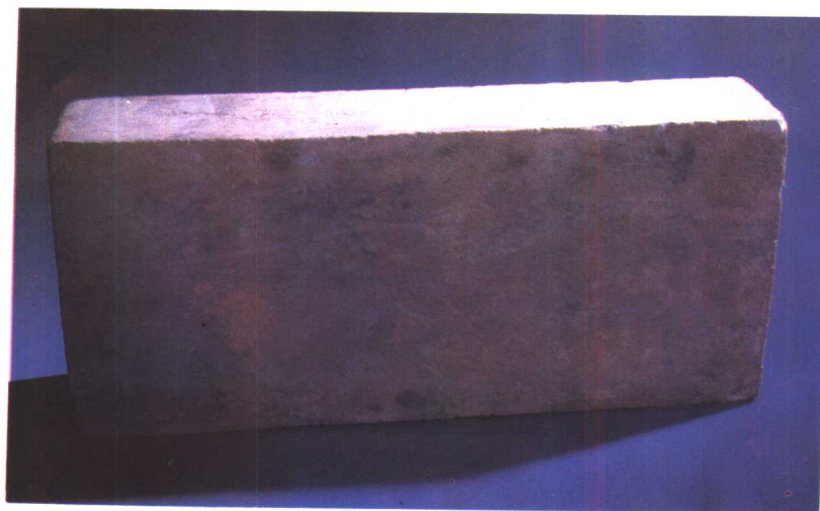




半两铜钱



青铜戈头



空心砖



夔纹大瓦当



束箭遗迹



蹲姿射俑



跏趺坐陶俑（圉人）



挟长剑老将军俑



战车轮迹



免胄束发战袍武士俑头



戴武帟甲俑头



戴长冠铠甲武士俑头



免胄束发铠甲武士俑头

本书提要

秦始皇帝(公元前 259~前 210)姓嬴名政,原是秦国的国王,于公元前 221 年统一了中国,开始称皇帝。他的陵墓位于今陕西省临潼县东的晏寨乡。经过两千多年的风风雨雨,这座用黄土堆起来的陵冢现仍高 51.668 米。原来它被两道城墙围绕着,其外周长可达 6.2 公里。陵东兵马俑阵营坑和陵西彩绘铜车马的出土,使人们对这座神秘的地下之宫产生了渴望揭晓的兴趣。本书援引了陵园发现的考古资料,结合史书记载,进行综合比较研究,力图给史学界和旅游爱好者提供一个比较满意的回答。

(一)

公元前 247 年,只有十三岁的嬴政立为秦王,不久就开始给自己营建陵墓,随后还专门设立了特别行政区——丽邑。如果说这时的劳动力还只局限于秦国的话,到统一全国之后,就以服役的形式从全国各地征调民力了。这些被称做“郿山徒”的人,大体包括了自由民(农民、手工业者和商人)、社会罪犯、替债者和奴隶四种人。

秦始皇陵墓之所以选建在骊山北麓,一是因为它属于秦都咸阳整体规划中的重要内容之一,其所不同之处是从东陵陵区独立了出来;二是因为这里环境优美,早就流传着美丽的神话传说。

陵墓施工是按照原设计图纸进行的。从考古所见,陵墓处于长方形围墙的南半部,其北半部被礼仪性建筑和陪葬墓所占据;陵园东侧依次有兵马俑阵营坑、马厩坑、陪葬墓区;陵园西部则是烧造砖瓦、陵材加工地和修陵人的墓地。说明秦始皇陵园是个由东向西、具备纵深的平面布局。作为一项巨大的土木建筑

工程,它修筑了三十七八年的时间,大致完成了包括挖墓、筑陵、围墙、地面上大型的礼制建筑群、各类从葬坑、陪葬墓、陵园管理人员的食宿建筑和护陵设施等在内的一些项目。

主持陵墓工程的最高中央级官员是丞相,先后有吕不韦、昌平君、隗状、王绾、冯去疾和李斯等人。实际参与具体修建的,是少府和掌握大量刑徒的其他中央部门。他们对修陵工人按行业分工,依技术等级确定领属关系,按军事化组织和管理。

建陵的石材来自渭北的淳化一带大山中,巨大的木材是从今四川、湖北一带运来的。墓内的随葬品多是从全国各地搜集来的,只有兵马俑和砖瓦是在当地烧造的。

(二)

