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AGRICULTURE
IN THE GUAN ZHONG AREA OF CHINA
FROM THE LATE WARRING STATES
TO THE END OF WESTERN HAN

By

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TO

MY PARENTS
AND XIAO-XIONG

SYNOPSIS

The goal of my research was to depict the state of agriculture in the Guan Zhong area of China from approximately the mid-third century through the mid-first century B.C.

Various kinds of source materials, most of which have an implicit or explicit relationship to the Guan Zhong area enabled me to research different aspects of contemporary agriculture. These included the administration of agriculture, agricultural dwelling places and other buildings, and agricultural activities.

Available written materials provided valuable information on the farmers' obligations to the government and government attempts to promote agricultural production via government policies and designated officials. They also contained many references to how and when agricultural activities were conducted.

Information on the farmers' dwelling places and surroundings, as well as some of the activities in which they engaged, was obtained from Han tomb models of farmhouses, farming machinery, and village sites.

I concluded that it was possible to make an in-depth study of the state of agriculture during the Qin/Han period if one focused on the Guan Zhong region.

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PART I: INTRODUCTORY CHAPTERS

Chapter 1 Introduction

The purpose of my research is to depict the state of agriculture in the Guan Zhong area of China (the region west of the Hankou Pass that incorporates much of modern Shaanxi) from approximately the mid-third century through the mid-first century B.C. Recent finds and late Warring States and Western Han agricultural texts make it possible to not only determine how agriculture is administered, but also to depict the physical environs of the Guan Zhong farmers and the activities they engage in throughout the agricultural year.

There are number of major reasons why I chose my research topic.

First, there is no previous study that focuses on agriculture in the Guan Zhong region from the late Warring States through the Western Han.

Second, studies of the above period frequently gloss over agriculture, especially agricultural administration and the farmers' situation. With the recently discovered bamboo tablets from Yun Meng and other sources at my disposal, I wanted to investigate a little explored area to provide a new angle from which to view the historical period in question.

Thirdly, there is a sufficient number of primary sources that were written in or refer to the Guan Zhong region, as well as many secondary sources that refer to different aspects of my subject matter.

Although there were a number of valuable sources at my disposal, I encountered a number of difficulties.

One difficulty is that it is sometimes difficult to distinguish actual portrayals of agricultural administrators from idealized ones. While depictions of the agriculturally-related roles of higher officials often contain a degree of symbolism, more realistic accounts of lower agricultural

officials are limited.

Another difficulty is that many passages in the annals of the **Han Shu** frequently do not refer to place names when mentioning events or laws that affect the farmers. Though some appear to affect the farmers throughout China, others do not. Thus, for example, accounts of numerous droughts, famines, and earthquakes are often not easy to assess since it is uncertain how many of these affected the Guan Zhong farmers.

Sources relevant to my research include previous scholarship and primary source materials. Previous scholarship includes works focusing on farming activities, agricultural history, government administration, historical geography, and history.

My primary sources include the recently excavated Qin bamboo tablets from Yun Meng Shui Hu Di, the Lū Shi Chun Qiu essays, and the Fan Sheng-zhi Shu. The first two are related to the earlier part of the period investigated and the third to the later part.

The Qin bamboo tablets throw light on how certain types of agricultural and agriculturally-related activities are administered by the government and illustrate the farmers' place in society.

The Lū Shi Chun Qiu essays present detailed information on farming methods and the specifications of farming implements.

The Fan Sheng-zhi Shu provides a rather detailed picture of soil preparation, sowing methods, and other farming procedures with respect to major crops. This text frequently assigns these types of activities to various times of the calendrical year or associates them with specific natural phenomena.

In addition to the above principal sources, there are other materials. These include historical texts (namely, the Shi Ji and the Han Shu), and fragments of agricultural

treatises dating from the late Warring States and Western Han that provide important information on agricultural administration and farming in the Guan Zhong region.

One kind of primary source is non-literary, but serves as important evidence of some farming practices described in literary texts, as well as provide light on how the farmers lived. This refers to Han tomb models. Many of these provide visual models of the farmers' dwelling places, the villages in which the farmers lived, and different kinds of farming practices, thereby providing a valuable source of information.

My selection of a period, the late Warring States through the Western Han, has been dictated by the nature of the sources available. Similarly, for location, the three principal sources seem to have an explicit or implicit relationship to the Guan Zhong area. Evidence from supporting primary sources without clear regional reference will be assessed carefully to preserve as far as possible the validity of my reconstruction for a particular location.

Approach to the Investigation:

My thesis is divided into five major parts. In the first part, I present relevant background material. I introduce major source materials (chapter 2) and discuss special considerations (chapter 3). Parts two, three, four, and five contain the heart of the thesis. In parts two and three, I discuss how agriculture was administered during the period in question, thereby emphasizing the relationship between the state and the farmer. This includes topics, such as the farmers' political obligations to the government and government policies promoting agricultural production (chapters 4-11). Part four provides information on the villages in which the farmers lived (chapter 12). The last part relates the activities in which the farmers engage throughout the agricultural year. My thesis closes with the appendices, bibliography, and glossary of Chinese terms.

Chapter 2 Major Source Materials

An overview of major source materials will familiarize the reader with the nature of these texts and help him follow the discussions in part II. These sources include many of the bamboo tablets discovered at Yun Meng Shui Hu Di, the Lū Shi Chun Qiu essays on agriculture, relevant chapters in the Han histories the Shi Ji and the Han Shu, relevant Guan Zi chapters, fragments of agricultural treatises, Han tomb models, and calendrical sources.

2.1 The Yun Meng Bamboo Tablets

Many of the sets of bamboo tablets or strips found in the grave of a lower official named Xi at Yun Meng Shui Hu Di are valuable in elucidating government policies with respect to the farmers, the farmers obligations to the government, the affects of the Qin social system on human relationships, and regulations concerning specific, farming activities in the agricultural year. These sets of tablets include the Tian Lū, the Ji Yuan Lū, the Cang Lū, the Yao Lū, the Jin Bu Lū, the Qin Lū Za Chao, and the Fa Lū Da Wen. The first four are part of what the Wen Wu editors refer to as the Qin Lū Shi Ba Zhong, or the Eighteen Kinds of Qin Laws (or Statutes). As a matter of convenience, I will refer to the page numbers in Wen Wu's publication , Shui Hu Di Qin Mu Zhu Jian. These tablets appear to date from approximately 250 B.C. to 221 B.C. because they indicate the influence of Shang Yang's reforms in certain areas and pre-date the Qin dynasty, as shown by references to Qin Shi Huang as the King of Qin, the avoidance of the character "zheng" (the King of Qin's personal name),³ and references to kingdoms outside Qin as "xia" or "zhu guo".

2.1.1 The Tian Lū

In the Tian Lū tablets, a number of related topics are briefly discussed. These include the government's involvement in agriculture via officialdom and the enforcement of government regulations.

Various agricultural officials are responsible not only for overseeing different kinds of agricultural and agriculturally-related activities, but for reporting the results or outcome of these activities in dispatches sent to the appropriate government offices.

2.1.2 The Ji Yuan Lū

The Ji Yuan Lū focuses on animal husbandry activities. It points up the government's involvement in agricultural activities in a number of respects. This includes the government's role in regulating the timing of certain agriculturally-related activities, and illustrates the borrower/lender roles of the government and the farmers.

2.1.3 The Cang Lū

Procedures involved in certain seasonal farming activities, and the lending of government slaves to farmers are of interest in the Cang Lū. There are specifications concerning planting, seed storage, and harvesting methods.

2.1.4 The Yao Lū

As its title suggests, the Yao Lū is important for information it conveys on the corvee system in Qin. This involves the responsibility of the people conscripted to perform corvee duty, volunteer corvee labour, and other related aspects.

2.1.5 The Jin Bu Lü

The Jin Bu Lü sheds light on the government's involvement in agriculture in terms of the lending and selling of tools.

2.1.6 The Qin Lü Za Chao

The Qin Lü Za Chao, a set of miscellaneous laws or statutes that focuses on the conduct of civil and military officials, brings to the fore the question of freedom of the common people, who are composed largely of farmers. In this context, it reveals the importance of using population registers as a means of controlling the movements of the people.

2.1.7 The Fa Lü Da Wen

Questions and answers on various aspects of criminal law encompass a wide range of topics. Of major concern here is the relationship between the "shi wu" system of social grouping and community responsibility.

2.2 Agricultural Essays in the Lü Shi Chun Qiu

The Lü Shi Chun Qiu is attributed to Lü Bu-wei, who according to the Shi Ji was a native of Yang Zhai in the Ying Chuan prefecture of Henan, and a former merchant. He helped Zi Chu, Qin Shi Huang's father, to the throne as An Guo-jun's heir and provided him with guidance as his prime minister. When Zi Chu's (i.e., King Zhuang ~~Xiang~~) son Zhuang became King of Qin in 246 B.C., Lü Bu-wei became his prime minister. However, due to political intrigue, Lü Bu-wei lost the King of Qin's favour and committed suicide by drinking poisoned wine.^{Ob}

Lü Bu-wei compiled the *Lü Shi Chun Qiu* several years before he died in approximately 240 B.C.^{Oc} The writings it contains appear to have been written by scholars of Qin.^{Ad} The sections of the *Lü Shi Chun Qiu* that deserve attention are four essays focusing on different aspects of farming activities. These chapters are entitled, the *Shang Nong*, the *Ren Di*, the *Bian Tu*, and the *Shen Shi*. I will refer to them as they appear in the *Si Bu Bei Yao* edition of the *Lü Shi Chun Qiu*.

2.2.1 The Shang Nong

The *Shang Nong* chapter is valuable not only because it seems to indirectly project a message to the Qin ruler of the importance of agriculture to the welfare of a kingdom, but because of the prohibitions it contains that affect both the farmer and farming, i.e., the five "Prohibitions Concerning the Fields" (or "Ye Jin") and the four "Seasonal Prohibitions" (or "Si Shi Zhi Jin").

2.2.2 The Ren Di

The *Ren Di* provides information on procedures involved in certain farming activities in Qin during the late Warring States. This includes lengthy references to tilling methods, weeding, and major farming implements. Such references help us visualize how the farmers actually till the soil.

2.2.3 The Bian Tu

Detailed ploughing and sowing methods are explained in this essay, providing the reader with an understanding of the concerns of the Qin farmer at the beginning of the farming season.

2.2.4 The Shen Shi

Though very brief, the **Shen Shi** is useful as advice to farmers (transmitted to them via lower overseers). It tells how to examine seven major types of grains at harvest time to determine whether they are sown on time, too early, or too late.

2.3 Relevant Shi Ji Chapters

The **Shi Ji** is attributed to the court historian of Emperor Wu, Si Ma-qian. Si Ma-qian lived from approximately 145 B.C. to 90 B.C., and completed the **Shi Ji** shortly before his death.^{oe} The **Shi Ji** is noted for the accuracy with which it records events during the Qin and Han dynasties.^{of} Six chapters in the **Shi Ji** are relevant to my research, to various degrees, for their historical content. These are the **Qin Shi Huang Ben Ji**, the **Gao Zu Ben Ji**, the **Xiao Wen Ben Ji**, the **Xiao Jing Ben Ji**, the **Xiao Wu Ben Ji**, and the **He Qu Shu**. I will refer to them as they appear in the **Zhong Hua** edition.

2.3.1 The Qin Shi Huang Ben Ji

The **Qin Shi Huang Ben Ji** chapter is important because it provides essential historical background of Zheng's (i.e., Qin Shi Huang) ascendancy to the throne as king of Qin, his policies as the king of Qin, the battles he fights in uniting the warring kingdoms, his policies after he becomes emperor of China, and his son Er Shi's reign.

The material dealing with Qin Shi Huang's policies both before and after he becomes emperor are important because they frequently involve measures affecting the farmers, as well as other strata of society. These concern the treatment of people in defeated territories, providing aid to people in areas struck by natural disasters, and corvee policies.

2.3.2 The Gao Zu Ben Ji

The Gao Zu Ben Ji provides detailed information on Gao Zu's (i.e., Liu Bang) background, focusing on the battles in which he engages from the time he is the Magistrate of Pei through the end of his reign as emperor. Of importance here is the fact that the farmer's life appears to undergo little change during Gao Zu's reign (approximately 206 B.C.-194 B.C.). There is little information on Gao Zu's policies as emperor, but much information on the battles in which he engages against the Xiong Nu and kings of enfeoffed principalities.^{9j} Such information suggests that the battles force the government to heavily tax the farmers and send a larger percentage of crops to the fighting troops. However, there is no such indication of this.

2.3.3 The Xiao Wen Ben Ji

The Xiao Wen Ben Ji chapter narrates events during the reign of Emperor Wen (179-156 B.C.). This reign begins with the destruction of the Lü family that rose to power under Empress Lü's influence.^{Oh} During this reign, there are attempts made to encourage agriculture and improve the farmer's situation after years of famine, droughts, and floods.^{Oi} This includes the repealing of land taxes in the thirteenth year of the first reign period, the emperor's symbolic participation in agriculture, and the repealing of two Qin criminal laws.

2.3.4 The Xiao Jing Ben Ji

This brief account of Emperor Jing's reign (156-140 B.C.) provides basic historical background focusing on the political situation, important political personages, and the general

state of affairs. There are many passages concerning the "Rebellion of the Seven Kingdoms" (154 B.C.), Xiong Nu attacks, and natural disasters, such as the coming of locusts in the ninth month in the third year of the reign period "zhong yuan".^{0j} However, there is no reference to the farmer's situation. For this, it is necessary to see the Jing Di Ji chapter of the Han Shu.

2.3.5 The Xiao Wu Ben Ji

The earliest historical text dealing with Emperor Wu's reign is the Xiao Wu Ben Ji chapter. However, this text largely ignores the political situation during Emperor Wu's reign. Instead of focusing on government policy, military campaigns, and other like topics, this text emphasizes the emperor's ceremonial role. There are many passages concerning the details of imperial sacrifices, such as those made to Hou Ji and Tai Yi, as well as passages concerning Emperor Wu's search for an elixir of life.

2.3.6 The He Qu Shu

The building of canals for transport and irrigation, and the fording of the Yellow River are the focus of the He Qu Shu. Si Ma-qian begins by referring to the legendary Emperor Yu as the expert forder of the Yellow River before chronologically relating the building of various canals and the repairing of breaches in the Yellow River from the late Warring States through Emperor Wu's reign.^{OK}

Canals built in the Guan Zhong area are extremely influential in irrigating large tracts of land and, consequently, making Guan Zhong more fertile and capable of producing higher crop yields.^{ol} Thus they have a positive influence on the farmers' lives.

2.4 Relevant Han Shu Chapters

The Han Shu was written during the Eastern Han (approximately 90 A.D.) by Ban Gu. Unlike the Shi Ji, it is confined exclusively to one dynasty, the Han. The Han Shu provides important historical source material on the Western Han and supplements the Shi Ji. The chapters most important to my research are the annals recording major events from the reigns of Emperor Hui through Emperor Xuan.¹ The seven accounts in question emphasize similar themes and concerns, as will be discovered by brief discussions of these texts individually. Though not as significant, the Shi Huo Zhi chapter that deals with food and commodities is also of value. All references to the Han Shu are taken from the Han Shu Bu Zhu, edited by Wang Xian-qian and published by Zhong Hua.

2.4.1 The Annals

2.4.1.1 The Hui Di Ji

The Hui Di Ji chapter records major events that take place during Emperor Hui's reign (194-187 B.C.) Among these events are those that have a direct bearing on the farmers and their families. These concern the permission granted to ransom oneself from a harsh punishment, corvee labour, untimely natural phenomena, and government interference into the people's personal lives.

2.4.1.2 The Gao Hou Ji

The reign of Emperor Gao Hou (187-179 B.C.) is dominated by Empress Lü, Gao Zu's widow, as was the reign of Emperor

¹ Much of the account of Gao Zu's reign is copied from the Shi Ji, and thus will be considered as a Shi Ji text.

Hui.^{1a} During this time many natural disasters are recorded. These include not only earthquakes, but floods. The Han River and the Yangtze River flood Han Zhong prefecture in Northern Sichuan more than once.^{1b}

In addition to natural disasters, a reference to the building of a wall near Chang An at Gao Ling, the site of Gao Zu's grave, suggests the conscription of a large number of people.^{1c}

2.4.1.3 The Wen Di Ji

This text can be considered the Han Shu version of the Shi Ji chapter the Xiao Wen Ben Ji. It presents a similar picture of the political situation with variations in context, wording, and style. It alludes to the same government policies that encourage agriculture and benefit the people as the Xiao Wen Ben Ji. However it sometimes provides different explanations for these policies.

2.4.1.4 The Jing Di Ji

This account of Emperor Jing's reign (156-140 B.C.) supplements the Shi Ji account. The Jing Di Ji chapter records efforts made by the government to encourage agricultural production and improve the state of affairs after years of famine, as well as the type of information found in the Xiao Jing Ben Ji chapter of the Shi Ji.

2.4.1.5 The Wu Di Ji

Emperor Wu's reign (140-86 B.C.) is the climax of the Western Han in terms of China's territorial expansion. However intense fighting with the Jiang barbarians (in the south) and the king of Korea, as well as many campaigns against the Xiong Nu in the northeast, result in a depletion

of government funds and the exhaustion of the people. Numerous earthquakes, floods, and droughts also cause human suffering and a decrease in crop yields (that increased in the earlier part of Emperor Wu's reign).

In the early period of Emperor Wu's reign, a number of government policies are enacted that positively affect the farmers. For instance, poor farmers living near the capital are allowed to graze their cattle in the imperial pastures from the third year of the reign period "jian yuan".^{1d} There is also the building of transport and irrigation canals.

2.4.1.6 The Zhao Di Ji

Like Emperor Gao, Emperor Zhao (86-73 B.C.) inherits the throne as a minor. From his father, Emperor Wu, he inherits an empire exhausted from many years of war and still threatened (though to a lesser degree) by the Xiong Nu. In an effort to encourage agricultural production and help the people recover from periodic floods, and droughts, he distributes grain rations and reduces taxes.^{1e}

2.4.1.7 The Xuan Di Ji

During the reign of Emperor Xuan (73-48 B.C.), the last of the Han emperors to maintain a "mausoleum town" (Thompson, 1987, p.18), there are continued droughts and poor crops. Among events relevant to the farmer during this period of decline are a decrease in the amount of required corvee duty and seasonal prohibitions.^{1f}

2.4.2 The Shi Huo Zhi

The Shi Huo Zhi provides many insights on government policies and farming procedures in its discussions of food and commodities from the Spring and Autumn period through the Western Han. This is particularly true where good government policy, corvee service, canal building, and the "dai tian" system of farming are concerned.

2.5 The Fan Sheng-zhi Shu

The Fan Sheng-zhi Shu was written by the official of agriculture, Fan Sheng-zhi, between the years 32 B.C. and 7 B.C.^{lg} Though this text was written after 50 B.C., it was written close enough in time to provide an accurate picture of farming activities during Emperor Xuan's reign. The Fan Sheng-zhi Shu is one of the nine agricultural texts listed in the bibliography of the Han Shu.^{lh} Because the eighteen chapter text was lost by the Southern Sung, only fragments of it exist. These are preserved in the Qi Min Yao Shu, a fourth century A.D. text that quotes the Fan Sheng-zhi Shu extensively.^{li} However the edition I will refer to here is edited by Wan Guo-ding.

The descriptions of new and existing farming procedures and when they take place are important evidence of what the farmer does and when he does it during Emperor Xuan's reign. Although Fan Sheng-zhi is from Qi, he carries out his official duties in the Guan Zhong area and bases his new techniques on the soil and climate of this area.^{lj} Thus because the Fan Sheng-zhi Shu provides specific evidence of farming techniques in the Guan Zhong region at a relevant period of time, it is indispensable to my research.