秦始皇陵园范围很大,包括了围墙内外纵横各7,500米、占地约56平方公里的广阔地域。其中南北长、东西窄的长方形围墙有两重套合着。外城墙南北长2,165米,东西宽940米,周长合6,210米。内城墙南北长1,355米,东西宽580米,周长合3,870米。在内城的东北角还附设了一个南北长695米、东西宽330米的小城。城的四面有门,四角有守护的角楼。外城墙基宽14米,估计高约17.7米。内城基宽8.3米,估计高约10.4米。

墓穴是深入地下的上大下小的倒四棱台空体。墓口南北长515米,宽485米。内筑围墙一周称做“方城”,南北长460米、东西宽392米,总长1,704米,墙的高度和厚度各约4米。东墙有5个斜坡门道,其他三面各有一道门。墓壁四面呈阶梯状的内收。墓底东西长160米,南北宽120米。墓的深度经测定有33.18米。在放置秦始皇尸体的这个巨型墓穴里,建筑有豪华的宫室。根据《史记》记载,墓顶上绘有日月星辰,下面塑造着山河地理模型,用机械的力量推动着水银做成的江河湖海,使之流动不息。墓内不但设置有象征中央各部门的衙署,埋藏着大量珍奇的宝贝,而且还点燃着鲸鱼油作成的蜡烛,据说可以长明不灭。

在墓室之外的壁上凿有很深的侧室。墓室四侧筑有斜坡的上下通道。在各条道口上设门,并安装有对外的机弩,以便射杀敢来掘进的盗墓者。

在秦始皇墓上,用土堆起一座呈四棱台体的封土堆,上面还栽着树木。据《汉书》上记刘向的话,经折算原高116米,底边周长2,087.65米。由于两千年

来自自然的和人为的破坏,现高只有 51.668 米,底边也向内收缩成南北长 350 米、东西宽 345 米。

秦始皇陵园区的地面建筑有这么几处:(a)寝殿——陵北侧偏西 53 米处,建筑面积 3,534 平方米,是放置秦始皇生前衣服、帽子,备人祭祀的地方;(b)便殿——寝殿之北,当小城之西到内城之间,建筑遗迹密集,是供始皇灵魂游乐休息的便殿建筑群;(c)食官——造作膳食以供祭祀,位于陵西北的内外城之间,南接西门址的大道;(d)园寺吏舍——作为陵园管理人员的宿办建筑,位于食官遗址之北的内外城之间;(e)鱼池村的官邸、军防建筑——位于陵东北五里;(f)安沟建筑群遗址——位于陵国外东北七里。

经考古证实,始皇陵园的地下有很多从葬坑,像围绕陵墓的四周有很多“御府”坑,陵西墓道上就出土过两辆彩绘的四马铜车;陵西内外城之间当西门之南,除有两处大型的马厩坑外,还有埋藏珍禽异兽的苑囿散坑几十个。而陵国外东侧除百多座马厩坑外,莫过于埋有七千左右的兵马俑阵营坑了。

目前探明的陪葬墓区有三处;即:陵园东墙外一处,南北并列有 17 座墓;小城内 20 多座墓;西门北的内外城间分布有多种墓形的墓葬区。此外,修陵人的墓地分别位于陵国外西北的赵背户和姚池头一带。

(三)

修陵墓的人群是在强制之下劳动的,其所创造的劳绩也是惊人的,如土方量 50,714,945.79 立方米、墓壁砌石面积 55,647.2 平方米、建筑铺瓦 300 万平方米以上,谁能想象出它是怎样被完成的?即以兵马俑坑而论,用条砖就有 230,350 块、木材 50,914.3 立方米、芦苇 19,469.3 平方米。劳动强度之大,只要通过埋葬时从鱼池掘土、运送陵前和夯筑封土三项,就可算知每月即有四五十万人在陵区从事着繁重的劳动。工程是夜以继日的,加之衣、食、住条件恶劣,其死伤当是极为惨重的。

“郿山徒”面临生活的困苦、鞭笞的折磨、疾病的痛苦、死亡的威胁,就从消极怠工、破坏设施、逃亡,到起而反抗。随着东方农民起义军进入关中,陵墓的后期工程也随之而中止。

(四)

很多文献记载,秦始皇陵墓曾遭到盗掘、焚烧而彻底破坏。这主要集中在秦

末的项羽、五胡十六国时期的石虎和唐末的黄巢三人身上。但事实证明这只是一些误传。论及破坏,实际是项羽等烧毁了地面建筑、掘走了地下的从葬设施、劫取了陵园的财物等三个方面。由汞测量知,始皇墓还没有遭到大的破坏。

历史上很多统治者还是重视对始皇陵墓保护的,像西汉初刘邦曾下令派人守陵,北魏孝明帝明令在陵周围五十步内不准耕种。隋炀帝下令在帝王陵墓附近安排十户农民守陵。北宋尤为重视守护,除守陵、祭祀,还培土修筑。但是,在多数情况下,陵墓还是无人管理,任其毁坏,致使陵冢高度急骤下降,陵墓也蚕削严重,竟变成了现在的样子。

真正切实保护秦始皇陵墓的工作,还是在1949年新中国成立以后。1987年12月,这个陵墓已被联合国教科文组织列入《世界遗产清单》,成为世界人民共有的文化财富。

(五)

陵园出土的文物内容丰富,数量甚多,其中不少又是希世的珍品。

陵西出土的彩绘铜车、铜马和铜俑,真实地再现了秦宫中用车的情况。七千个左右兵马俑以阵营的形式出现,气势磅礴,更是世界群体文物中的奇观。

建筑材料包括着多种规格的砖(条砖、薄方砖、杂砖)、瓦类(板瓦、筒瓦、脊瓦等)、管道(陶质的和石质的)。其中的花纹砖和瓦当上的图案规正、花纹多变,很富艺术趣味。

工程用具见有起土用的铁镢、铲、铧,木工用的铁斧、凿、刀、削,加工硬材料用的铁锤、螯、铤、钩等。至于工程材料和构件,更是多种多样。

生活器具有铜的甑、釜、釜、勺、盆、钟、镜、匱,铁的灯、釜,陶的盆、罐、盒、壶、甑、缸等。而青绿釉瓷罐的发现,对追溯耀瓷系统的渊源是很有意义的。作为金银的装饰品、玉器更是精美无比。

秦俑铜兵器是出土文物中组合最完整的一种,包括了远射程器的弓弩及白刃格斗的戈、矛、戟、铍等长兵器,还有近身防卫的短兵器——剑。

其他文物如“乐府”铜编钟、铜铎、铜权、“半两”铜钱、印章等,均具极高的学术价值。

Summary

Emperor Qin Shihuang, whose family name is Ying and first name is Zheng, used to be the king of the Qin kingdom. In 221 B.C., he unified China and began to be entitled "Emperor". His tomb is situated in Yan Zhai Township in the east of Lin Tong County, Shaanxi province. Having gone through the wind and rain for more than 2000 years, the mausoleum, piled up with yellow soil, is still 51.668 metres high. It used to be encircled by two rounds of city walls. The outside one had a perimeter of 6.2 kilometers. The excavation of the vaults of terra cotta armies and soldiers to the east of the mausoleum as well as the painted bronze chariot to the west of the mausoleum aroused the interest of the people to uncover the mystery of the underground palace. This book has its references from the archaeological materials uncovered in the mausoleum as well as from history records. By making a comprehensive comparative study, this book hopes to provide a comparatively satisfactory answer to the historical circle and also to people who are fond of tourism.

(I)

In 247 B.C., the merely 13-year-old Ying Zheng was made king of the Qin kingdom. Before long, he began to build a mausoleum for himself. Later, a special administrative region named Li Yi was established. The labour forces for the construction of the tomb was restricted within the Qin Kingdom at this time. However, after the unification of the whole country, labour forces were requisitioned throughout the country in the form of corvée labour. These people included freemen (peasants, handicraftsmen and businessmen), criminals, debtors and slaves.

The mausoleum of Qin Shihuang was built at the northern foot of the Li Shan Mountain, firstly, because it was one of the important contents of the overall plan for the construction of Xian Yang, capital of the Qin Kingdom. But this mausoleum was separated from other royal tombs in the eastern tomb area. Secondly, because it has a very beautiful environment out of which a lot of beautiful fairy tales were nourished.