Many types of farming activities are referred to in the Fan Sheng-zhi Shu. These include tilling and sowing procedures, irrigation techniques, Fan Sheng-zhi's novel seed

soaking method ("sou zhong fa"), and seed storage. All of these activities are described with precision and in detail.

2.6 Relevant Guan Zi Chapters

The Guan Zi is a product of Qi and not the Guan Zhong area. However, like Guan Zhong, Qi was also progressive and influenced by legalist theories of government introduced by the political theorist, Guan Zhong.^{1k} Thus it is possible to use certain Guan Zi chapters that contain relevant information as source materials. These are the Li Zheng and the Ba Guan. I will refer to them as they appear in the Si Bu Bei Yao.

2.6.1 The Li Zheng

The Li Zheng was written by political theorists and deals with various aspects of establishing a government. It appears to date from the third century B.C., judging from the similarity of terminology with third century texts and its style. I will focus on the section entitled Shan Guan. This lists the responsibilities of five officials, four of whom have agriculturally-related duties (i.e., the Si Kong, the Xiang Shi, the Si Tian, and the Yu Shi).^{1q} In the descriptions of their duties, the interaction of farmers and officials is brought to light, since many of the officials interact with the farmers in carrying out their duties.

2.6.2 The Ba Guan

The grammatical structure of the Ba Guan suggests it is one of the later Guan Zi texts, dating from the late second century B.C., during the reign of Emperor Wu.

Discussions concerning what distinguishes strong from weak kingdoms (or principalities) highlight the ruler's obligations to his people and his responsibility for

encouraging farming activities and protecting agricultural interests.^{1m}

2.7 The Yang Yang Jing

The Yang Yang Jing is a Western Han text that was written during Emperor Wu's reign by Bu Shi, an official from Henan. Bu Shi became wealthy from raising sheep. After ten years he had over one-thousand of them.^{ln} Thus in this text he imparts his knowledge of sheep raising to the reader. I will refer to the Yu Han Shan Fang Ji Yi Shu edition.

This work is significant because it sheds light on sheep raising methods in the Guan Zhong region during a specific period of time (i.e., the mid-second to late first century B.C.) based upon the author's personal experiences.²

2.8 The Yang Yu Jing

The Yang Yu Jing is considered the earliest extant text on fish breeding.^{2a} An approximate date cannot be determined. Because fish were not raised in ponds prior to the Warring States period, it could not have been written prior to the fourth or fifth century B.C. However, since the text suggests that breeding fish in ponds was well established prior to the writing of this text, it was possibly written in the third century B.C. The Yang Yu Jing is attributed to Tao Zhu-gong, an official in charge of fishery.^{2b} I will refer to the text as it appears in the Gu Jin Shuo Bu Cong Shu.

In the Yang Yu Jing, Tao Zhu-gong discusses the procedures involved in breeding carp.^{2c} He stresses that if bred properly, the economic rewards will be great.

This brief text is significant because it is the only one

² There is no other available text on sheep raising during the late Warring States and Western Han.

that provides us with some idea of fishery techniques during the late Warring States when some northern farmers begin to engage in fishery on a small scale.

2.9 The Yin Du Wei Shu

The Yin Du Wei Shu was written by a Dou Wei official named Yin in the Western Han.³ According to Wang Xian-lian's commentary in the bibliography of the Han Shu, this text cannot be accurately dated, nor can its author be determined. (p.889) However, since the north was more progressive than the south and produced more agricultural texts, the Yin Du Wei Shu was probably written in the north. I will refer to the Yu Han Shan Fang Ji Yi Shu edition.

This work assigns farming activities, particularly the sowing and harvesting of a large number of crops, to various times of the farming year. This helps in determining the order of seasonal events that the Western Han farmer has to follow.

2.10 Han Tomb Models

The Han tomb models depicting village and farm scenes are significant because they not only supplement available written materials, but also provide evidence absent in the texts. The models referred to are from Henan and Shaanxi, the two major areas in which contemporary finds were found. There appear to be no major differences between the two styles, since Henan is not located far enough away from the capital for there to be much variation, it generally being the case that the

³ In reference to the mention of the Yin Du Wei Shu in the bibliography of the Han Shu, Song Qi says "yin" (尹) should have been written as "jun" (郡) because it means "prefecture". This is possible since each prefecture had a "du wei" official since the Qin. (Han Shu, p.889)

further away from the capital a site is, the less resemblance its objects bear to those found at the capital (Schloss, 1975, p.17). Though made during the Han, there is no reason why these models cannot also serve as evidence of rural life during the Qin period. This is because change in the countryside is very gradual.

2.11 Calendrical Sources

Some calendrical texts supplement evidence found in other kinds of contemporary texts. The relevant calendars are the Yue Ling Calendar, the Shi Ze (B) Calendar, the Qing Zhong Calendar, and the Wu Xing Calendar.

2.11.1 The Yue Ling Calendar

The Yue Ling Calendar can be found in three extant texts, the Lū Shi Chun Qiu (ca. 240 B.C.), the Xiao Dai Li Ji (ca. 140 B.C.), and the Huai Nan Zi (ca. 122 B.C.). The Lū Shi Chun Qiu version appears to be the earliest compilation. It was interpolated into the Lū Shi Chun Qiu text when it was written onto cloth.³ I will refer to the Lū Shi Chun Qiu version as it appears in the Si Bu Bei Yao edition.

The calendar is a Xia calendar with the spring equinox occurring in the second month and the winter solstice in the eleventh. The year is divided into four seasons, each of three months duration.⁴ Each season is sub-divided into three monthly periods designated as "meng", "zhong", and "ji" for the first, second, and third months of the season.

⁴ There is an additional month inserted after the third month of summer to allot the fifth of the "five powers" (or earth) to a season. However, this month isn't allotted any length of time and is what one might call a "theoretical month", existing in theory and not in practice.

Each month is correlated with a legendary emperor, color, musical pitch, and so forth, indicating the strong influence of correlative thought. The list of correlations is followed by references to the activities appropriate to that month. The emphasis on timeliness in carrying out seasonal duties, particularly those related to agriculture, is of relevance here.

2.11.2 The Shi Ze (B) Calendar

This is the untitled calendar which immediately follows the *Huai Nan Zi* version of the *Yue Ling* Calendar. I will refer to the text as it appears in the *Huai Nan Hong Lie Ji Jie*. Here the year is divided into five seasons, represented by the five directions. Of relevance is the calendar's emphasis on timeliness with respect to agriculture and agriculturally-related activities.

2.11.3 The Qing Zhong (Ji)Calendar

Though this *Guan Zi* Calendar makes no reference to the "five powers", the manner in which it divides the seasons suggests it was written no earlier than the late third or early second century B.C., and possibly as late as the mid-second or early first century B.C. I will refer to the text in the *Si Bu Bei Yao* edition of the *Guan Zi*.

The calendar is divided into four seasons, each consisting of two periods of forty-six days. With exception of the five colors, it correlates each month with correlates not found in other calendars. Each season refers to how many days have passed since the former solstice or equinox. The text emphasizes the emperor's seasonal promulgations, which include references to agriculture.

2.11.4 The Wu Xing Calendar

The **Wu Xing** Calendar is a five season calendar found in the **Guan Zi**. It appears to date from approximately the late third or early second century B.C., and can be attributed to the Yin Yang school. The degree of Yin Yang influence and the division of the calendar into five seventy-two day periods suggest it could not have been written prior to this time. I will refer to the **Si Bu Bei Yao** edition of this text.

Each of the five seasons is correlated with one of the five powers, which influences its course and determines the kinds of political and agricultural activities that should occur within a given season. The first season is reckoned from the winter solstice. This season and the others that follow are seventy-two days in duration. As in the **Qing Zhong** Calendar, the emperor makes a proclamation relevant to each season. It is the agricultural matters referred to here that are of importance.

Chapter 3 Special Considerations

3.1 The Influence of Shang Yang's Reforms on the Yun Meng Tablets

The degree to which Shang Yang's policies are being used in Qin during the late Warring States is reflected in the Yun Meng tablets. These tablets were written much later in time than the *Shang Jun Shu* but indicate the continuing influence of some of Shang Yang's major policies on later Qin rule. Among these are the implementation of the "shi wu" system, the ranking system, the emphasis on punishments, and government efficiency.

It was Shang Yang's idea to group members of society in a manner that would allow for the greatest amount of control of the individual. Thus he devised the "shi wu" system of communal responsibility.^{1a} In the Yun Meng tablets, many of the laws dealing with how to punish the common people speak in terms of this system. This refers to the responsibility borne by each member of a group of families to insure that other members return borrowed tools to the government and do not engage in any inappropriate or criminal actions.^{1b}

The ranking system refers to the merit one needs to receive a rank. In the *Shang Jun Shu*, the number of heads one kills in battle determines this.^{1c} In the Yun Meng tablets, rank is generally assigned on the basis of military merit, though there is no specified correlation between rank and the number of enemies killed.^{1d}

A system of punishments and rewards based upon established laws was proposed by Shang Jun.^{1e} Such a system was designed to prevent officials from acting for personal gain as well as encourage the people to seek rewards by devoting themselves to agriculture or military pursuits, thereby

preventing them from committing crimes (i.e., due to a fear of punishment)¹⁶ In the Yun Meng tablets, there is also emphasis on the distribution of rewards and punishments based upon laws (though the punishments are generally less severe than those proposed by Shang Jun). The officials, as well as the people, must adhere to them. Thus, in addition to many passages relating the meting of punishments to common people who disobey the laws are numerous others referring to the punishments unlawful officials receive.¹⁹ However, higher officials tend to receive lighter punishments than lower officials and commoners.^{1h}

Efficiency was necessary for a legalist system, like Shang Yang's, to function. This called for good government policies and the establishment of objective guidelines for officials to prevent them from pursuing personal gain. The Yun Meng tablets appear to elaborate on the idea of government efficiency to the point where many procedures, such as the storing of grains in government granaries, are explicated in full.¹ⁱ

3.2 The Treatment of Annual Farming Activities and Natural Events

Because the timing of agricultural events changes little over time, I will not subdivide chapter 13 into two sections (i.e., the Qin and Han periods). This will avoid repetition. Technological innovations from the Han, such as the mechanical seed drill, do not altar the order of farming events or significantly change the farmers' farming situation. However, I will specify if there is a reference to a practice not relevant to both these periods.

The same applies to my treatment of natural events and their role in the farmers' lives. Because the same kinds of natural events are involved in the relevant periods, and their

role in the farmers' lives are fairly constant, they will be treated in one section in Appendix E.

PART II: THE ADMINISTRATION OF AGRICULTURE - UNDER THE QIN

Chapter 4 The Political, Social & Economic Frameworks

4.1 The Political Framework

Qin is able to overpower the other kingdoms because of the King of Qin's ability to create a unified system of government by which it can mobilize its people to fight. The king of Qin strengthens his kingdom by inaugurating a number of new policies.

First, he aims at diminishing the power of the hereditary nobles by eliminating their privileges and preventing them from receiving hereditary ranks in his new ranking system.^{Ob} Only those nobles who perform military feats can receive ranks. He also requires that many noble families be sent to Fang Ling,^{Ob}

The weakening of the nobles' power coincides with the allocation to the farmers of larger plots of land divided by north/south and east/west boundary lines,^{Oc} enabling many of them to work on private plots without having to fulfill obligations to the local nobility.¹ However, the above appears not to apply to farmers living in enemy territory. Limited evidence indicates that commoners living in defeated areas are frequently banished to other locations. For example, in the eighth year of the king of Qin's reign (i.e., approximately 239 B.C.), after the king defeated the kingdom of Zhao, he "...遷其民於臨洮。" (p.225) ("...banished the people [of Zhao] to Lin Tao.")^{2a} The majority of the people referred to are probably farmers. Though Zhao is located in the Zhong Shan area and has cold winters, such a

¹ In some areas of the kingdom, some still work on large estates and pay 1/15 in land taxes.

² Lin Tao is located in Gansu.

change may or may not be welcomed, depending upon how successful a farmer is and his age.

While the nobility in other kingdoms are fighting each other, the Qin kingdom establishes a bureaucratic system based on impartial laws that apply to everyone in the kingdom. At each government level, there are many kinds of civil and military officials. The levels refer to territorial divisions, such as the "xian" (or "district"), the "dou", a sub-division of the "xian"; the "xiang", and the "li".^{2b}

As for civil officials, the most common kind of official is the Se Fu.^{2c} There are Xian Se Fu, Xiang Se Fu, and many other kinds of specialized Se Fu, such as the Ting Se Fu. Under Se Fu that serve as higher officials are many kinds of subordinates. For example, the subordinates of the Xian Se Fu are the Cheng, or "assistant magistrate" ; the Li; and many more. Such a complex system of officials probably results from the need to insure obedience at all levels of government.

In addition to the vast web of civil officials, there are many ranks of military officials, composed largely of people who achieve military success.^{2d}

All civil and military officials receive food rations and land based upon their rank. Higher ranking officials not only receive greater rations, but are not required to perform corvee service, which is a burden on the populace and lower officials.^{2e}

A further means of unifying the kingdom and controlling its people is by means of household (or population) registers. The Qin is the first government to keep such registers.^{2f} These registers are amended annually to keep track of births and deaths. They record the names of individuals, the names of the groups of five and ten families to which they belong, and other like information which is used by the government to

select people for corvee service, as well as to aid in land and poll tax collection, and grain distribution.^{29 2*}

Household registers are also used to prevent freedom of movement. Having one's name on a particular register means that one cannot freely leave the area in which he registered without special permission. Otherwise he will receive a severe penalty. The government tends to approve of the movement of commoners only when it wants to establish settlements in remote areas, at which time it sends farmers in large numbers. In such an instance a farmer would be entitled to change his name from one register to another. Otherwise, his movement is illegal, even if it is to an area recently conquered by Qin or to another district within Qin. A passage in the Qin Lǚ Za Chao tablets warns officials of high and low status from helping natives of Qin (i.e., non-officials and possibly farmers) cross Qin's borders: "有為故秦人出,削籍,上造以上為鬼薪,公士以下為城旦。" (p.123) ("If [an official helps] a native of Qin leave Qin or erases his name from the [population] register, he will become a "gui xin" if he has the status of a Shang Gao or higher, and a "cheng dan" if he has the status of a Gong Shi or lower.") Thus the farmers do not have freedom of movement.³

When the King of Qin ultimately unites the warring kingdoms, he imposes upon them the measures of centralization he applied to the Qin kingdom (as the King of Qin) with the help of his prime minister Li Si.^{3a} This includes the standardization of weights and measures and the written language, and the implementation of the Qin ranking, legal, and tax systems.^{3b} Qin Shi Huang also divides China into thirty-six prefectures or "jun", that are sub-divided into "xian",

³ "Gui xin" convicts serve three years of physical labour, while "cheng dan" convicts are condemned to five years of building fortifications.

2* According to Yun Meng Qin Jian Yan Jin (雲夢秦簡研究 [Taipei: Mian Shu Press, 1986]), there is a separate register used only to select male corvee recruits during the Qin (p.114).
The Cambridge History of China refers to a separate register used to assist in the collection of land taxes during the Han.

or "districts", and governed by a hierarchy of officials.^{3c}

In efforts to destroy the power of the old nobility in the defeated kingdoms and establish a ranking system based on merit, Qin Shi Huang destroys the walls around former kingdoms in the Guan Dong area (i.e., the area east of Han Kou Pass). He also sends wealthy landlord families and members of the aristocracies of the defeated kingdoms to the capital at Xian Yang.^{3d} During the briefer reign of Qin Shi Huang's son, Er Shi, many of these large landlords are executed.^{3e}

In order to complete numerous projects of great magnitude, such as the Great Wall (or "chang cheng") and carry out campaigns to defeat areas south of the empire, the rulers of the Qin dynasty require an even greater amount of corvee service than did Qin Shi Huang as the King of Qin.^{3f} They also demand higher taxes and implement harsher punishments.^{3g} A minor crime deserving of a fine during the late Warring States might now result in the death penalty.

In addition, there is a strict censorship system that reaches a climax with the "Burning of the Books" in 213 B.C., on the advice of Li Si.^{3h} This affects primarily the intellectuals. The goal is to erase old philosophies, histories of other former kingdoms, and other types of materials that would prevent people from discarding outdated ideas and accepting legalism. Intellectuals who do not cooperate are punished, indicating the low status of the "Confucian scholar".

4.2 The Social Framework

The main social groups are officials, commoners (many of whom are farmers), merchants, convicts, and slaves.³ⁱ There are

four main classes of convicts to whom detailed rules apply.^{4a} As for the slaves, there are both government and private slaves.^{4b} Private slaves can be lent to the government to serve the owner's period of corvee duty. The many kinds of government slaves include people repaying government debts or paying ransoms or fines, those atoning for the crimes of relatives, the offspring of slaves, and enemy prisoners.

The basic units of "free" society are the "shi" and "wu", or five and ten family units. By organizing societal members in this fashion, the government produces cohesion at a local level and creates a new source of identity and belonging for individuals. The government's intent in creating such a societal organization appears to be both the desire to exert tight control over its subjects, as well as provide a means of organizing the populace to fight.

Concerning efforts to control its subjects, the Qin establishes a system of mutual responsibility, whereby each member of a shi or wu is responsible for the behavior of all the other members. If one member of one's family, shi, or wu commits a crime, all the members are generally culpable and punished for the guilty member's offense.^{4c} Such a system naturally causes people to become excessively involved in the daily lives of others in order to protect their own. According to Mark Lewis, the collective legal liability exercised here is based on social ties defined by vengeance obligations and reflects the state's way of upholding

⁴ Those serving the longest and heaviest sentences are the "cheng dan", who engage in massive building projects, and the "chong", or the female "grain pounders". These are followed by the "gui xin" ("gatherers of firewood for spirits") and their female counterpart, the "bai can" ("sifters of white rice"). The following group includes male and female bond servants, some of whom appear to serve more as slaves (since they can, in certain cases, be ransomed by young, male relatives). Lastly are the "si kou" and the "hou" ("watchmen"), the only group that isn't mutilated.

vengeance (Lewis, 1990, pp.91-92).

The government tries to encourage people to report the crimes of others within their immediate family or group of families by offering rewards. Though some are encouraged to spy on others because of such rewards, others are probably motivated by fear of what will happen if, by not doing so, another member commits a crime. Thus, for example, if family members are aware that one family member (or family group member) tends to associate with the wrong sort of people, they might be able to prevent him from committing a crime which would disgrace both the individual's immediate family and the family group(s) by monitoring his activities. Therefore, it appears that the members of farmers' families live in an atmosphere of dread, always fearful that a family member or member of their "shi" or "wu" will commit an error that will result in their own trials and punishments. This is not surprising when one considers how severely innocent family members tend to be punished for the crimes of their brethren. For instance, "延行事有罪當遷(遷),已斷已念,未行而死若之,其所已當詣遷所。" (p.177)^{4d} ("If someone who committed a crime is banished [to a place], but dies or flees before the time of banishment arrives, family members must be banished in his place.") It appears that in this case, the family members initially are either punished with a fine or not punished at all. However when the guilty member is unable to receive his punishment, they must suffer for him. Again, in the Qin Lǚ Za Chao tablets, if a commoner either lies that he is sixty or older (in order to avoid further corvee service) or is sixty or older but fails to request the removal of his name from the population register on time, the members of his "wu" are fined one shield and banished.^{4e}

According to the Han Fei Zi, the effects of legalist social and political policies on human nature are positive. This is because in altering human nature, laws (or "fa")

create a system in which people naturally seek rewards and avoid punishments. The laws condition the people to change their likes and dislikes by threatening them with fear (Chi Ling chapter of the Han Fei Zi Ji Shi, p.1142). Therefore, the mutual responsibility system is effective because it incites family members to report the crimes of other family members or relatives out of fear of receiving punishment. To Qin politicians, like Han Fei-zi, such a system based on fear is considered indispensable to a well-run government, despite the effects it has on the personal lives of the governed.

4.3 The Economic Framework

The primary source of revenue is in the form of taxes paid by the people.⁵ Land taxes are as high as one-fifth of the harvest. However, it can be speculated that a large revenue is also received from the ransoms and fines in money or kind of wealthy farmers and officials. Throughout the Yun Meng tablets are references to the fines high civil or military officials must pay for various lesser crimes, such as the selling of grains reserved for the military to the people. (p.134)^{5a}

In addition, people who serve the government to repay their debts, other government slaves, convicts, and farmers conscripted for short periods of time, provide a source of free labour that can be viewed as one kind of revenue. Instead of having to pay labourers to conduct public work projects (such as canal building), vast amounts of free labour are at the government's disposal.

⁵ Prior to the unification, the farmers are able to increase agricultural production, despite lengthy periods of corvee duty. However they appear to make limited profits since much of the surplus grain is used as rations given to civil and military officials, as well as soldiers.

After the Unification, the wars which Qin Shi Huang conducts against the southern barbarians, as well as the recent fighting necessary to unify the country, quickly deplete government funds.^{5b} It is necessary to heavily tax the people to pay for the fighting costs, as well as recruit them to fight.^{5c} The combination of higher land taxes and an increased demand for corvee recruits puts an excessive burden on the farmers. Lengthy periods of corvee service prevent them from devoting enough time to farm work, while high taxes leave them with little or no profit. In addition, conscripting the farmers to labour on vast building projects also depletes their energy and decreases the level of agricultural production. Despite the building of roads and canals for irrigation and transport, the tax and corvee policies implemented by Qin Shi Huang indicate that he has a lesser concern for agricultural production than he had before becoming emperor.

Chapter 5 The Obligations the Qin Government
Demands of Farmers

During the later years of the Qin kingdom (i.e., approximately 250-220 B.C.), people living in rural areas (i.e., the farmers) are obliged to provide corvee service, pay taxes, and not disregard the borrower/lender relationship they have with the government.

Most farmers serve one month of corvee duty per year from the age of fifteen through the age of sixty.^{Ob} In order to insure the maximum number of recruits, two adult men are not allowed to live in the same household.^{Ob} These farmers and their adult sons engage in a number of kinds of corvee duty, including the reparation of inner and outer city walls, the building of dikes and canals, the building of highways, and the building of palaces and other monuments that benefit only the ruler.¹ Some of those conscripted are possibly poor farmers who are substituting for officials or wealthy farmers.²

Numerous laws in the Yun Meng tablets concern corvee duty. They prescribe the obligations of the person who must labour for the government. For instance, a passage in the Yao Lū tablets from Yun Meng states that conscripted labourers are responsible for the work they complete for one year. "網徒以爲邑中之紅(工)者,令結卒歲。未卒者壞,司空將紅(工)...有罪,令其徒復姬之,勿計爲籍。" (p.76-7) ("When gathering conscripts to work inside a district on earth walls, [the Court] orders [the officials concerned to] guarantee that they

¹ A large number of those involved in repairing walls on the frontier appear to have been poor farmers who volunteered to offer themselves as government slaves.

² Gao Min, *Yun Meng Qin Jian Chu Tan* (Henan: Renmin, 1979), p.55.

will be in good condition for at least one year.³ If the work of the labourers is damaged after less than one year, it is the fault of the Si Kong...who directed the project. The same people who repaired them [the first time] are ordered to repair them again. This [time it] does not count as corvee service.") The same type of situation holds where the reparation of menagerie walls and other public works projects are concerned.^{2b} The official involved is frequently only reprimanded, while the labourers, composed primarily of farmers, are subjected to additional toil.

There are also laws enumerating the punishments that will be mete if one fails to appear for corvee duty, leaves the site of corvee work, or does not complete his corvee service. For instance, there are various punishments one can receive if he fails to appear for corvee duty on time. The severity of the punishment increases with time. In the Yao Lū tablets, 御中 "發徵王弗行, 贖二甲..." (p.73) ("If [someone] arrives one day late he is fined two suits of armor.")⁴ Conscripted people who casually leave the place where corvee work is being conducted also must pay two suits of armour.⁵

The government's demand for annual corvee labour naturally impinges upon the farmers' personal lives. However there is evidence that suggests the government tries not to conscript farmers during the height of the farming season to avoid disrupting necessary farm work. One type of evidence concerns menagerie regulations. For example, in the Yao Lū tablets, menageries cannot be repaired until autumn when young

³ A.F.P. Hulsewe interprets "yi" (邑) as "settlement", rather than "city" or "district" (Hulsewe, 1985, p.63).

⁴ Fines are the major kind of punishment. However, there seems to be a large number of people who cannot afford the fines and must become government slaves for a designated amount of time.

⁵ In general, commoners were fined with increased periods of corvee service.

animals have matured and major farm work has been completed.
"夏有壞者，勿稍補善，至秋毋雨時而以豢(後)
爲之。" (p.77) ("If [the menagerie wall] is damaged in
summer, don't conscript people to repair it until autumn, it
being the time when there isn't rain.")

In addition, because the Qin government emphasizes the
importance of agricultural production, it makes allowances
where farmers serving penal labour sentences are concerned.
In the Yao Lū tablets, "一室二人以上居贖贖而
莫見，其室者出其一人..." (p.90) ("If two or
more people from one family must serve the government to pay
ransoms or fines, or pay off debts, and no one will be left
at home, one can stay at home [to manage household
affairs]..."). The family members will take turns serving
their labour sentences.

There are few references to taxes in the Yun Meng tablets
and other sources referring to the Qin kingdom.⁵ It appears
that though taxes (in particular, land taxes) are used to help
finance military campaigns and building projects, the
government is more concerned with recruiting farmers for
corvee labour than with taxing them.

Perhaps a greater burden than taxes on the Qin farmers
is their obligation to return borrowed implements to the
government and see that family members, neighbours, and others
in one's corvee work group do the same.⁶ The poor and average
farmers very likely cannot afford to buy iron farm tools and
have to rely upon the government to lend the tools to them.
Upon borrowing them, they must promise to return them in
satisfactory condition sometime in the future. The penalties
for individuals not returning these tools is frequently harsh.
For example, in the Jin Bu Lū tablets from Yun Meng, "百姓
段公器及有責(債)未償(償),其日踐以牧責之,而弗牧責,

⁶ Qin, being more technologically advanced than the other
kingdoms, is able to supply more of its farmers with iron
implements.

其人死亡...

" (p.61) ("If the people borrow tools from the government, have the obligation to return them but do not, and a sufficient amount of time has passed, the person responsible [i.e., who borrowed the tools] must be sentenced to death...") The local Se Fu and Li in charge of the area where the person resides are also punished.⁶² However the government does make allowances for implements worn over time. When the borrowed implements become useless after many years of use, the farmers theoretically do not have the right to dispose of them themselves. Yet, in the Ji Yuan Lū tablets from Yun Meng, "段(假)鐵器, 金尚尚不勝
而毀者, 勿用書, 受勿責." (p.32) ("If [someone] borrows iron implements [from the government] and disposes of them when they become worn out and useless, this must be recorded. But the person concerned will not receive a punishment.")

Those who tamper with the seals (or brands) before returning borrowed tools are also punished. Thus, according to the Jin Bu Lū tablets, if a borrowed weapon is returned, but the original lacquer or cinnabar seal removed and replaced with another, there is also a punishment. However, it is much less severe.⁷ A fine must be paid. (p.77)

There are times when bronze and iron implements are sold to the people, but this is generally when they are beyond repair.^{7a} Before being sold the government seals are rubbed out. Because such tools are probably worn out and of little use, it seems unlikely (in light of the passage quoted from the Ji Yuan Lū) that many farmers buy such tools.^{7b} A large

⁷ The seals are not carved.

percentage of the handles of such tools are probably used to make firewood, which is what the government does with many used tools that cannot be sold.

There is not much detail as to the nature of the punishment members of a family or corvee group receive if one member dies or flees before returning borrowed tools. We do know that they are responsible. Thus in the Guan Shi tablets from Yun Meng, "邦中之辭及公事官(舍官)舍,其殿公,殿而死亡者,亦令其徒,舍人任其殿."

" (p.71) ("If a person who is doing corvee duty in the capital and official work on government buildings borrows [government tools], and dies or flees without returning them; the rest of the people in his corvee group and the retainers must bear responsibility.")

The obligation of family and work groups to insure their members return borrowed tools, as illustrated above, appears related to the obligation of societal groups discussed in chapter 4.

After Qin Shi Huang unifies China, he and his successors appear to conscript even greater numbers of labourers to carry out a number of massive building projects.^{7c} The nature of some of the building projects, such as the Great Wall and numerous palaces, and limited records of the number of common people required to complete them suggest that the corvee period demanded of the farmers frequently exceeds one month per year (the required period of corvee service in the Qin kingdom). This would shorten the time many farmers have to tend to agricultural tasks. Available records suggest that some farmers serving extended periods of corvee duty far from home have to move their entire families to the site of the building projects. For example, according to the Qin Shi Huang Ben Ji chapter of the Shi Ji, in approximately 218 B.C., Qin Shi Huang visits the site of Lang Ya Tower. "...乃徒黑令有三萬戶琅邪臺下,復十二歲." (p.244) ("Below Lang Ya Tower were thirty-thousand homes of common people who

laboured [on the project] for twelve years.")⁸

The great number of people conscripted for corvee duty by the government here and elsewhere appears to have had a negative influence on both the farmer and farming, as illustrated by decreased agricultural production by the close of the dynasty.^{8a}

Land taxes demanded from the people become increasingly higher throughout the dynasty. The *Qin Shi Huang Ben Ji* records that there are heavy taxes, particularly in Er Shi's reign.^{8b} The combination of high land and poll taxes and extended periods of corvee duty probably both limit the time farmers can spend farming and decrease the farmers' profits. This would result in a decrease in their standard of living and time with their families.

In addition, a number of passages in the *Qin Shi Huang Ben Ji* indicate that the Qin farmers (along with the rest of the common people) are obliged to satisfy the emperor's whims. This is especially true in regard to Qin Shi Huang's search for the elixir of immortality that the immortals possess. For example, in approximately 218 B.C., Xu Shi (徐市) of Qi and others tell Qin Shi Huang "... 海中有三神，名曰：蓬萊，方，瀛洲，仙人居之... 於是遣徐市發童男女數千人入海求仙人。" (juan 6, p.247) ("...in the sea are three divine mountains. These are called Peng Lai, Fang, and Ying Zhou. Immortals live there...' Thus [Qin Shi Huang] sent Xu Shi to find several thousand girls and boys with whom he would enter the sea to seek these immortals.") Their boats never return. This passage reflects the indifference of Qin Shi Huang to the common people's fate. It also suggests the possibility that some of those chosen by Xu Shi are the children of farmers. The loss of children to the farmers would be an economic loss, as well as a personal loss,

⁸ The Lang Ya Tower was located in modern Yan Zhou, which is northeast of the Guan Zhong region in Shan Dong.

especially where male children are concerned. This is because the farmers would need their manpower in the fields.

Chapter 6 Major Agricultural Policies Designed to Promote Agriculture

Under the leadership of the king of Qin, the Qin government establishes many government policies that are favourable to the farmers. Before discussing these policies, it is necessary to mention one important government practice that I believe helps provide the government with the essential input needed in making effective agricultural policies. This refers to the Qin practice of record keeping. In an attempt to keep track of agricultural events and the natural events that influence them throughout the kingdom, the Qin government requires all local officials who personally oversee different activities in the agricultural cycle to send official dispatches to the appropriate government offices at designated times. In the Cang Lū tablets from Yun Meng, the amounts of grain and fodder before and after distribution must be reported to the district government office.^{0a} Faithful reporting of the above kinds of events would enable the government to be in a better position to indirectly guide the farmers and create sound, agricultural policies.

Major agricultural policies include the endorsement of canal building, the designation of rewards and punishments in response to the carrying out of agriculturally-related tasks, the enforcement of seasonal regulations, the encouragement of good farming techniques, and allowances made in general policy when agricultural production is affected.

Though canal building depends on the recruitment of large numbers of farmers, its long term effects are of great advantage to the farmers in the Guan Zhong area.^{0b} In the He Zhu Shu, the Zheng Guo Canal is credited with making the Guan Zhong area fruitful: "而韓...使水工鄭國說秦,令鑿涇水自中山西邸奇風口為渠;並北山東注洛三百餘里,谷以滋沃田...鄭國曰:「...然澤成亦秦之利也。」"

秦以爲然，卒使就謀...於是關中爲沃壤。" (p.1408)^{1a}
("The state of Han sent the water engineer, Zheng Guo, to Qin to convince the king to dig a canal from the Jing River, west of Mt. Zhong, to Han Kou Pass; and from there along the Northern Mountains east to the Luo River. It would cover a distance of about three-hundred 'li' and be used to irrigate the fields...¹ Zheng Guo said: '...If this canal is completed, it would also profit Qin.' The Qin king accepted his proposal and had the canal built...Thus the Guan Zhong region now had fertile fields.")

In addition to references to the government's responsibility to build and maintain irrigation canals in historical texts are references in some early calendars. For example, in the *Wu Xing* Calendar, in the sixth month, the emperor orders the digging of ditches six feet in width (or "gou") and the smaller ditches they feed into (or "hui").^{1a} Though it is uncertain that irrigation ditches are dug in a specific month, the government's involvement in major irrigation projects appears to be real.

Rewards and punishments are designated by the government for lower officials and commoners in response to how they carry out agriculturally-related tasks. An example can be found in the *Ji Yuan Lü* tablets from Yun Meng that relates numerous regulations concerning the raising of livestock. One passage refers to the evaluation of ploughing oxen, which the government assigns to the first, fourth, seventh, and tenth months. If at the comprehensive examination of the oxen held near the beginning of the New Year, they are found to be in good condition, the *Tian Se Fu* receives a jug of wine and ten sticks (i.e., a bundle) of dried meat, the *Zai* (a lower

¹ The actual purpose of Zheng Guo's plan was for Qin to put enough effort into building the canal that it would not attack Han. The Qin king was later informed of Zheng Guo's real purpose, but still accepted the proposal since Zheng Guo said it would also benefit Qin.

official) is exempt from one period of corvee service, and the Niu Chang (his assistant) can rest for thirty days. However, if the oxen are in poor shape, the Tian Se Fu is reprimanded and the Zai must perform two months of corvee labour.^{2 3} At the same time, the Village Elder is punished or rewarded, depending upon the results of the inspection of village oxen.^{3a}

The enforcement of seasonal prohibitions by officials can be viewed as a government attempt to keep the ecosystem in balance. The government probably sees itself as doing its utmost to protect the environment, thereby preventing some of the natural disasters that harm agriculture. The farmers may or may not view such prohibitions as favourable depending upon how they are directly affected by them. The Tian Lū tablets from Yun Meng indicate that few or no exceptions will be made for disobeying these prohibitions. For example, "春二月, 毋敢伐材木山林... 不夏月, 毋敢夜草爲灰, 取生荔, 鹿蹄(印)麇毋... 毒魚蟹, 罾穿罔..." (p.26) ("In the second month of spring, don't fell trees in the mountain forests... If it isn't summer, don't burn grass [i.e., weeds] into ashes, pick growing indigo, capture young deer or young birds, or take bird eggs.⁴ Don't poison fish and soft-shelled turtles or set up nets and traps to catch birds and four-legged animals.") One cannot do the above until the seventh month.⁵ An exception is made to the felling of trees

² It was common for higher officials to receive more privileges and lesser punishments than lower officials and commoners.

³ Hulsewe suggests that "two months" might refer to two months of salary, as opposed to two months of labour. ("Remnants of Qin Law", p.26.)

⁴ Hulsewe feels the association between the picking of indigo and not burning weeds into ashes in the Li Ji means that "li" (荔) probably refers to indigo. I agree with him.

⁵ One way of fishing was poisoning the water. However this was generally regarded as an unacceptable way of fishing.

if someone dies to enable the family to make a coffin. (p.26)^{5a}
 Again, in the Yue Ling Calendar, in the second month, "...
 毋立冢川澤, 毋灑陂池, 焚山林 (p.6a) ("...[One] doesn't
 drain marshes or ponds, or burn [wood] in mountain forests.")⁶

Scattered passages in the Yun Meng tablets indicate that the Qin government also tries to propagate good farming techniques. For example, in the Cang Lū tablets from Yun Meng, the number of seeds that should be sown in planting various crops is recorded. These crops include rice, hemp, wheat, ~~beans,~~ and cereals. For example, "種: 秬白麻畝用二斗大半斗... " (p.43) ("[As for] sowing: Each 'mu' of rice and hemp requires two and two-thirds 'dou' of seeds...")⁷ It adds that if the soil is good, or if other crops have already been sown in the same fields, the amounts can be altered slightly. Again, in the same set of tablets the seed storage of wheat is mentioned: "具遺麥以為種用者, 殺禾以藏(藏)之。" (p.44) ("The seeds of wheat left over in each district should be stored in the same manner as cereal seeds.") There is no explanation as to exactly how this is done, possibly because it is assumed that the reader of the laws already knows. The presence of such information in documents designed for dissemination by government officials suggests the role the government plays (or tries to play) in standardizing agricultural techniques.

In addition, agricultural essays written or compiled by

⁶ The Jin Cang chapter of the Guan Zi not only illustrates the kinds of activities prohibited during the farming season, but also indicates that certain prohibitions are related to sacrificial offerings. For instance, "奉春祭...以魚為牲, 毋殺玄生. 毋拊卵, 毋伐木, 毋采英..." (juan 17, p.9b-10a) ("[When] the spring sacrifice is held...fish is used as the object of sacrifice. [The people are] forbidden from killing [domesticated] animals, striking open eggs, and picking flowers...")

⁷ The weight of the above grain crops before and after grinding is also recorded.

officials, such as Lü Bu-wei, illustrates the efforts of the Qin bureaucracy to improve, as well as standardize, agricultural procedures.

The government appears to be involved^{in a positive sense} in promoting agriculture to the extent that it allows farmers serving terms of penal servitude to return home during the height of the farming season. In the Si Kong tablets from Yun Meng, "居皆田時者也 歸田農。 種時之 治苗時 各二旬。" (p. 88) farming season. In the Si Kong tablets from Yun Meng, "居皆田時者也 歸田農； 種時之 治苗時 各二旬。" (p. 88) twenty days during the sowing period and twenty days during the period when one tends to new shoots [i.e., weeds].")

However, in encouraging farming, the government sometimes interferes with the farmers' private pursuits. For example, in one of the "Prohibitions Concerning the Fields" in the Shang Nong chapter of the Lū Shi Chun Qiu, farmers are specifically forbidden from engaging in work unrelated to farming. "農不敢行買。" (p. 9a) ("A farmer dare not engage in mercenary activities.") The justification for the prohibition of these kinds of activities is that they would prevent timely farming events from being completed. If the farmer doesn't farm, who will farm for him? Though this viewpoint is understandable, the above type of prohibition is probably viewed as unfavourable by the farmers because it prevents them from earning a living outside farming if they meet with successive years of poor crops. Again, there is a passage in the Cang Lū tablets from Yun Meng that emphasizes not making more wine than needed, in conjunction with the selection of the grains used in making wine.^{7a} The government does not want the farmers to make enough wine to sell it, thereby becoming "merchant farmers".