The basis of the mausoleum was constructed on the original drawing. Archaeologists said that the mausoleum was situated to the south of the rectangular enclosing wall. To the north of the enclosing wall were some ritualistic buildings and some accompanying tombs; The east of the mausoleum area was successively occupied by pits of terra cotta warriors and horses, as well as of stable; To the west of the area of accompanying tombs was the place for the baking of bricks and tiles and for the processing of tomb materials as well as the graves of

the tomb builders. All these show that the mausoleum of Qin Shihuang is a plane figure which goes from east to west and which develops in depth. As a gigantic construction, during the 37–38 years of construction, the projects include digging of the tomb, building of the mausoleum, the enclosure, the large-scale ritualistic constructions above the ground, the various kinds of pits and accompanying tombs, the construction for the board and lodging of the administrative personnels of the mausoleum, as well as some protective equipments of the mausoleum.

The most senior officials who were in charge of the construction of the mausoleum were the prime ministers, and they were successively Lu Buwei, Chang Pingjun, Kui Zhuang, Wang wan, Feng Quji and Li Si. The actual participants were called Shao Fu as well as some central departments which control a great number of criminals. They practiced a militarized organizational management by dividing the constructors according to their trades, and setting the leadership according to their technical grades.

The stones needed for the mausoleum were mined from the mountains in the Chun Hua area to the north of the Wei He River. The huge pieces of wood were transported from today's Sichuan and Hubei areas. And the burial objects were collected from the various places of the country. Only the terra-cotta warriors and horses as well as the tiles and bricks were baked in the local area.

(II)

The mausoleum of Qin Shihuang occupies a large area, including the 7500 metre long area in length and breadth inside and outside the enclosure, which is an area of 56 square kilometres. The rectangular enclosures, of which the south–north side is longer than the east–west side, have two layers. The south–north side of the outer one is 2165 metres long, and the east–west side is 940 metres wide. The total perimeter is 6210 metres. The north–south side of the inner one is 1355 metres long, and the east–west side is 580 metres wide. The total perimeter is 3870 metres. At the northeast corner of the inner city, there established a small city, of which the north–south side is 695 metres long and the east–west side is 330 metres wide. There are gates at the four sides of the small city, and at the four corners there are defensive towers. The base of the outer city wall is 14 metres wide, and the height is approximately 17.7 metres. The base of the inner city wall is 8.3 metres, and the height is about 10.4 metres.

The cave of the tomb is an upside down pyramid dug deep into the earth. The north–south side of the upper opening of the cave is 515 metres long, and is 485 metres wide. Inside the cave there is a round of enclosing wall called "Square City", of which the south–north side is 460 metres long, the east–west side is 392 metres wide, and the total length is 1704 metres. The wall is four metres high and thick. There are five leaning gateways on the eastern wall, and one gateway for the other three sides. The bottom of the tomb has an east–west side of 160 metre long and a north–south side of 120 metres wide. The depth of the tomb was determined to be 38.18 metres. Inside this gigantic mausoleum cave where Qin Shihuang's body was stored, there built magnificent palace rooms. According to a book named <Historical Record>; On the roof of the tomb cave, there painted stars, the sun and the moon. Down on the bottom

were models of mountains, rivers and landscapes. The rivers, lakes and the sea made of mercury, which were pushed forward by mechanical forces, flow incessantly. Inside the tomb cave, there are not only symbols for the various departments of the central government, but also a great deal of rare jewellery. Moreover, candles which are made of whale oil are lit, which were said to be ever-lasting and will never extinguish.

There are side rooms on the walls outside the tomb. leaning passages were built on the four sides of the tomb cave. At the opening of each passage there built a gate, on which there fixed an outward trigger, used for the purpose of shooting any tomb robber who dares to dig into the tomb cave.

Above the mausoleum of Qin Shihuang, people piled up a pyramid-shaped mound with earth, on which there planted trees. According to <Chronicles of Han Dynasty>, the original height of the tomb mound was determined to be 116 metres, and the bottom perimeter is 2087.65 metres. Because of natural and artificial destruction over 2000 years, the height of the mound is now only 51.668 metres, and the bottom sides were also shrunk inward with a south-north side to be 350 metres long and the east-west side to be 345 metres wide.