After the Qin dynasty is established, the government appears to make less of an effort to become involved in agricultural production. Though public works projects, such as the building of roads, will aid in the transport of grains

from some farming areas and eventually enable needed items to be transported to farming areas,^{7b} the simultaneous building of massive structures exhausts the farmers to the point where agricultural production decreases.

However, there is occasional mention of later Qin policies that reflect a limited involvement in agriculture. The three situations established by Qin Shi Huang in which farmers may migrate provide an example. They are: 1) when the destination is Guan Zhong;⁸ 2) when one migrates to the frontier or other outlying areas to reclaim new land; 3) when one travels to unpopulated areas within the empire (Gao Min, 1979, p.20). The above shows that voluntary migration is only permitted when it will boost agricultural production.

⁸ The increasing numbers of people migrating to the Guan Zhong area from this time through the early Western Han will prevent Guan Zhong from being self-sufficient despite a great increase in agricultural production. There will still be the need to transport grain from the Guan Dong region.

Chapter 7 The Roles of Government Officials in Stimulating Agricultural Production

Certain officials are designated by the government to carry out different functions with respect to agriculture. Available ritual and non-ritual texts name a number of these officials.¹ Though accounts in ritual texts, such as the *Yue Ling Calendar*, appear to be idealized, a comparison of references to certain officials in these texts with non-ritual texts indicates they are often more realistic than they seem.

7.1 Officials Who Directly Supervise Agricultural Production

7.1.1 Officials Serving as the Farmers' Teachers

According to the *Shi Ji*, the teaching role of agricultural officials has a long tradition. It has a precedence in ancient agricultural officials, such as Hou Tu, the Minister of Agriculture who is attributed with having taught the people how to sow grains and vegetables.²

As the farmers' teachers, agricultural officials teach the people about farming practices. The *Li Zheng* chapter of the *Guan Zi* and the *Yue Ling Calendar* describe the duties of one of these officials, the Tian.² In the *Li Zheng* chapter, the Tian "... 使五穀, 桑, 麻皆安起處。" (juan 1, p.16a) ("...sees the five grains, and mulberry and hemp trees are planted in the right soils.") In order to insure that the above grains and trees are planted in the appropriate soils,

¹ Many of these are probably lower subordinates working under the names of higher officials.

² Though the *Li Zheng* chapter cannot be dated more accurately than the third century B.C., I have considered it as a Qin text because it appears to be more similar to pre-Han texts than Han texts in subject matter and presentation.

he has to tell the people where such trees ought to be planted. Here, though the word "teach" is not mentioned, I believe that this Tian has a teaching role.

In the Yue Ling Calendar the Tian is ordered directly by the emperor to "善相丘陵,原隰,土地所宜,五穀所
殃,以教道民必躬親之..." (p.3b) ("...properly examine mounds [or hillocks] and plains and marshes [or level ground and low ground] to learn about the respective distribution of the soil and the growing of the five grains. Then he must use what he has learned to personally teach the people...")

7.1.2 Officials Serving as the Farmers' Overseers

The agricultural officials serving as overseers appear to be responsible for encouraging the farmers to tend to farming duties at crucial times in the agricultural year. The degree to which these types of officials encourage the farmers is questionable. Though there may be some officials who try to positively encourage the farmers, there are possibly also lower agricultural officials and their subordinates who do not sympathize with the farmers and try using force to increase their efficiency.

The Li Zheng chapter of the Guan Zi and the Yue Ling Calendar are two texts that refer to these overseer/officials. The Li Zheng chapter discusses the duties of the Xiang Shi (鄉師). In one of his roles he "...勸勉百姓,使力作毋偷,畏樂家室,重去鄉里..." (juan 1, p.16a) ("...urges the people to exert themselves in ploughing the fields and not be lazy, stay at home, or lightly consider leaving their villages.")

The Ye Yu in the Yue Ling Calendar is not only in charge of forestry duties, but is also responsible for encouraging the people on behalf of the emperor to work hard and not act inopportunistly. Both of the above officials are credited with encouraging and overseeing farm work in the fields.

7.2 Officials Who Carry Out Government Policies Indirectly Related to Agricultural Production

These kinds of officials include grain distributors; recorders of agricultural events; regulators of seasonal activities; corvee officials; and tax collectors. In some roles, they represent the government's obligations to the farmers, while in other roles, they appear to show a lack of concern for the farmers.

7.2.1 Grain Distributors

Officials who distribute grain are carrying out the government's responsibility to feed and clothe its people.³ The Cang Lū tablets from Yun Meng refer to the details of both distributing and storing grains under the direction of the Cang Se Fu, emphasizing that the correct amount of grains must be distributed, as well as stored.^{3a} Though no mention is made of who is eligible to receive grain, it appears that grains are distributed to poor farmers and average farmers in time of need, as well as to various grades of officials.^{3b} There may also be some farmers who receive the grains they stored in public granaries after previous harvests. Their names would be listed in the granary records, but not on the grain ration registers. In this capacity, the Cang Se Fu plays the role of a clerk in the mechanical way he distributes grain to people on the grain register and has them sign for it. He seems to have no close interaction with the people he comes into contact.

The Yue Ling Calendar refers to when grain is and should be distributed. It refers to the distribution of grain by civil authorities in the third month.^{3c} It is unlikely that

³ Tool and clothing distribution appear to have been common during the Qin period.

such an activity could be assigned to a particular month.

7.2.2 Record Keepers

During the Qin, in particular, great importance is placed on the need for agricultural officials to keep good records in order that the government be informed of farming conditions and agricultural production levels.^{3a} Numerous sets of tablets from Yun Meng refer to agricultural officials who keep various kinds of records. In their record-keeping role, these officials tend to have an impersonal relationship with the farmers. For example, in the Tian Lū tablets, the Tian Se Fu records particulars concerning the spring millet harvest and related events for the Nei Shi. "雨無澍(澍)及時(秀)粟, 輒以書言, 澍稼, 秀粟及時(星)田田象毋(無)稼者頃數..." (p.24)

("When the timely rains fall and affect grain in the ear, [the Tian Se Fu] reports in writing on the rain, the favored crop, and the grain in the ear, as well as the amount of cultivated land and the amount of land not yet cultivated...")⁴

In the Cang Lū tablets the Cang Se Fu records the number of grains stored and distributed and updates the grain register, which is sent with the account book to the district government office at the close of each year.^{4b} Tool distributors and other like officials also keep records that are annually submitted to the proper government offices.⁵ ⁶

⁴ According to Hulsewe, "feng" (澍) refers to "beneficial", rather than "timely". Beneficial rains would, by their nature, have to be timely. Thus I interpret "feng" as "timely". However, I feel Hulsewe's interpretation of "xiu" (秀) as "favored" with respect to the grain to be more acceptable than the Wen Wu editor's interpretation.

⁵ Contemporary ritual texts, like the Yue Ling Calendar, occasionally refer to record keeper/officials. For example, in the Yue Ling Calendar, in the third month, "...擡牲馬句擡, 擡書其數" (p.8b-9a) ("...[officials] report the number of

7.2.3 Regulators of Seasonal Activities

These officials regulate seasonal activities and insure that they are carried out at the proper times to prevent farmers from harming the environment. They have to closely interact with the farmers in order to insure that seasonal prohibitions are enforced.

A number of texts refer to these seasonal regulator/officials in terms of the protection of natural resources. The Li Zheng chapter of the Guan Zi provides an example. In relating the duties of the Yu Shi, it reveals how the Yu type of official interacts with the farmers. The Yu Shi carries out his responsibilities but permits the people to obtain resources when they are in need of them. "无财之所出, 以时禁发焉, 使民足於宫室之用, 薪蒸之所積..." (juan 1, p.15b) ("[He] forbids and allows the use of natural resources at certain times depending on the time of year, permitting the people to have enough timber to build homes and enough wood to store for future use.") The Yu Shi tries to accommodate himself to the farmers' needs while trying to protect natural resources.

7.2.4 Officials Restricting Farmers From Engaging in Secondary Work

There are limited references to specific officials involved in preventing the farmers from engaging in secondary work. For example, in the Tian Lū tablets from Yun Meng, "有

young sacrificial cows and horses.")

⁶ There are no Han record keepers referred to by name in available texts. However, because the tradition of record\keeper officials continues during the Western Han where household registers are concerned, we can assume they existed.

姓居田舍者毋敢鬻酒。田耆夫，部佐謹禁御之。
有不從令者有罪。

" (p.30) ("The people who live in the countryside [i.e., farmers] are not permitted to sell wine. The Tian Se Fu and his subordinates must carefully prevent and stop this. Any who don't obey the ordinance will have committed a crime.") In enforcing the above regulation, the Tian Se Fu and/or his subordinates would have to personally visit farmers' homes to determine if they engage in making wine, what appears to be the most popular secondary occupation of the farmers. This would infringe upon the farmers' privacy and inconvenience them. It would also put the respective officials in the awkward position of intruders.⁷

7.2.5 Corvee Officials

Officials regulating corvee policy have two major roles: deciding when to conscript the farmers and supervising the work of conscripted farmers and other corvee labourers.

Because farming practices vary slightly from region to region, one would expect "corvee seasons" to vary as well, particularly during periods of greater political and economic stability. The Li Zheng chapter of the *Guan Zi* refers to one of the duties of the Tian as follows: "... 相高下，視肥磽，觀地宜；明詔期，前後農夫，以時鈞修焉..." (juan 1, p.15b) ("He observes [the soil in] high and low areas, examines fertile and stony soils, and carefully examines the crops appropriate for the [respective] soils. He [uses the above knowledge in order to] decide upon the period when farmers should fulfill their corvee service using time as a factor in determining the order of agricultural production and corvee duty...") Though this is a rare instance in available

⁷ It would not be surprising for the farmers to view such officials with hostility.

texts, it is important in pointing out the involvement of officials knowledgeable about agricultural production in designating when to recruit farmers.

Perhaps the official most consistently referred to in conjunction with corvee labour is the Si Kong. In supervising public works projects, he oversees the labourers who are building or repairing projects. Because he is also responsible for the results of their labour, it is possible that he and/or his subordinates treat the farmers harshly and are not well regarded by them. The Yue Ling Calendar and the Yao Lū tablets from Yun Meng contain references to the Si Kong. The Yue Ling Calendar refers to his supervision of light public works projects in spring.^{7a} This includes the repairing of dikes and the opening of barriers to insure that there is no flooding when the timely rains arrive.

The Yao Lū tablets discuss the duties of the Si Kong in conjunction with what appears to be large scale public works projects in autumn.^{7b} He oversees the building of city walls. If the walls are damaged within one year, it is his fault, as well as the labourers'. However there is no mention of his being punished. There is only mention of recalling the people originally conscripted to build the wall to repair it. They are the only ones who suffer. Because a large percentage of farmers serve annual corvee duty, it is likely that many of the above corvee labourers are farmers.

7.2.6 Tax Collectors

Examples of tax collector/officials are contained in some ritual texts. Though these tend to distort reality in many cases, I believe that they do illustrate some actual practices where tax collector/officials are concerned. For example, the Yue Ling Calendar refers to officials that collect taxes on bodies of water. In the Calendar both the Shui Yu and the Yu Shi have this responsibility. They both "收泉池澤之賦" (collect taxes on springs, ponds, and lakes).

..." (p.24b) ("...collect taxes on rights to use springs, ponds, and marshes.") The Yue Ling Calendar says they are not supposed to infringe on the people's interests, suggesting they probably do at times. Conflicts might arise between farmers and these officials concerning the amounts the farmers should be fined.

One passage in the Fa Lū Da Wen tablets from Yun Meng illustrates how unfairly the farmers could be treated by such lower officials. "部佐匿者(譜)民田, 若民弗智(知), 當論不當?... 已租者民, 弗言, 為匿田; 未租不說 〇〇為匿田." (p.218) ("If a subordinate of the Xiang Bu steals a commoner's (i.e., farmer's) land and the commoner doesn't know, is he guilty of a crime? What he did is only considered stealing if he has already received taxes from the commoner. Otherwise it is not.") The farmers are at the mercy of such lower officials. Unless the farmers fulfill their obligation of paying taxes, there are no safeguards for their land, not even under the law.

PART III: THE ADMINISTRATION OF AGRICULTURE
- UNDER THE WESTERN HAN

Chapter 8 The Political, Social & Economic Frameworks

8.1 The Political Framework

The Han dynasty is established by Liu Bang after he defeats the military general Xiang Yu, the other major contender for the throne.^{0a} In approximately 207 B.C., shortly after becoming the King of Guan Zhong, Gao Zu (i.e., Liu Bang) claims he will replace the Qin codes with the following three article code: "殺^{cb}人者死, 傷人及盜抵罪. 餘悉除秦法。" (p.362)^{cb} ("Whoever kills someone will die. Whoever harms people or steals from them will receive the appropriate punishment. [I] will abolish all the laws of Qin.") But he soon abandons his promise and adopts many Qin policies, such as the implementation of harsh punishments, annual corvee service, the punishment of relatives of enemies and commoners living in enemy territory, and household registers.^{1a} He also is responsible for large building projects. For example, the building of Chang Yue Palace (under the direction of Xiao He while Gao Zu is fighting the Xiong Nu and the king of Han) reveals a similar policy of extravagance at the expense of the populace.^{1b} It can be suggested that Gao Zu had some admiration for Qin Shi Huang during his earlier years. The Shi Ji quotes Gao Zu saying, "嗟呼! 大丈夫當如此也。" (p.385)^k (Alas! A worthy man should be like this!") in reference to Qin Shi Huang while performing corvee labour as a lower

¹ There is mention of unequal tax distribution among the people in various principalities, depending upon Gao Zu's relations with their leaders. Thus the people^{of} Pei have their taxes repealed while the people of Feng, Gao Zu's birthplace, still pay heavy taxes as a result of their leader Yong Chi having joined Wei. It is only after the people of Pei request that Feng's taxes be repealed that Gao Zu does so.

official before he becomes a village constable.

Unlike Qin Shi Huang, Gao Zu de-centralizes government rule by dividing the "jun" (prefectures) into "guo" (principalities or kingdoms) to be ruled by "wang", or "kings" he appoints himself.^{2a} One consequence of the lack of centralization is periodic difficulties with some of the kings. This climaxes in Emperor Jing's reign with the Rebellion of the Seven Kingdoms in 154 B.C.^{2b}

During the reigns of Gao Zu through Emperor Xuan, there is not only the problem of the vassal kings, but also difficulties posed by the emperors' relatives and neighbouring barbarians. As for the emperors' relatives, Empress Dowager Lü, Gao Zu's widow, dominates the reign of Emperor Gao Hou during which she appoints many of her relatives as kings and various officials.^{2c} Among barbarians, the northeastern Xiong Nu are the greatest threat to the throne throughout the Western Han, and a source of much anxiety.^{2d}

The effects of de-centralization upon the farmer appear to be both positive and negative. The priority the government gives to agricultural production during much of the Western Han frequently results in policies favourable to the farmers, such as the allotment of larger plots of land, the building of more irrigation canals, and the appointment of agricultural officials, like Zhao Guo, who will innovate farming techniques.^{3a} However less centralization also means that large landlords can re-assume their power over the farmers.^{3b} This sometimes results in the farmers becoming pawns in conflicts between these large landlords (or "vassals") and the

² Under the jurisdiction of the prefectures and principalities are "xian" (districts) and sub-divisions of the districts (i.e., "yi", "dao", and "hou guo"), each of which is governed by a hierarchy of officials.

³ Because many of the canal labourers are farmers, building such canals is a burden on the farmers. However they profit from these canals after they are completed.

government.^{3c} Even when there are no such conflicts, the landlords do not seek to help the farmers, even during famine. Thus, for example, Emperor Wu has to send grains from Ba and Shu to Guan Dong during a famine in Guan Dong because the landlords will not help (Ge, 1986, p.66).^{3d}

8.2 The Social Framework

Han society is composed of officials, commoners, merchants, convicts, and slaves.^{3e} With the inauguration of "vassal rulers", there are also hereditary kings and other enfeoffed nobles.^{3f} Numerous officials are now appointed based on merit.^{3g} Commoners (many of whom are farmers) can earn up to the eighth rank. Though this doesn't lessen their corvee obligations, it provides a kind of prestige (Loewe, 1973).^{3h} Thus at the beginning of an emperor's reign or when the reign title changes, the emperor usually grants^{one or} two degrees of rank to all adult males.³ⁱ The convicts are generally sentenced to five years of labor, although they can be freed if the emperor gives them an amnesty (which he does periodically) (Loewe, 1973, p.38). Slaves appear to have amounted to no more than one per-cent of the population. They were originally the male and female relatives of convicts (Loewe, 1973, p.38). There are both government and private slaves. Government slaves atone for personal crimes, while private slaves pay private debts or are illegally bound (Wilbur, 1943, p.195). Also, during times of hardship, a number of poor people (many of whom are probably farmers) sell their children to individuals. The former often function as palace messengers, banquet attendants, park caretakers, and so forth, while the latter slaves perform household duties, perform on musical instruments, and sometimes farm (Loewe, 1973, p.59).

Although the Western Han abandons the formalized "shi wu" system, the fact that many Qin policies are carried out well into the Western Han, including many Qin criminal laws,

suggests that there is an informal system of mutual responsibility. For example, it is not until the reign of Emperor Wen that some of the harshest Qin laws are abolished, including the punishment of slavery for family members of convicted criminals. At this time, two Qin laws are repealed. The law prescribing the punishment of slavery for family members of criminals is abolished in the first year of the first reign period.^{3j} In a proclamation, the emperor states the reason for abolishing this law. He states that the purpose of laws is to improve the people's conduct. However, this particular law "... 使毋罪之父因妻子產生之反為收幣, 朕甚不取," (p.418)^{3k} (...tries innocent parents, wives, children, and siblings [for the crimes of a family member], and makes them become slaves. I cannot tolerate this.") The law permitting the three kinds of mutilation punishments (i.e., branding the face, and cutting off the nose and toes) is repealed in the thirteenth year of the first reign period.^{3l} The elimination of such laws will benefit the farmer and cause for less disruption in the farming community when someone commits a crime.

8.3 The Economic Framework

The economic situation generally improves during the Western Han, although there is a period of decline during the later part of Emperor Wu's reign as a result of his military campaigns.^{3m} Economic policies are established to improve the government's finances, as well as to improve agricultural production. For example, during Emperor Wu's reign, the government monopolies on salt, iron, and coinage are re-established and a government monopoly on wine established (Fairbanks, 1978, p.73). Also, at designated times throughout the Han, it is mentioned that the people are permitted to ransom themselves from execution or other punishments if they give the government a certain sum of money. For instance, the

Hui Di Ji chapter of the Han Shu states that in the first year of Emperor Hui's reign, "民有罪, 得買爵三十級以免死罪." (p.61) ("If the people commit crimes, they can [pay the equivalent of] buying the thirtieth rank to escape from the death penalty.") Such a measure would help the government treasury or the government granaries, depending upon whether payment is in money or in grain.⁴

Throughout much of the period, agricultural production increases. This is particularly true after 100 B.C. when Zhao Guo invents the "dai tian" system and the mechanical seed drill. As a result of the above kinds of technological innovations, the building of canals, and government policies favourable to agriculture, agricultural production increases.^{4a} When the people of the Guan Dong region suffer from famine, such as during the fourth year of the reign period "yuan shou" (ca. 133 B.C.) in Emperor Wu's reign, they migrate to the once sparsely populated Guan Zhong region. According to the Wu Di Ji chapter of the Han Shu, at that time "冬有司言關東貧民隴西北地, 西河上郡, 會稽。凡七十二萬五千口." (p.90) ("In winter, the civil authorities said, 'the poor of Guan Dong have travelled by foot to northern Long Xi prefecture.'⁵ There are seven-hundred and twenty-five thousand of them...") Though productivity increases in Guan Zhong, the increasing immigration of commoners from Guan Dong to these previously sparsely populated areas, as well as landlords and families of defeated rulers, prevents the farmers from being as self-sufficient and prosperous as they could be, despite increased crop yields.^{4b} The transport of

⁴ Unfortunately, only the wealthy farmers, officials, and merchants are able to pay such ransoms. The average or poor farmers are either sentenced to death or serve a period of penal labour, depending upon the crime.

⁵ This includes part of southwestern Guan Zhong, as well as some of Qing Hai and Xi He prefecture near Shuo Fang in the north.

grain from Guan Zhong further aggravates the situation.^{4c}

Thus it appears that the general prosperity of the Guan Zhong region does not mean a significant improvement in the farmers' living conditions. Furthermore, the farmers probably profit less than they are entitled to due to the obligations some of them have to the landlords of large estates, as well as to the fact that the average field size is not much larger than during the Qin.⁶ During times of military exploits, such as during the reigns of Emperor Gao Zu and Emperor Wu, the farmers are also burdened by higher taxes and longer periods of corvee service.

⁶ According to Martin Wilbur, these powerful landlords frequently oppress their neighbours and acquire their property.

Chapter 9: The Obligations the Western Han Government Demands of Farmers

The Western Han government demands that its people fulfill a period of annual corvee service. The length of the corvee period and the age of recruitment indicate similarity with the corvee system of the Qin kingdom, particularly during the dynasty's early years. From the beginning of the Western Han until the reign of Emperor Jing, the age of recruitment is from fifteen through sixty (Gao, 1979, p.27).¹ Also, as during the Qin period, the farmers are required to do one month of corvee duty.²^{2a} Thus in one passage in the Hui Di Ji chapter of the Han Shu, in the second year of Emperor Hui's reign (ca. 193 B.C.), "春發長安六百里內男女十四萬六千人城長安,三十日罷。" (p.61) ("In spring, one-hundred and forty-six thousand men and women from within six-hundred 'li' of Chang An were recruited to repair the Chang An Wall. They finished in thirty days.") Many of the conscripted people from outside the city are likely farmers and the wives or daughters of farmers. Because the above activity occurs in spring, there is the possibility that farming activities are disrupted during this time.

Later in the Western Han, though recruitment begins at a later age, the periods of corvee duty appear to exceed one

¹ From Emperor Jing's reign to Emperor Zhao's reign, the age of recruitment is from twenty-three through fifty-six. In Emperor Zhao's reign, the minimum age becomes twenty-three.

² In addition to one month annually, Han males below the ninth rank have to perform two consecutive years of service in the military (partaking in either training or security duties) and be available for emergencies. (The Cambridge History of China, vol. 1., 1986, p.151.)

month at times, especially during wartime.^{3a} During Emperor Wu's reign, the building of canals and other public works projects, and campaigns against the Xiong Nu and other barbarians require many farmer labourers, as well as government slaves, convicts, and hired soldiers. According to the *Shi Huo Zhi* chapter of the *Han Shu*, "農夫五口之家, 其服役者不下二人. 其能耕者不過百畝." "

(p.521) ("The number of farmers conscripted for corvee duty in a family of five [adult members] is not less than two. The amount of land provided for those remaining at home is not more than one-hundred mu.") A rather high percentage of family members is conscripted. Also, the land allotted to remaining (male) family members is inadequate. This suggests that though there are periods of prosperity during the Western Han, such as during the end of Gao Zu's reign and the beginning of Emperor Wu's reign, the farmers' potential still is limited by annual corvee service, as well as relatively small plots of land.

As for taxation, during the Western Han, particularly from Emperor Wen's reign through the beginning of Emperor Wu's reign and from the end of Emperor Wu's reign, there are periods during which the amount of land and other taxes is lessened.⁴ This frequently occurs after a decrease in agricultural production due to wars and natural disasters. For example, in the thirteenth year of the first reign period of Emperor Wen (ca.167 B.C.), after years of famine, there is no tax collection. √ This is in the hope that not paying taxes
(*Wen Di Ji*, p.74)

³ In the *Xuan Di Ji*, Emperor Xuan proclaims that corvee duty frequently conflicts with personal duties, such as mourning for family members. In this case, the distant mourners wear mourning clothes, but cannot return home for the funeral.

⁴ For example, in 168 B.C., the standard rate of the produce tax is reduced from 1/15 to 1/30. (*The Cambridge History of China*, vol. 1, 1986, p.150.)

will help the farmers financially and keep them devoted to farming after years of crop failure. Again, Emperor Xuan does not collect land taxes after a long period of drought in the third year of the reign period "di jie" (ca. 67 B.C.).^{4a}

Despite periods of low or no taxes, there are many periods during the Western Han in which high taxes are paid by the farmers to cover the costs of military campaigns, public works projects, and the upkeep of "imperial tomb" towns. This includes much of Emperor Wu's reign, during which many military campaigns are conducted. To help finance his wars he inaugurates new taxes. For example, in approximately 119 B.C., the poll tax on minors aged three to fourteen is raised from twenty to twenty-three coins per head.⁵ Also, during the Western Han, there is the inauguration of a wine tax to help pay for more soldiers to guard the frontier. According to the *Zhao Di Ji* chapter of the *Han Shu*, each "sheng" of wine is taxed four pieces of money.^{5a}

In addition, as in the late Warring States, the government requires the farmers to be faithful to farm work to the extent that it forbids them from engaging in secondary occupations. Throughout the annals of the *Han Shu* are occasional references to regulations forbidding the farmers from selling wine, a major secondary source of income. For example, in the *Jing Di Ji* chapter, in summer of the third year in the reign period "zhong yuan" not long after a drought, "禁酤酒." (p.81) ("[The people] are forbidden from selling wine.")⁶ The people are also forbidden from engaging in other secondary activities, such as tracery work and inlaying.^{7a} Another secondary source of income from the

⁵ *The Cambridge History of China*, vol. 1, p.160.

⁶ However, an exception is the mention that wine can be sold during severe droughts to provide a source of liquid.

⁷ It is likely that most of the farmers directly affected by such a regulation lived relatively close to the capital.

Western Han, the raising of fish in dammed ponds, is not questioned.^{7b} Perhaps this is because it is related to agriculture.⁸

⁸ The Yang Yu Jing emphasizes that profit that can be made by raising fish in ponds.

Chapter 10 Major Government Policies Designed to Promote Agriculture

Many of the Western Han rulers make some effort to become involved in agricultural production and encourage officials to be involved, as indicated by a passage in the Jing Di Ji chapter of the Han Shu. In the third year of the reign period "hou yuan", the emperor "令郡國務勸農桑。" (p.83) ("...orders the [leaders of] prefectures and principalities to devote themselves to encouraging farming and sericulture...") This involvement tends to increase after periods of decreased agricultural production due to natural disasters, wars, or other factors.^{0a} The kinds of involvement in question concern the periodic lightening of taxes and corvee obligations, the relaxing of government restrictions, government irrigation projects, the enforcement of certain seasonal prohibitions, and government efforts to dissuade farmers from engaging in secondary occupations.

Western Han rulers periodically lighten taxes and corvee obligations to increase agricultural production. For example, according to the Xuan Di Ji chapter of the Han Shu, there is a decrease in the amount of required corvee service toward the end of Emperor Xuan's reign, which is intended to allow the farmers to devote more time to farming and simultaneously increase agricultural production and the farmer's prosperity.¹ Rulers, such as Emperor Wen, view the lightening or lifting of taxes, as an even more important stimulant of agricultural production. They believe that such a policy, alone, will solve the farmers' problems and stimulate the economy.^{1a}

¹ Unfortunately, due to continued raids by the Xiong Nu, political corruption, and decline, the average farmer is still poor. In the first year of the reign period "huang long", the emperor makes the following proclamation: "於今天下少事
蠲役...而民多貧。" (p.119) ("...At the present time, the people in the empire have reduced corvee periods...yet the people still are impoverished.")

Unfortunately there are frequently other factors involved (particularly where war destruction and natural calamities are concerned) limiting the effectiveness of the above policy.²

The restrictions that are relaxed include those on the use of natural resources. According to the Shi Huo Zhi chapter of the Han Shu, "漢興...弛也山澤之禁。" (p.3261) ("At the beginning of the [Western] Han...the prohibition on the use of natural resources in mountains and lake areas was relaxed.") This appears to reveal an attempt of Gao Zu to revitalize the economy after years of fighting.

The He Qu Shu chapter of the Shi Ji, the Shi Huo Zhi chapter of the Han Shu and some of the early calendars refer to the Han government's irrigation projects. For example, the He Qu Shu chapter refers to the canal proposed to Emperor Wu by Zheng Dang-shi. "是時鄭當時...曰:「異時關東漕粟從渭中山度大冏而罷,而漕水道九百餘里。」引渭穿渠起長安並南山下,至河三百餘里...度河今三月罷;而渠下民田萬餘頃,又可得以溉田...而益肥關中之地得穀" (p.1409-10) ("At this time, Zheng Dang-shi...said: 'Until this time, the grains transported from Guan Dong have reached the capital via the Wei River. It has taken about six months for them to arrive and a route of about nine-hundred 'li'...If a canal is built from the Wei River starting at Chang An and going along the Southern Mountains to the Yellow River, there would only be a distance of three-hundred

² Sometimes the government accepts responsibility for not successfully stimulating agriculture by distributing grain, as well as lessening taxes after successive crop failures. For example, in the Zhao Di Ji chapter of the Han Shu, in the second year of the reign period "shu yuan", the emperor makes a proclamation before his officials saying, "今年彗變傷,所振貨,種,食,勿收.責毋令民出今年田租." (p.104) ("This year, [because] the silkworms and the wheat have been harmed, distribute all goods, grain seeds, and food, retaining none. [And] do not make the people pay this year's land taxes.") Such a policy helps to temporarily ease crises, but fails to offer a solution or prevent future crises.

'li'...and it would take only about three months...Also, the people living near the canal could irrigate over ten-thousand 'qing' of land with this water...This would make the soil in Guan Zhong more fertile and result in the reaping of more grains.") The above illustrates the great distance covered by such canals and how they are able to serve as sources of both transportation and irrigation. It also implies that an increase in soil fertility would make the farmers more prosperous.

The Shi Huo Zhi chapter refers to canals built in the reign period "yuan guang" (ca. 130 B.C.) during Emperor Wu's rule. One canal passes through the Yellow River and the Fen River in central Guan Zhong. "穿汾河渠巨為溉田." (p.520) ("A canal passing along the Fen River and Yellow River was used to irrigate fields.")

Though there appears to be a small number of massive projects during much of the Western Han, there is still the building of many smaller irrigation projects and the reparation of existing ones, all of which serve to benefit agriculture. For example, the Shi Ze (B) Calendar refers to the repairing of sluice-gates and irrigation ditches in autumn, the time when major public works projects are frequently conducted. "補決竇 ... 遏洶瀆, 上流水." (p.18b) ("Repair sluice-gates...Repair irrigation ditches to contain the flowing water [i.e., prevent it from overflowing].") This passage reflects a continuing government concern for agriculture.

The enforcement of seasonal prohibitions concerns the types of prohibitions mentioned in late Warring States texts, with the exception that there is a greater stress on the direct relationship between the restricted activities and farming than the relationship between these activities and the environment. One example is found in the Ba Guan chapter of the Guan zi. "山林蜜佳廣, 草木蜜佳美, 禁發必有時..."

蟹雖多，因罟必有正... 專民於生穀。

" (p.4a) ("Although the forest is vast and vegetation beautiful, there must be the issuing of timely prohibitions [concerning activities that take place here]...Although the soft-shelled turtles are many, there must be regulations concerning the size of net holes...to enable the people to concentrate on grain production.")

As in the Qin, the government actively tries to prevent the farmers from engaging in secondary pursuits that it believes distract them from farming work. The Han Shu provides illustrations. In the Wen Di Ji chapter, Emperor Wen is said to perform the act of ritual tilling and reduce taxes by half because "...民或不務本而事末，故生不遂." (p.72) (...Some people [i.e., farmers] don't devote themselves to what is essential [i.e., agriculture], but rather to what is non-essential [i.e., mercenary activities], thereby not fulfilling agricultural production [goals].")³ Again, in the Zhao Di Ji chapter, during the time of Emperor Zhao in the reign period "shi yuan" (ca. 80 B.C.), there is the inauguration of a wine tax designed to curb the profits of farmers selling wine. "賣酒升四錢以邊塞." (p.105) ("For each 'sheng' of wine sold, four coins had to be [paid as a tax] used for [safeguarding] the frontier passes.")

³ As is to be expected, the above actions don't result in an increase in agricultural production.

Chapter 11 The Roles of Government Officials in Stimulating Agricultural Production

The government of the Western Han, like that of the Qin, assigns designated officials to agriculturally-related tasks. Here, we have not only records referring to the basic functions of some of these officials, but references to actual agricultural officials. The kinds of officials referred to by name in available texts include teachers, grain distributors, regulators of seasonal activities, and tax collectors.

11.1 Officials as the Farmers' Teachers

The Da Si Tu in the Zhou Li plays a role similar to the Tian in the Li Zheng chapter of the Guan Zi and the Yue Ling Calendar.¹ He "辨十有二壤之物而知其種，以教稼穡樹藝。" (juan 10, p.3a) ("discerns between the appropriate types of vegetation for each of the twelve types of soil and knows the different varieties. He uses his knowledge to teach the people how to plant fruit trees and grains.")

Though one would expect ritual texts, such as the Zhou Li to greatly exaggerate the Confucian role of the teacher/official, historical references to teacher/officials performing similar roles indicate that such officials do exist and that the government's emphasis on appointing such officials is real. These historical officials include Fan Sheng-zhi, Bu Shi, Tao Zhu-gong, and others.² All of these officials are extremely knowledgeable about the farming

¹ It seems that an official with this name did not exist. The Da Si Tu appears to represent an official with similar duties, perhaps the Si Gu, who went by another name. The Da Si Tu first appears in historical records in the late Western Han during the reign of Emperor Ai. (Sun Yong-du and Meng Zhao-xing, *Jian Ming Gu Dai Zhi Guan Ci Dian.*)

² Though the Zhou li is a late Warring States text, the material it contains can be applied to the Western Han, as well.

activities in which they are involved and are able to use what they learned to create new farming or animal husbandry methods. It appears that these officials frequently have personal contact with the farmers and teach them directly.

In numerous cases, these teacher/officials are concerned with not only helping one generation of farmers in a specific location, but in helping future generations of farmers in a wider area. This concern results in the writing of a number of agricultural texts from the late Warring States, many of which are no longer extant. Thus, for example, Fan Sheng-zhi's desire to help the farmers in the Guan Zhong area (who suffer from strife and corruption near the end of the Western Han) is the reason why he writes the *Fan Sheng-zhi Shu*.^{1b} He wants as many farmers as possible to be informed (through lower agricultural officials) of more efficient farming methods and the accurate timing of farming activities. Again, what remains of Tao Zhu-gong's *Yang Yu Jing* indirectly tells the northern farmers how to raise fish to make a profit.

Unfortunately, the growth of large estates during the Western Han probably limits the contact of some farmers with such officials.

11.2 Grain Distributors

An official associated with grain distribution is the Cang Ren. There is a passage in the *Zhou Li* that refers to his duties in conjunction with the distribution of grain during times of hardship. The amount of grain that is harvested in any one year determines how much will be distributed and when. "天子 ...命有司發倉庫賜貧窮，振五色。" ^{1c} ("The emperor...orders the civil authorities to open the public granaries and give the poor grain to save them from starvation [under his guidance].")

The above suggests that there are probably other officials with specific duties related to grain distribution.

11.3 Regulators of Seasonal Activities

Western Han texts refer to officials with forestry duties similar to those found in Qin texts. For example, in the Zhou Li, the Si Huan regulates when fires can be made.^{1d} (The fires possibly refer to fires that burn objects into ashes and/or charcoal fires, both of which are prohibited during parts of the farming season in various texts.) Thus the Si Huan prohibits the people from making fires in spring and allows them to make them from the ninth month through the winter months. At times, some farmers might resent such restrictions being imposed upon them. However, there are probably allowances made in cases of necessity. Though the Zhou Li sometimes assigns imaginary names to officials, I feel it likely that, in this case, an official with the same or similar duties existed.

11.4 Tax Collectors

From the Western Han, although there are government appointed tax collectors, it becomes increasingly more common for the overseers of large estates to collect land taxes in certain parts of China.^{1e} In this case, the landowner keeps a portion of these taxes and presents the rest to the central government.

Because of the above change, it is difficult to determine how prevalent government appointed tax collectors were. However, it appears that there were probably numerous officials who collected other taxes, such as taxes for fishing rights. The Zhou Li refers to the Ze Yu, who is responsible for collecting both taxes for fishing rights and taxes (in the form of pearls and other valuables) for the right to take what one finds in lake and river regions. Concerning the latter, "... 侵其地之人守其財物, 以時入之於玉府,

頒其餘於萬民。 " (juan 16, p.7a) ("...[The Ze Yu] permits the people living near bodies of water to take what they offer. If the people give the Yu Fu [pearls and other] valuables they find in these areas [paying taxes on time], the Yu Fu will take some and leave them the rest...") Like the Yu Shi in the Li Zheng, the Ze Yu tries to be reasonable with the people and satisfy their needs.

PART IV: AGRICULTURAL DWELLING PLACES & OTHER BUILDINGS

Chapter 12 Agricultural Dwelling Places and Other Buildings

The Han tomb models are valuable since they not only provide a setting for the reader, but also verify the types of domestic animals the farmers raise in abundance, the types of food they eat, the layout of the villages in which they live, and the mechanical inventions they use during the Qin/Han period.

In the "area inside the passes" (i.e., Guan Zhong) where the Yellow River bends, there appears to be different kinds of farm dwellings, reflecting various degrees of prosperity. We can distinguish the types of homes as those of the small and very poor farmer; the average farmer; and the wealthy farmer, who might also be a small landowner.

The small farmer's home consists of a small one story building that is frequently connected to a pigsty. In diagram #1 is a model from Loyang in Henan (Schloss, 1975, photo #6). The raised house has a sloping tile roof and an opening that serves as a door. In the walled pigsty in front of the home are two pigs. Model pigs are frequently found with model farmhouses, suggesting that they are widely raised and that pork is a staple food.

In diagram #2 is another one room house, also from the Henan area (Schloss, 1975, photo #7).¹ According to Ezekiel Schloss, this kind of home is common throughout China during the period. The opening appears to serve as a window and entrance to which steps were attached separately. The grooves in the roof and its sloped roof are designed to help with water drainage during the rainy season (Schloss, 1975).^{1a} The

¹ Here there is no pigsty, but it is possible that the pigsty was constructed separately from the house.

sharply curved ends of the roof are characteristic of the Han.

The small farmer owns little. There appears to be no granary or other structures on his property. Of importance to him are his fields and any domesticated animals he owns. In diagram #3, a poor farmer is kneeling in a pigsty in which he seems to be guarding his only pig (Schloss, 1975, photo #9).