The constructions above the ground in Qin Shihuang's mausoleum are the following: (A) Sleeping hall, located to the north-west side of the tomb, with a construction area of 3534 square metres, is the place where clothes and maps, which Qin Shihuang used before his death, are stored, and where people go to sacrifice; (B) Living quarters, to the north of the sleeping hall, where construction sites are densely spotted, is a group of living-quarter constructions for the recreation and rest of Qin Shihuang's soul; (C) Dining hall, for the offering of dinner to sacrifice, located between the inner and outer city walls to the northwest of the tomb, and which is connected with the road outside the west gate; (D) Living quarters of tombs keepers, used as living quarters of tomb administrative personnels, located between the inner and outer cities to the north of the Dining hall; (E) Official premises and military constructions in Yu Chi Village, located five Lis to the north-east of the tomb; (F) Construction sites in An Gou Village, seven Lis to the north-east outside the Mausoleum. Archaeology proved that there are also many accompanying tombs under the ground in Qin Shihuang's mausoleum, like the many "Imperial Pits" around the tomb. Two painted bronze carriages were excavated on the tomb passages to the west of the mausoleum. To the south of the west gate, between the outer and inner cities to the west of the tomb, apart from two gigantic stable pits, there also scatter tens of animal pits where rare animals were buried. To the east of the mausoleum, apart from the more than a hundred stable pits, there are nothing more than the camp vaults where the 7000 terra-cotta warriors and horses were buried.

At present, three areas of accompanying tombs were uncovered, which are respectively, the one outside the eastern wall of the mausoleum, where seventeen tombs stand side by side from the north to the south; more than twenty tombs inside the small city; the tomb area where tombs take many shapes between the inner and the outer cities at the northwest gate. In addition, the graves of tomb-builders are located respectively at the Zhao Beihu and the Yao Chitou areas to the northwest outside the mausoleum.

(III)

Mausoleum builders laboured under compulsion. The achievements that they made were marvelous. For example, the amount of cubic meter of earth is 50714945.79 cubic metres; the area of stones which covered tomb walls is 55647.2 square metres; the number of tiles used during the construction reach more than 3000000 square metres who can imagine how it was completed. Take the pits of terra-cotta warriors and soldiers as an example. The rectangular bricks used are 230350 pieces, and timber 50914.3 cubic metres, reed mats 19469.3 square metres. The labour is so much intensified that it can be figured out from the following that some 400000 to 500000 people undertook heavy work in the tomb area each month, digging out earth from the fish pond for burying things, sending the earth to the mausoleum and tempering the earth as well as covering the tomb with earth. The project was proceeding day and night, and the conditions of clothing, living and feeding were bad. Therefore, the labourers suffered heavy casualties.

These "Li Shan People" were confronted with the difficulties of life, the torment of being whipped, the suffering of illness and the intimidation of death. They went slowly during the construction, damaged the facilities, ran away, until rebelling. With the peasants uprising forces in the east marching into the Guanzhong area, the later period of the construction of the mausoleum came to a stop.

(IV)

According to historical records, Qin Shihuang's mausoleum used to be dug, robbed, burned and destroyed completely. All these were reflected on Xiang Yu in late Qin dynasty, Shi Hu during the Sixteen States Period and Huangchao in late Tang Dynasty. But facts proved that these were simply misinformation. Talking about damage, the fact consisted of three aspects that Xiang Yu and other people burned down the constructions above the ground, dug the burial facilities and robbed the property of the mausoleum. From a survey on mercury, it can be determined that Shihuang's mausoleum did not experience any radical damage.

Many rulers in history attached importance to the protection of Qin Shihuang's tomb. For example, early in West Han Dynasty, Emperor Liubang issued an order to send people to guard the mausoleum. Emperor Xiao Ming in North Wei Dynasty prohibited any cultivation and plantation within fifty steps around the mausoleum. Emperor Sui Yang of the Sui Dynasty issued an order to arrange for ten peasant families to guard the tombs near the imperial tombs. The North Song Dynasty took the guard of the tombs very seriously. Apart from guarding the tomb, offering sacrifices, they also added up some more earth and renovated the tomb. However, under most circumstances, the tomb was not under administration of any people, and was damaged recklessly, that the height of the grave declined sharply. Moreover, the base of the tomb was also nibbled seriously until now.

The actual action to protect Qin Shihuang's tomb started to be taken since 1949 when new China was founded. In December 1987, this mausoleum was listed on the Detailed List of