The "middle" or average farmer seems to live in a home more like that in diagram #4, which according to Schloss is rather typical (Schloss, 1975, photo #5). This L-shaped house has two stories, each of which has many slotted openings that serve as windows. A door at the rear of the house opens into a closed courtyard. In the main doorway there stands a farmer. Near the other side doorway is a cow with a missing head. The cow can serve as evidence of the extensive use of the ox-plough in the region, as well as the use of oxen for transportation. Such a home probably has a kitchen inside the main house with a rectangular or horseshoe-shaped stove. It might also have a small granary, judging from the model of a similar house with a courtyard from the first century B.C. (Smith, pp.62-63).

Though L-shaped homes are popular, a Western Han model of a rectangular two story building with many "windows" and a gabled roof from Shaanxi indicates that rectangular homes are also being built by the average farmer (Schloss, 1979, p.34). Behind the model in question is a barnyard with domestic animals. In the doorway of the house are three people, each of whom is holding a stick and mixing something in a pot. This is probably home-brewed wine. This would indicate that government efforts to prevent the farmers from engaging in such secondary work are probably not successful. The making of wine among the farmers seems to be quite widespread.

The wealthy farmer's home is probably like the model home in diagram #5. This consists of a gate house, the main house, a watchtower, a grain storehouse, a kitchen, and a latrine (The Quest for Eternity, 1987, p.110). The main house has a gabled roof and is opposite the gate house, in which there is a watch dog on alert. To the left of the main house is the kitchen in which three bronze vessels are placed: a cauldron, a basin, and a rice steamer. To the right of the main house is a pigsty containing a model pig, above which is the latrine. Three chickens sit on the ridge of the latrine roof. [See diagram #6.] The chickens would provide eggs. They might also be killed on occasion for meat, though pork appears to be the major kind of meat consumed in a largely vegetarian diet. Between the gate house and the latrine is the hip-roofed watchtower.² Opposite this watchtower is the hip-roofed granary that is reached by a double staircase. [See diagram #7.]^{2b}

In addition to models of pigs, cows, dogs, and chickens, there are also models of goats³, geese³, ducks⁴, rams⁴, and fish⁴. [See diagrams #8-12.] Goats might be valued for their milk, as well as their meat. Ducks, geese, and fish are consumed, but with much less frequency than pork, and probably not by the average farmer.⁵ ^{5b}

Numerous tomb models of communal sites within a village add to the picture of village life. These include models of a watchtower, an outdoor stove, a granary urn, a wellhead, a grain mill, and a rice huller and winnow.

² A hip-roof has sloped edges and sides.

³ The Quest for Eternity, 1987, p.109, p.112.

⁴ Schloss, 1975, photos, #25, #23, #15

⁵ The fish referred to here was probably caught in one of the rivers near Loyang.

The watchtower is the tallest building in a village. As diagrams #13a and #13b show, it is usually two or three stories high and provides a good view of the surroundings, making it an ideal military lookout (uncatalogued tomb models, shelving #L1987.61.25 - Schloss, 1975, photo #1). In the three story watchtower model, there are four people on the first and third story and one at the top of the tower and on the second story. It cannot be determined whether some or all the villagers in a particular village are appointed to serve a number of hours on guard duty.^{5b}

Though there are private homes with kitchens, there are also community stoves, like the model of an outdoor one in diagram #14, suggesting that many do not have stoves in their homes (Schloss, 1975, photo #13). Instead of the usual rectangular or horseshoe-shaped form, this stove and the connecting three story building form a L-shaped figure. It appears that several people use this stove at one time.

The granary urn, such as the one in diagram #15, is modelled on the granary towers that are probably communally used by the small farmers and some average farmers. The round granary model is open in the middle of the slanted roof. This type of granary changes little over time (Schloss, 1975, photo #10).

The wellhead is considered an important part of village architecture (Schloss, 1979, p.38). There are two basic kinds: rectangular and cylindrical. Models of wellheads, like the one in diagram #16, are frequently decorated on all four sides with farming or combat scenes (Schloss, 1975, photo #11). The wells they represent in real life are important to the farmer both as sources of drinking water and irrigation.

The lack of grain mills in models of farm houses suggests that they are used by more than one household. The grain mill model in diagram #17 consists of a runner and a bedstone that rests inside a shallow bowl. The runner has two round holes that enable one to grasp and turn it to grind grain into flour

(Schloss, 1975, photo #12).

There are also models of farming *equipment* that indicate the level of technology. For example, in diagram #18, there is a model of a rice huller and winnow on a rectangular base from Henan (The Quest for Eternity, 1987, p.112). This is one of the earliest models of an operating winnow and huller with a treadle-operated tilt hammer.^{5c} The existence of such a model suggests that the winnow and huller existed prior to the Western Han. In the model, the rice huller is worked by a man holding both sides of the huller frame as he treads on the hammer that hulls the rice. The man working at the winnow, that polishes the hulled rice, operates the crank-operated fan from near the back of the winnow.^{5d} In addition to illustrating the use of advanced agricultural technology, the above shows that rice is part of the diet of the farmer in the Guan Zhong area, at least in its southeastern part.

According to Ezekiel Schloss, there are no significant differences between Western and Eastern Han tomb models, to the point where it is often difficult to distinguish Western Han models from Eastern Han ones (Schloss, 1979, p.38). Perhaps the major difference between Western and Eastern Han tomb models is that there are fewer tomb models of farming scenes from Western Han than from Eastern Han. Because the appearance of farming activities or practices depicted in the tomb models indicates that they existed some time before the models were made, numerous Eastern Han models (especially those proven to date from the early Eastern Han) can be used to supplement Western Han ones in illustrating certain farming practices that existed from at least the middle of the Western Han.⁶ This refers in particular to the construction of dammed

⁶ There are examples of models that have not been distinguished as Western Han or Eastern Han in Ming-Ch'i (Schloss, 1975). Some of them made in or near Loyang probably date from the Eastern Han. But this does not appear to detract from their value as evidence of the farmer's dwelling

ponds and different types of land plots. Finds from an early Eastern Han tomb that dates from approximately 23 A.D. in Mian county in Shaanxi provide examples. Diagram #19 presents a model of a circular pond of the type built along mountain slopes for both water storage and irrigation. Such dammed ponds are small and used to grow water plants and raise fish, as well as store water (The Quest for Eternity, 1987, p.115). By the Western Han, farmers engage in fish breeding on a small scale. This model gives us an idea of how such ponds appear.

A model of winter rice paddies found in hilly areas is slightly irregular in shape. [See diagram #20.] (The Quest for Eternity, 1987, p.115) These kinds of fields yield only one crop per year and appear to be those referred to in the *Fan Sheng-zhi Shu*, that was written not long before this model was made. The models of frogs, snails, eels, and soft-shelled turtles suggest these fields are filled with water long enough to raise the above types of edible animals, as well as grow aquatic plants.

A third model of interest is diagram #21.^{6a} This consists of two rectangular fields separated from a square pond that serves as a reservoir by a dam with sluice gates. The reservoir contains models of snails, frogs, soft-shelled turtles, and carp. The narrow area between the reservoir and fields above the dam serves as a path.^{6b} Such a model provides an excellent illustration of small-scale irrigation and water conservation that must have existed by the late Western Han and reflects the increasing interest in irrigation techniques since the reign of Emperor Wu.

place or his surroundings, which appear to have changed slowly over the centuries.

The above models of farm houses and their environs provide concrete evidence that cannot be found in literary sources, but is crucial to understanding where and how the farmers live.

PART V: ANNUAL CYCLE OF AGRICULTURAL ACTIVITIES

Chapter 13 The Annual Cycle of Agricultural Activities

Although the farmers in the Guan Zhong area are subject to some differences in agricultural administration throughout the period, the pattern of farm work they carry out throughout the agricultural year is essentially the same. There may be slight differences in the technology used in certain areas, but the basic timing of the activities and the demands they put on the farmers appear to be fairly constant. Under this assumption, I will discuss the major kinds of activities engaged in by the Guan Zhong farmers when not engaged in corvee duty. In doing so, I will divide the chapter into sections referring to specific types of activities.

13.1 Sowing Preparations

Major sowing preparations include tilling, weeding, and the making of fertilizer. All of them begin early in the agricultural year (in approximately the first or second month) and continue throughout most of the farming year.

Tilling of the soil is considered to be crucial to the growing of crops. Because failure to properly till the soil may result in a poor harvest, proper tilling is emphasized in late Warring States and Western Han agricultural works. The Ren Di chapter of the Lū Shi Chun Qiu, the Bian Tu chapter of the Lū Shi Chun Qiu, and the Fan Sheng-zhi Shu are three texts that discuss the kinds of tilling methods all farmers (in the Guan Zhong area) should use. They all emphasize the tilling of hard soils prior to that of soft soils to prevent the loss of moisture in hard soils. For example, in the Ren Di chapter, "力者欲柔, 柔者欲力... 五耕五耨." (juan 26, p.10b) ("Strong [or hard] soils must be made soft [or weak]; soft ones must be made firm...[One] tills five times

and weeds five times [with a "nou", or weeding hoe] .") This presents the main "tilling principle" and provides information on the relationship between tilling and weeding, and the types of implements used. The Bian Tu chapter states the reason underlying the above principle. "凡耨之道，必始於壟。爲其寡澤而後耨..." (juan 26, p.14a) ("[As for] ways of tilling, one must till black soils first because they lack moisture and will become too dry if not tilled first...") One tills soft soils afterwards because it does not matter if they are tilled later. Such advice reflects good farming practice. The Fan Sheng-zhi Shu indicates that farmers till hard soils from approximately the first month.^{0a} The Xiao Guang chapter of the Guan Zi says farmers usually till deep at this time.^{0b} The tilling of the soil generally continues until approximately the eighth month, prior to the sowing of winter crops. Thus, according to the Fan Sheng-zhi Shu, rice fields are tilled in the first month, male nettle-hemp fields are tilled in the third month, and so forth.^{0c}

The major tools used to till the soil in the Guan Zhong region are the "nou" and the square-framed iron-pronged plough.^{0d} The use of the plough is described in the Ren Di chapter of the Lū Shi Chun Qiu in connection with the "mu chuan" system of tilling. "是以六尺之耨，所以成畝也。博八寸以成田川。" (p.11a) ("Thus one uses a six foot plough to till the ridges and its eight inch wide blade to till the furrows.")¹ This is the first reference to the Mu Chuan system, in which seeds are sown on ridges and in furrows. The ridges are wide and level and the furrows deep and narrow to shade the roots. Sowing on ridges and in

¹ According to the Kao Gong Ji chapter of Zhou Li, the ridges are six feet wide. This accounts for the six foot plow. However, Kao Gong Ji says the furrows are one foot, rather than eight inches, wide.

furrows is widespread during the Qin and early Western Han.^{2 3a}

From the mid Western Han, an increasingly larger number of farmers begins to use the "dai tian"^{3b} method. This system of ridges and furrows is invented in approximately 100 B.C. by Zhao Guo, the Minister of Agriculture.^{3c} It refers to the splitting of a six foot wide ridge into three shallow furrows separated by ridges, and the inversion of these ridges and furrows in alternate years. The *Shi Huo Zhi* chapter of the *Han Shu* refers to the "dai tian" system as follows: "過能為代田，一田為三田川。" (p.523)^{3d} ("[Zhao] Guo was able to create the 'alternating field system' in which one ridge was divided into three furrows.") With the inauguration of this system, seeds are now sown only in furrows to protect them from the wind.⁴ "而播種於田中。" (p.523)^{4a} ("[Grain seed] is sown in furrows.") Such an innovation will help increase agricultural production, especially during less turbulent times.⁵

² From the late Warring States through the mid Western Han, farmers frequently plough in groups of two. This is called, "ou geng" or "paired tillage". However, with the increase in large estates during the Western Han (resulting from the decentralization of the government), this practice becomes less common. (Bray, 1984, p.167)

³ Though the square-frame plows are still used in the Western Han, there are some improvements. For example, there is the adjustable strut, that modifies the distance between the slade and the beam. This allows for control of ploughing depth necessary in tilling different soil types and in different climates. (Bray, p.169)

⁴ When weeding, the soil from the ridges falls into the furrows (covering the roots) until the ridges and furrows are level. (*The Cambridge History of China*, vol. 1, p. 564.)

⁵ The extant fragments of the *Kui Ji Shu*, a Western Han text written during the reign of Emperor Xuan, also refer to Zhao Guo's achievements. This work mentions not only the invention of the "dai tian" system, but also three farming methods Zhao Guo teaches the people. These are the use of ox ploughs drawn by one man and one ox; sowing with the mechanical seed drill (invented by Zhao Guo); and farming one-hundred "mu" of land. (*Yu Han Shan Fang Ji Yi Shu*,juan 69,

In addition to tilling the soil, the farmers also tread upon it. The Yin Dou Wei Shu refers to this practice in conjunction with the beginning of the farming season in the first month.^{5a} However it probably occurs throughout the year when soil is being prepared for sowing. Treading is important in the loess region of northwest China because it compacts the light soil and strengthens it (Bray, 1984, p.221).

Also crucial to farmers from the beginning of the year is weeding. The Ren Di and the Xiao Guang refer to the removal of weeds in conjunction with spring ploughing.^{5b} This is frequently done with weeding hoes, which eliminate weeds and improve the tilth of the soil (Bray, 1984, p.300). Light hoes are frequently used. Weeding occurs throughout the year, but is regarded with greater concern in spring, and summer or early autumn. [See sections 13.2 and 13.4.]

Fertilizer mixtures are made from the beginning of the year. The Fan Sheng-zhi Shu provides the most detailed account of how this cooked manure is made in a description of Fan Sheng-zhi's novel seed soaking method ("sou zhong fa"): The basic ingredients are ground bone, excrement, and water (or snow water). The type of bone or excrement used depends upon the soil type. For example, ox bones are used for hard soils. After the correct combination of excrement and bone is chosen, the fertilizer ingredients are cooked. After being cooked, the seed is soaked in the mixture to strengthen it and enable it to withstand extremes in weather and harmful insects. An example of how this is done is the following passage: "又馬骨坐一石,以水三石,煮之三次。瀉去滓,以汁漬附子五枚 ..."^{5x} (p.45) ("[One] mixes one "dan" of ground horse bone with three "dan" of water, and cooks this mixture until it boils three times. Then [one] removes the sediment and soaks five grain seeds [in this mixture]..") The Fan Sheng-zhi Shu adds that if one cannot obtain ground horse

p.1a)
^{5x} - Three or four days later, one removes the seeds, adds silkworm and sheep excrement into the mixture, and mixes it until it has the consistency of porridge, etc.

bone, snow water can be used instead since it prevents the crops from becoming too dry. Seed soaking must take place approximately twenty days prior to sowing.⁶ ⁷ In the Zhou Li, the discussion of the duties of the Cao Ren presents a similar picture of fertilizing methods: "凡糞種,馬牛用牛,雞是用羊 ..." (juan 16, p.3b) ("There are different kinds of fertilizing methods: 'If the soil is red and hard, use the ground bones of ox [or cows]. If the soil is a reddish-yellow colour [and not too hard], use ground sheep bones.")

13.2 Sowing Procedures

Sowing methods used by the Guan Zhong farmers can be discussed in terms of seed placement and irrigation.

Of the three major sowing methods, the kind most favoured in the Guan Zhong area appears to be sowing in rows.⁸ It has the advantage of losing less soil moisture than the other methods (Bray, 1984, p.252). This practice appears to begin in the Warring States, though the seed drill is not used to place the seeds until the mid Western Han (since it is one of Chao Guo's inventions).

The **Bian Tu** chapter of the **Lǔ Shi Chun Qiu** and the **Fan Sheng-zhi Shu** illustrate sowing in rows. In the **Bian Tu** chapter, there is emphasis on the care needed in placing seeds in order for seedlings to be able to grow strong. For example, "正其行,通其風。" (p.15b) ("If [the seeds] are arranged correctly in rows, [the seedlings] will be able to withstand the wind.") In sowing the seeds in rows, the

⁶ In the late Western Han, green fertilizer (i.e., with bean as opposed to excrement bases) is used, but not very widely.

⁷ According to Bray, fertilizer mixtures were made and applied by farmers as early as the Shang.

⁸ The other two methods are broadcast sowing and the sowing of individual seeds.

number of seeds planted and the amount of soil used to cover them is crucial. Thus the *Bian Tu* also says, "慎其種, 勿使數, 亦無使疏。於是施土, 無使不足, 亦無使有餘。" (p.14b) ("One must be cautious in sowing seeds and see that neither too many nor too few are sown, and that the sown seeds are not covered with too little or too much soil.")

One of the two kinds of pit cultivation ("qu tian fa") referred to in the *Fan Sheng-zhi Shu* concerns the sowing of crops in rows inside long ditches of varying widths surrounded by raised ridges.⁸² The ditches are fertilized and irrigated. [See diagram 1.] Surrounding the fields of ditches are foot paths. This appears to be a modified version of the sowing method described in the *Bian Tu* chapter of the *Lǔ Shi Chun Qiu* and other texts. For instance, in explicitly stating the exact specifications for the sowing of millet, "種黍於溝間。一溝四十四株。令上有-寸土 ... 令相去二寸一行。" (p.66) ("Millet [seeds] are planted in rows. In one ditch forty-four seeds [are sown]. Above [each seed] is one inch of soil...The distance between each row is two inches.")

Though sowing in rows seems to be most common in the Guan Zhong region, the sowing of individual seeds gains popularity with the introduction of Fan Sheng-zhi's other sowing method.⁹ This refers to the sowing of individual seeds in small, square pits that are lined up in even rows across a field surrounded by footpaths. The pits are fertilized and irrigated. The distance between pits depends on whether one is a farmer of

⁹ However this method appears not to have promoted lasting changes in Northern China, since it is so labor intensive. (The Cambridge History of China, 1986, p. 565.)

the first, second, or third rank.^{9a} [See diagrams 2 through 4.] This method works well in mountainous areas, as well as in level areas.^{9b} The irrigation method used here varies slightly with different crops, as do the fertilization mixtures. Crops sown by this method include ramie, hemp, melons, taro, mulberry trees, large beans, and rice (which is more common in the south). For example, taro is sown in pits with soft soil in the second month. "二月注雨,可種芋。" (p.164) ("In the second month, if there is rain, taro can be sown.") If the weather is dry, then the taro fields can be irrigated.^{9c} The size of the pits used in planting the above types of major crops is frequently mentioned in the *Fan Sheng-zhi Shu*. For instance, when sowing large beans, "...坎方深各六寸..." (p.130) ("...[One uses] pits six inches square and six inches deep...")

After the seeds have been sown, the fields are periodically harrowed with a harrow. The harrow breaks up and levels the soil, thereby protecting the growing shoots. The *Fan Sheng-zhi Shu* and the *Yin Dou Wei Shu* provide examples. The *Fan Sheng-zhi Shu* relates the practice of harrowing with jujube (or date) branches. For example, "秋金鋤以束束柴糶之,以糶麥根。" (p.110) ("At the time of autumn weeding, [one] uses jujube branches to harrow the [winter wheat] fields, so as to protect the wheat roots.") Other instances of harrowing in this work refer to the harrowing of spring wheat fields in the first month and male nettle-hemp in the third month.^{9d}

The *Yin Dou Wei Shu* refers to the harrowing of fields after the sowing of certain crops, such as sunflowers.^{9e}

In addition to the above sowing methods are a number of other sowing practices. These include the practice of sowing more than one kind of crop in the same field and the planting of specific kinds of crops. The former tends to enhance the growth of both crops. For example, in the *Fan Sheng-zhi Shu*, "又可種小豆於瓜中..." (p.152) ("[One] can sow small

beans in the melon field.") However, in certain cases this is not advised. According to the *Shi Huo Zhi*, farmers should not plant trees in grain fields. This is apparently detrimental to the growth of the five grains. (p.506)^{9f}

Planting all of the "five grains" is considered to be a good preparation against drought. If more kinds are sown, there is a better chance that at least one kind will survive a drought.^{9g} Also, a number of works stress the sowing of beans as a good protection against famine.^{9h} This is because they are hearty and easy to plant. Thus the *Fan Sheng-zhi Shu* claims, "大豆保歲易為，宜古之所以備凶年也。" (p.129) ("Large beans guarantee a good harvest and are easy to plant. Thus the ancients planted them to avoid famines.") The many recorded instances of planting beans in the *Fan Sheng-zhi Shu*, the *Yin Dou Wei Shu*, the *Yang Yang Jing*, and other texts suggest the importance of planting a large bean crop.⁹ⁱ

In the Guan Zhong region, irrigation used in conjunction with the sowing of crops increases crop yields. This can be viewed on both a large and a small scale. Government efforts to promote irrigation (as well as improve grain transport) by digging canals is one kind of large scale irrigation that occurs in Guan Zhong. (This is discussed in chapters 6 and 10 in conjunction with the government's involvement in agriculture.) Small scale irrigation refers to the irrigation procedures conducted by the farmers on their fields. This includes irrigating one's fields using reservoirs and/or water taken from irrigation canals or underground wells.

A Han tomb model from Shaanxi and the *Yue Ling Calendar* refer to the farmers' use of reservoirs for irrigation.^{9j} In the tomb model, the reservoir is located next to the field it irrigates. A small dam with sluice-gates is used to allow the water to flow from the reservoir into the field when needed.

[See chapter 12.]¹⁰

The irrigation procedures described in conjunction with the sowing of various crops by pit cultivation in the Fan Sheng-zhi Shu appear to rely on irrigation ditches or wells for water. One detailed passage refers to the irrigation of rice fields. It says because rice plants are sensitive to changes in temperature it is necessary to regulate the flow of water in irrigating them. "始種稻欲溫...令水道相道。夏至後太熱，令水道錯..." (p.121) ("When rice plants are newly sown they need to be warm...The water must be channelled straight across the field. After the summer solstice when it is too hot, the water must be channelled at an angle across the field [so as to prevent the new plants from becoming too hot].") This appears to occur in approximately the third or fourth month.¹¹

Sometimes irrigation takes place shortly before sowing. For example, when "...臨種沃之如三升水。" (p.110) ("...about to sow [large beans], one irrigates the field with three 'sheng' of water.")

The irrigation of rice fields appears to be more complex than the irrigation of beans and other less sensitive crops, with exception of melons (that are irrigated by water jugs placed below the ground with their spouts above ground level).^{10a} However similar principles apply. The fields are frequently irrigated at the time of sowing, and when needed.

¹⁰ The Yue Ling Calendar refers to the prohibition against draining these reservoirs in the second month. I do not believe that such an activity is confined to only the second month. Because the second month is associated with sowing, it appears that reservoirs cannot be drained during the months of the "sowing season", or much of the farming year.

¹¹ According to the Fan Sheng-zhi Shu, non-glutinous rice is sown in the third month and glutinous rice in the fourth month.

Table 13.1 - The Crop Sowing Cycle

The Guan Zhong farmers appear to sow a large number of crops throughout the farming year. These include not only those listed in the table below, for which sowing times are recorded, but also indigo, sesame, and black millet (used in making wine).

List of Abbreviations:

- (FSZS) The Fan Sheng-zhi Shu
 (RD) The Ren Di chapter of the Lū Shi Chun Qiu
 (YD) The Yin Dou Wei Shu
 (YYJI) The Yang Yang Jing

The Second Month

(FSZS)
 taro, hemp
 (YDWS)
 melon, beans,
 shallots,
 lentils,
 rapeseed,
 mustard seed,
 mallows

The Third Month

(FSZS)
 cereals,
 non-glutinous
 rice, large
 beans, hemp,
 gourds
 (YDWS)
 (broad) beans,
 melons,
 shallots,
 smartweed
 rapeseed,
 mustard seed,
 mallows
 (YYJI)

The Sixth Month

(FSZS)
 large beans
 (YDWS)
 'cang' melon,
 late melon,
 autumn
 sunflowers,
 beans

The Seventh Month

(FSZS)
 winter wheat¹²
 (YDWS)
 mallows, mustard
 seed, rapeseed

The Eighth Month

(FSZS)
 winter wheat
 (YDWS)
 winter sunflowers

The Eleventh Month

(RD)
 hemp and beans^{13 14}

¹² The Yue Ling Calendar indirectly refers to the harvesting of winter wheat at this time.

¹³ This dating seems to be inconsistent and possibly erroneous.

large beans

The Fourth Month

(FSZS)

glutinous

panicum millet

(YDWS)

melons

(YYJI)

large beans

(RD)

barley

The Fifth Month

(YDWS)

'cang' melon,

late melon,

sunflowers,

beans

13.3 The Elimination and Prevention of Harmful Insects and Animals

The Guan Zhong farmers, like farmers throughout many regions of China, are concerned with insect elimination and prevention.

In cases where insect and animal pests appear after the farmer has sown particular crops and is in the process of caring for them, elimination is necessary. As for insects, there are two major methods of elimination. These are burning and smoking. The burning of insects existed much earlier and is referred to in texts, such as the *Shi Jing*.^{13a} The smoking of insects is first referred to in *Zhou Li Qiu Guan*, suggesting that it first appears no earlier than the late Warring States. A passage reads, "以莽草火熏之." (Zhou, 1980, p.205) ("Mang" [a poisonous grass technically referred to as *illicium anisatum*] is used to smoke [insects].") Though insects appear to be the farmers' major problem, there are

¹⁴ "Ren" can also refer to rapeseed.

references to the elimination of the kinds of animals that harm growing crops. For example, in the Yue Ling Calendar, in the fourth month, "是月...馬區 獸 毋 害 五 穀. 毋 大 田 鼠." (p.11a)^{14a} ("This month, one drives away the animals that destroy vegetation. Then [they cannot harm the five grains and] there will be no large voles [or moles].")¹⁵

The wise farmer tries to prevent insect and animal pests whenever possible. One method of prevention is sowing on time. Texts, such as the Fan Sheng-zhi Shu, refer to the association between locusts and the time a crop is sown. For example, the Fan Sheng-zhi Shu says that if wheat is planted too early, it will attract insects.^{14b}

Two other important methods of prevention are related to seed treatment. The first concerns soaking the seed in a fertilizer mixture prior to sowing. This is supposed to prevent insects from harming the new seedlings, as well as enable the seedlings to withstand extremes in temperature. [See section 13.1.] The second method focuses on the storing of seeds near the close of the farming year. The Fan Sheng-zhi Shu stresses the importance of wrapping dried grain seeds in dried artemisia, an insect repellent. These wrapped seeds should be stored in cool, dry places to insure their protection. Therefore they are frequently stored below ground.^{15a}

¹⁵ Though the Yue Ling Calendar is a ritual text, the association of the vole with the time of the year when farming activities are conducted in other contemporary calendars and descriptions of the vole eating grain in earlier texts (like the Shi Jing poem Shuo Shu) suggest that the above passage contains validity.

13.4 Harvest Activities

Harvest activities of the Guan Zhong farmers are not described in nearly as much detail as sowing preparations, sowing, and other activities. Many records center on the time of the year when particular crops are harvested, rather than upon harvesting methods.

The major kinds of harvest activities of concern here are pre-harvest weeding, the reaping of crops, threshing, and the selection of grain seeds, and grain storage.

Pre-harvest weeding refers to the recurrent weeding that occurs after the seedlings have grown but before they are mature enough to be harvested. If the fields are weeded (when necessary) until the harvests begin, there is a better chance of good harvests. The *Fan Sheng-zhi Shu* and the *Yue Ling Calendar* are two texts that refer to weeding at this time. In the *Fan Sheng-zhi Shu*, "區中草生，芟之。區間草以割割之，若以金力金力。" (p.71) ("When weeds grow within the pit, [one] removes them. One removes the weeds using a spade or a round-headed weeding hoe.") Though not explicitly stated, this type of weeding appears to occur periodically after the seedlings have reached a certain amount of growth, distinguishing it from the weeding associated with sowing preparations.

The *Yue Ling Calendar* illustrates the burning of weeds before the autumn harvests. "大雨時行，大燒割行水，利以殺草 ... " (p.15a) ("If one burns the weeds, before the timely rains, then after they fall there will be none left...In this manner, one can fertilize his fields and soften the hard soil.")

The grain stalks in north China are generally reaped with a harvest knife or sickles. The harvest knives are used to reap crops that ripen unevenly, such as setaria millet. The stalks are cut below the ear. This method appears to aid in the development of new strains (Bray, 1984, p.238). Iron

sickles are used in the late Warring States and Western Han to reap the other crops. The Shen Shi chapter of the Lū Shi Chun Qiu relates how grain crops, such as wheat, will appear at this time, depending upon whether they were sown early, late, or on time. "是以得時之禾，長禾同長穗...先時者，莖葉帶...穗閉而青零..."

" (juan 26, p.17b) ("If the [wheat seedlings] are planted on time, they will have long stalks and long ears...If they are planted too early, the leaves on their stalks will have beards...and the grains when ground won't be tasty...") If they are planted late, the leaves on their stalks will have beards and the ears will fall off before they have ripened.

After the grains are reaped, they are usually threshed.¹⁶ Grains have been threshed in a number of ways since early times. One method is treading. Other methods include beating the grains over a tub (for rice), mat (for cereals), or on threshing grounds; and winnowing, exemplified by diagram #18 in chapter 12.

Grains that will not be stored are ground into flour or meal using mills, such as the one in diagram #5 (Uncatalogued tomb models, Metropolitan Museum of Art, shelving #L1986.61.26).

Table 13.2-Recorded Harvests in Available Texts

The list of recorded crop harvests throughout the year in available texts does not appear to be complete. The harvests of numerous crops referred to with respect to sowing practices are not mentioned. This may result from a number of factors. These include the fact that much of the Fan Sheng-zhi Shu is not extant; the disappearance, in part or full, of other contemporary agricultural texts; and other factors, such as the emphasis on sowing methods as opposed to harvesting ones. What I find particularly striking about the list is the lack of records of bean harvests, since there are

¹⁶ Bray (1984, p.345) says cereals are frequently stored before threshing since they stay better in the ear.

many records of bean sowing. This is probably due to a lack of emphasis on harvesting procedures. The list is also lacking in entries from agricultural and historical texts. Most references are found in ritual texts, which frequently distort reality and have the tendency to generalize. Thus caution must be used in using the list to determine when various types of crops are harvested throughout the farming year.

List of additional abbreviations:

- (SZB) The Shi Ze (B) Calendar
- (QZ) The Qing Zhong Calendar
- (WX) The Wu Xing Calendar
- (YL) The Yue Ling Calendar

The Fourth Month

(RD)
barley
(YL)
wheat

The Fifth Month

(FSZS)
wheat
(YL)
glutinous
panicum millet
(QZ)
wheat

The Seventh Month

(YL)
cereals
(QZ)
glutinous
panicum millet
(WX)
setaria millet,
glutinous
panicum millet
(SZB)
wheat

The Eighth Month

(YL)
hemp
(WX)
setaria millet,
glutinous
panicum millet

The Ninth Month

(YDWS)
winter sunflowers,
rape turnips,
mallows, mustard
seed, and rapeseed
(YL)
rice

The Tenth Month

(YDWS)
rape turnips,
mallows, mustard
seed, rapeseed

Good seeds are chosen from large, ripened ears and then stored until late winter when they are taken out again and examined in preparation for the new farming season. This

activity frequently coincides with the drying of ears of grain. In the *Fan Sheng-zhi Shu*, the ears are dried in bundles in a high place on the threshing floor. (p.42) Drying is intended to protect the ears from harmful insects.

Grain storage takes place when the dried grains are ready to be stored. Grains are stored in both round and square granaries, the former of which is much more common in the north than the south. They are frequently made of straw or wicker. In the Guan Zhong region, grains are also stored in pits below ground in airtight containers. References to granary walls and fences in the *Yue Ling Calendar* and other texts indicate that granaries are frequently surrounded by walls for protection, hence the need to examine and repair the granaries at periodic intervals.^{16a}

The grain is stored in public and private granaries in terms of defined units that tend to vary in different regions. According to the Yun Meng tablets, even within the Qin kingdom, there are different granary units in different areas. For example, the "dan" is the unit used in the Xian Yang area, where ten-thousand of these units are needed to fill a granary.^{16b}

Of the utmost importance is the proper storage of grain. Grain properly stored does not suffer from heat, moisture, insects, or rodents. The *Cang Lü* tablets from Yun Meng are one source that emphasizes the importance of careful storage. The *Cang Se Fu* and other officials are punished severely if grains in government granaries are destroyed due to any of the above ~~four~~ reasons.^{16c} Destroyed grains would mean both less grain for those receiving rations and a loss for those farmers who store their grains in public granaries, as opposed to private ones.

Other texts, including ritual texts, emphasize the importance of examining the granaries to insure that they are

air tight and pest free.¹⁷

A recent excavation of a Western Han government granary called Jing Shi Granary, or He Kou Granary, reveals general information about granaries during the late Warring States and Western Han. Jing Shi Granary was built where the Wei River enters the Yellow River (i.e., where grain transported from the Guan Dong region arrived in Chang An). The granary remains reveal that the grains were piled up on raised floor boards balanced on stilts (Hu, 1984).^{17a} The lack of direct contact between these boards and the ground would enable wind to pass beneath the boards for ventilation (since there are no windows).

The high ceiling, the thick walls, and the large, thick tiles covering the roof prevent moisture and heat (that would destroy the grains) from entering the granary. Also, the thick walls prevent natural sunlight from entering and drying the grains.^{17b}

The description of grain storage in the Cang Lū, in which grain is stored in units of "dan", suggests that the grains stored in the Jing Shi Granary were also stored in specific units (Hu, 1984).^{17c}

Remains of a pond and canal were found around the granary, revealing that granaries tend to be built near water sources to protect them from destruction by fire.^{17d} It is likely that this principle was used in constructing private granaries, as well.

The emphasis on protecting stored grains from harmful insects and animals in the Cang Lū tablets from Yun Meng appears to be reflected in remains of tightly closing doors. These doors seem to have been effective since no remains of rat holes were found.

In addition, there is evidence of a wall surrounding the

¹⁷ According to Bray (1984), two kinds of artemisia ("ai" and "hao") are used to repel insects in granaries.

granary, as well as arrows and military weapons, suggesting that the valuable granary was protected by strong walls and guarded by members of the military, at times.¹⁸

Though the Jing Shi Granary was government owned, there is no reason why the builders of private granaries would not follow similar guidelines.

13.5 Animal Husbandry Activities

Contemporary texts and Han tomb models indicate that the Guan Zhong farmers engage in animal husbandry activities, as well as general farming activities. They raise numerous kinds of livestock for a number of purposes. The major animals raised appear to be horses, cows, pigs, sheep, and goats.

The raising of horses and cows is referred to in the Yue Ling Calendar and the Cang Lū tablets from Yun Meng. The Yue Ling Calendar records the mating of cows and horses in the third month, and the separation of male and female horses prior to the gelding and training of young, male horses in the fourth month.^{17e} Though I doubt the above activities can be assigned to a particular month in practice, the Yue Ling references are important for indicating the proper order of events in rearing horses. After mating, male horses are frequently gelded to control their temperament.

The Cang Lū tablets refer to the four months of the year when ploughing oxen are evaluated (i.e., the first, fourth, seventh, and tenth months).^{17f} Because oxen are important to farming, the oxen are examined at periodic intervals, the most comprehensive examination being the first month of the year.

There is mention in the Yun Meng tablets of the selling of offspring of unused pigs (as well as chickens).^{17g} The existence of model pigs in many Han tomb models indicates that

¹⁸ Thus the reference to the reparation of granary walls in the Yue Ling Calendar appears to contain validity.

they are widely raised in the Guan Zhong region during the period concerned, and valued for their meat, and possibly their excrement. [See chapter 12.]

The raising of sheep by the Guan Zhong farmers is described in the brief *Yang Yang Jing* and illustrated by Han tomb models. The *Yang Yang Jing* relates grazing times, how to raise newly-born lambs, when lambs are sheared, and other like activities. As for grazing times, sheep go out early to graze the first six months of the year and late to graze during the rest of the year.¹⁹ 19a

Lambs are born from approximately the twelfth month through the second month. Because it is cold, these lambs must be fed cooked cereal and beans, and be put close to a fire.^{19b}

It is important to shear sheep on time in order to obtain as much wool as possible. According to the *Yang Yang Jing*, this should occur in approximately the fifth month. "五月毛床将落金取之。" (juan 69, p.2a) ("In the fifth month, when [the sheep] are about to shed their coats of fur, they are sheared.") However, young lambs are sheared in the eight month before they grow beards.

The appearance of sheep in Han tomb models of farm yards indicates they are raised on a small scale by the average farmers. For example, in diagram #6, numerous sheep are standing in a semi-circular courtyard (Metropolitan Museum of Art, shelving #L1987.61.29).

In addition, there are also tomb models of farm yards with male sheep, or rams. Diagrams #7 and #8 provide examples (Metropolitan Museum of Art, shelving #L1987.61.30 and #L1987.61.31). Diagram #7 illustrates that rams are frequently kept in pens, separated from the female sheep,

¹⁹ Though not mentioned in the *Yang Yang Jing*, sheep probably do not go out to graze at the close of the year due to the extreme cold.

while diagram #8 shows a farmer riding a ram. [For other examples, see chapter 12.]

Goats are also raised by the Guan Zhong farmers, as indicated in tomb models, like the one in diagram #9, where they are confined to a semi-circular courtyard (Metropolitan Museum of Art, shelving #L1987.61.28) (See chapter 12 for more examples).

13.6 The Raising of Fish in Ponds

Though there are many kinds of fishing methods by the late Warring States, the raising of fish in ponds does not appear to begin until the late Western Han.²⁰ (Tang, 1985, p.296) The Yang Yu Jing and numerous tomb models indicate that fish are raised by individual farmers, as well as rulers.²¹ In the Yang Yu Jing, Tao Zhu-gong prescribes the most efficient and profitable way of breeding carp. ^{in a discussion with King Wei of Qi.} The breeding season begins in the second month. At this time, "求區鯉魚長三尺者二十頭, 牡魚長三尺者四頭。以二月上庚日納地水內... 至來年二月得魚鯉魚, 長一尺者, 一萬五千枚, 二尺者萬枚 ..." (juan 69, p.1b) ("Seek two pregnant carp three feet in length and four male carp three feet in length. In the second month, on the first 'geng' day, put them in a pond...The following year in the second month there will be fifteen-thousand one foot carp, and forty-five thousand three foot carp,

²⁰ By the Warring States, people have a good understanding of the nature of fish. According to Qiu Feng, one common way of fishing is to put hollow logs on top of the water for the fish to hide in. After a sufficient amount of time many fish enter the logs. Then the logs full of fish are taken from the water. This is one way of catching many fish at one time.

²¹ Warring States texts, such as the Meng Zi, and Western Han texts, such as the Shi Ji, refer to the rulers' raising of fish in ponds. For example, in the Wu Di Ben Ji, "昆明池在長安西南圍四十里 ..." ("Kun Ming Pond is southwest of Chang An and has a circumference of forty 'li'.")

ten-thousand two foot carp.") In the fourth, sixth, and eighth months, crabs⁵ are supposed to be put in these ponds. ^{Six μ (approximately 1 acre)} If the farmers do what is prescribed, they will reap much profit.

Examples of tomb models, such as diagram #21 in chapter twelve, illustrate the extent to which farmers in the Shaanxi area raise fish in dammed ponds that frequently serve as reservoirs. They also show that carp is sometimes raised with turtles, frogs, snails, and possibly eels.

13.7 Preparations For Winter

The major kinds of winter preparations in which the Guan Zhong farmers and their families engage include food preservation and the sheltering of livestock.

After the last grains are stored and farm duties come to an end, the farmers leave their fields and rest. Though many of them probably stay inside their homes during the coldest months, the Shi Huo Zhi chapter of the Han Shu suggests that some of them enter the capital.^{21a}

It is possible that the farmers' wives and daughters are responsible for much of the essential food preservation. There are not many instances of food preservation in contemporary texts. Perhaps more information on this activity was contained in lost texts. In any case, instances of this activity in earlier texts (such as the poem Qi Yue in the Shi Jing) and later texts (such as the Si Min Yue Ling) suggest the continual importance of this activity to the Guan Zhong farmers.^{21b}

Two contemporary sources recording the preservation of fruits and vegetables are the Fan Sheng-zhi Shu and the Yin Dou Wei Shu. The Fan Sheng-zhi Shu records the preservation of mulberry fruit in the fifth month. The fruit is soaked in water, pitted, and dried.^{21c} The Yin Dou Wei Shu refers to the preservation of smartweed in the sixth month, and the making

of pickled vegetables in the ninth and tenth months, but does not explain how they are preserved.²¹ They are probably salted and/or dried.

Because the weather is turning cold after the last major harvests of the year, livestock must be sheltered. The importance of storing livestock is emphasized by a passage in the eleventh month of the Yue Ling Calendar. This passage is similar to some found in earlier non-calendrical texts, such as the poem *Da Tian* in the *Shi Jing*. "是月也，農猶不收，藏精聚者，馬牛畜獸有放佚者，取之不言告。" (p.26a) ("This month, any grains not gathered and stored, and any animals not put into closed quarters can be claimed by anyone without committing a crime.") Because all animals should be taken care of, those abandoned can be taken by any responsible person.

The *Ri Shu* tablets from Yun Meng also refer to the sheltering of livestock. "十月建亥 ... 牧田可以入馬牛。" (tablet #752) ("In the tenth month, when the handle of the Dipper points to Hai, on the day of 'shou ri', horses and cows may be put in stables and barns.")²²

²² Though the *Ri Shu* contains much divination material, the activities it records at certain times are sometimes in agreement with non-divination texts.

13.8 Early Preparations for the New Farming Year

The Guan Zhong farmers engage in a number of activities in preparation for the coming farming year. Foremost among them are seed selection, the compaction of snow, and the storage of snow water and ice.²³

Seed selection refers to the selection of seeds from those stored after the harvests in late winter or very early spring. The following procedure in the *Fan Sheng-zhi Shu* presents one method of selection: "冬至後五十日，發取，量之。息取多者，歲所宜者。" (p.72) ("Fifty days after the winter solstice [i.e., the fifth day of the first month of the year], seeds stored at the time of the winter solstice are taken out and weighed. Those that weigh the most and have grown the most in size are considered to be the best suited for the soil.") Though this activity is said to take place at the beginning of the new year, it is possible that it sometimes takes place slightly earlier or later in warmer and colder areas, and in the parts of Guan Zhong south or north of where Fan Sheng-zhi lives.

The compaction of snow by Guan Zhong farmers appears to have taken place from at least the Western Han. The *Fan Sheng-zhi Shu* provides the earliest comprehensive account of this practice. "雨雪止，輒以蘭之，掩地雪，勿使從風飛去；後雪復蘭者；則立春保澤凍蟲死。來年宜穰" (p.27) ("[In winter] when the snow stops falling, one [uses something to] compact the snow, in order that it cannot be blown away by the wind. After it snows again, one compacts

²³ It is likely that tool preparation and reparation also begin at this time. However my only available records are in calendrical texts, like the *Yue Ling Calendar*.

Calendrical texts also emphasize the repair work intended to "seal what is open". For example, one of the autumn decrees in the *Guan Zi Calendar*, the *Si Shi*, reads: "...修牆垣，固門閭。" (juan 14, p.7b) ("...Repair walls and fences that surround homes and villages.")

the snow again. In this fashion, by the time 'li chun' [or 'the beginning of spring'] arrives, the ground will be moist, the frozen insects will have died, and the soil will be ready for next year's crops.") Compaction insures that the soil moisture will be retained, making it extremely important to the loess area of northwest China.

Storage of snow water by the farmers is essential in order to insure an adequate water supply through the hot months of the coming year. The **Fan Sheng-zhi Shu** and the **Qian Sheng** chapter of the **Da Dai Li Ji** refer to the storing of snow water. In the **Fan Sheng-zhi Shu**, "常以冬藏雪汁, 器盛埋於地中." (p.49) ("[One] frequently stores snow water [in vessels] in winter. When the vessels become full, they are buried below ground.") The **Qian Sheng** relates the storing of (snow) water in the winter months under the supervision of the **Si Kong**.^{24 25 25a}

²⁴ The possibility that the **Si Kong** does not actually oversee this activity is not significant. What is important is that it takes place.

²⁵ A number of ritual texts, such as the **Di Guan** chapter of the **Zhou Li** and the **Yue Ling** Calendar, refer to the cutting of ice (in ponds and other bodies of water) and the storing of ice in approximately the twelfth and first months under the supervision of designated officials. The stored ice would probably melt, even in storage pits or cellars, and become a source of water for drinking and irrigation. Thus these texts appear to refer to the same kind of activity.

CONCLUSION

A study of the Guan Zhong region during the Qin and Han reveals the diverse ways the government controls the rural population. These include government obligations, limitations on the freedom of movement, punishment of the rural population for excesses of defeated rulers, the social system, and agricultural policies.

Corvee duty and taxes are the two major obligations required of farmers by the government. The government generally demands one month each year of corvee service, thereby utilizing the rural population as a source of free labour to construct public works projects, perform military duties, and so forth. The names of the recruits are drawn from household (or population) registers, which are up-to-date lists of the names, ages, etc. of individuals in specific localities. Taxes are used by the government not only to fund building projects and military expeditions, but also, as with the tax on wine, to limit the profits of farmers.

Freedom of movement of the rural population, as well as the accumulation of personal wealth, is limited by the government. One is not allowed to reside in an area where he or she is not registered. Thus if there is a famine in a particular area and a local farmer wants to move to a non-affected area, the farmer can not leave his place of residence without committing a crime, despite the reasonableness of his request, unless he is authorized by the government. This would be unlikely unless he were moving to an area such as the frontier.

The frontier itself may be an instrument of control. Thus people are sent to the frontier as a punishment for the offenses of their defeated rulers, as in the case where the people of Zhao are banished to Lin Tao by the King of Qin. In such a situation, the rural population is indirectly and unjustifiably held responsible for the crimes committed by its

rulers or officialdom.

Such an act of injustice is not surprising when one considers it in context with the mutual responsibility system that is central to the social organization designed by the Qin government. This system obligates the individual to be legally responsible for the behavior of all members in his "shi" or "wu" to the point that he or she is punished when other members commit crimes.

Lastly, the government exerts control on agricultural affairs through agricultural policies carried out via designated officials. Many of these are positive, such as the government's encouragement of good farming techniques (promoting the development of technological innovations, such as Zhao Guo's "mu chuan" system) and the construction of canals and roads, which aid in the irrigation of fields and the transport of grain. However other government policies infringe on the personal lives of the farmers. A notable instance is the government's interdiction of farmers from engaging in secondary occupations.

In sum, throughout the Qin and Western Han, the government tends to exert control over the rural population by imposing various kinds of limits upon it. There are obvious echoes of these practices in present-day China. For example, the expected turning in of relatives to the government during the aftermath of the Tiananmen demonstrations resonates the mutual responsibility system of the Qin/Han period.

Appendix A The Diagrams Accompanying Chapter 12

Diagram #1

A Small Farmer's
Home
(Ming-Ch'i,
photo #6)

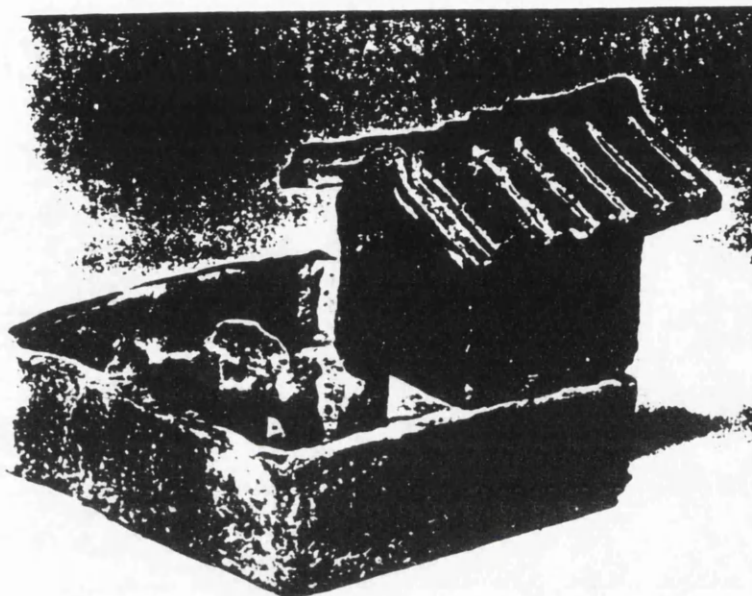


Diagram #2

A Small Farmer's
Home
(Ming-Ch'i,
photo #7)

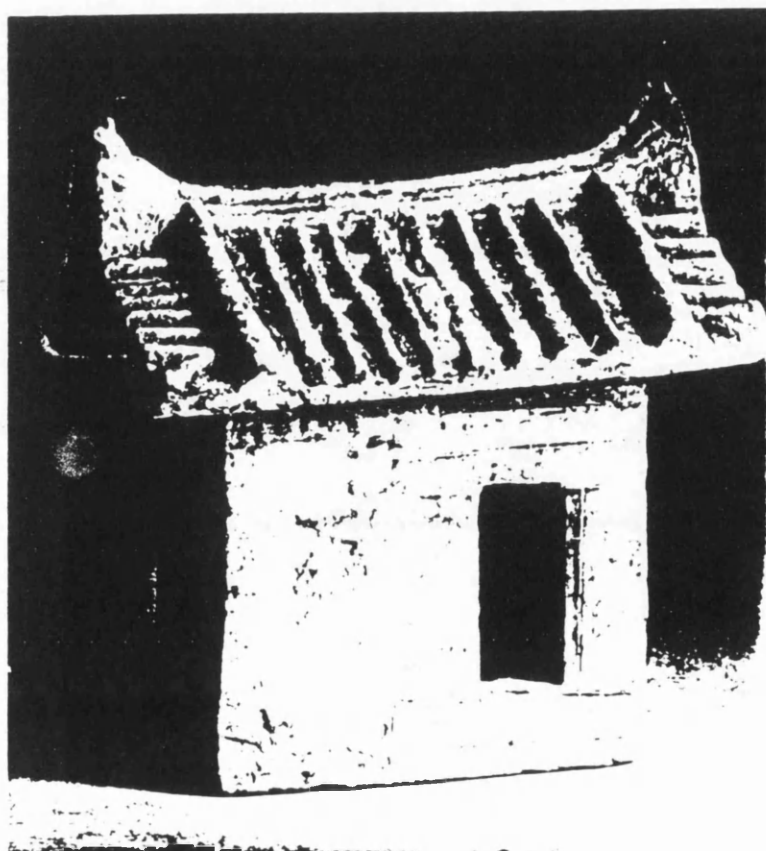


Diagram #3

A Poor Farmer
Kneeling
in His Pigsty
(Ming-Ch'i,
photo #9)

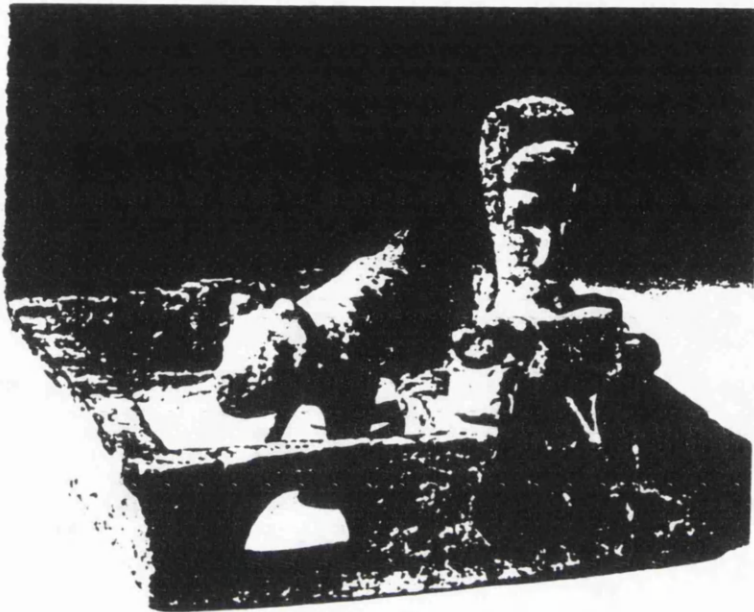


Diagram #4

An Average
Farmer's Home
Ming-Ch'i,
photo #5)

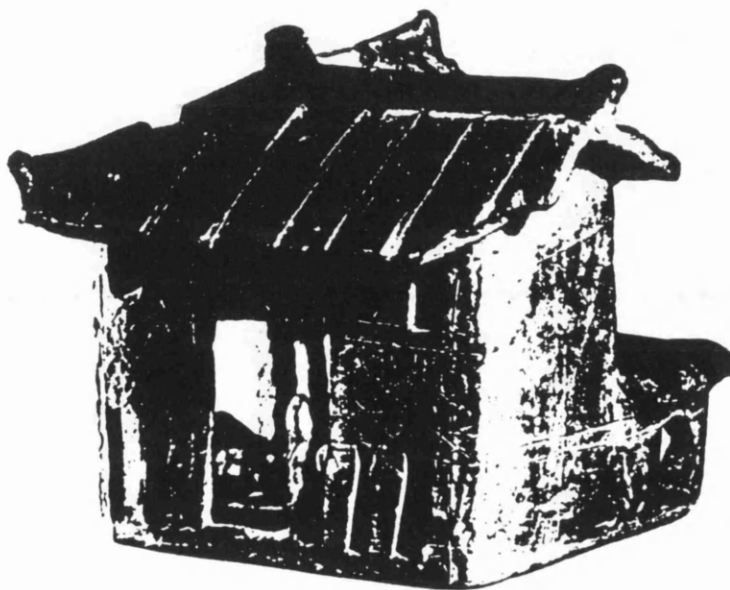


Diagram #5

A Wealthy Farmer's
Home
(The Quest For
Eternity, p.110)

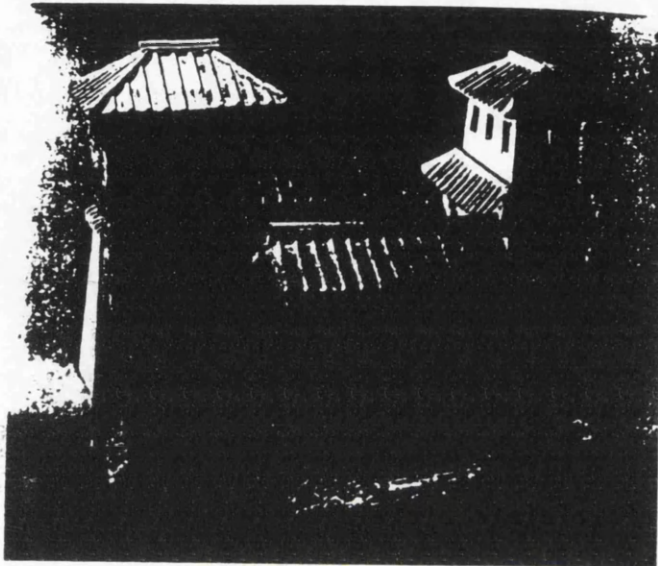


Diagram #6

Chickens Sitting on
the Latrine Roof
(The Quest For
Eternity, p.110)

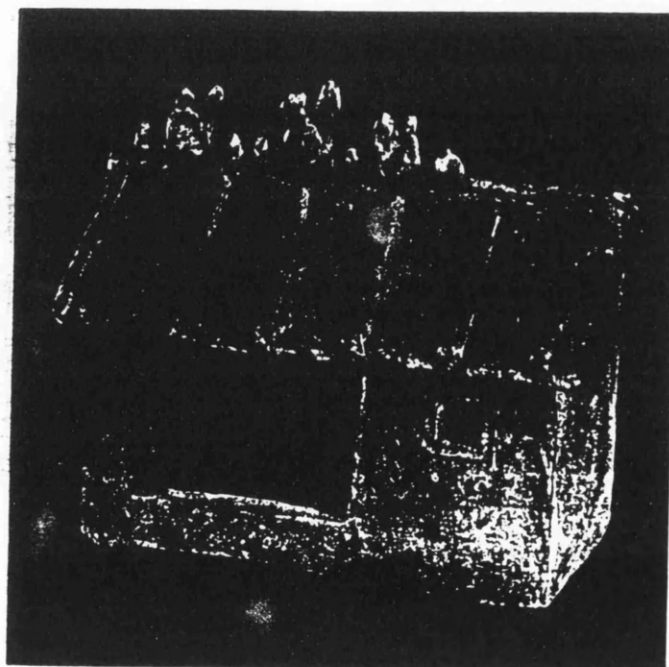


Diagram #7

The Double Staircase
Leading to the Granary
(**The Quest For
Eternity**, p.111)

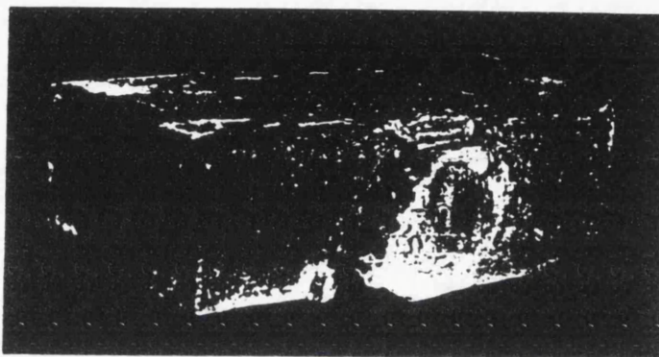


Diagram #8

Goats
(**The Quest For
Eternity**, p.109)

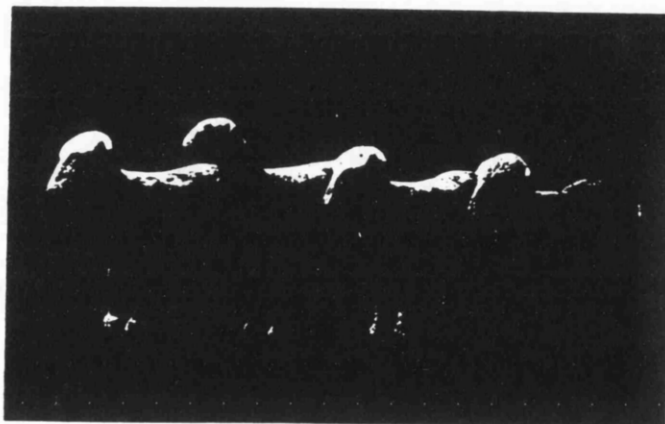


Diagram #9

A Duck
(Ming-Ch'i,
photo #25)

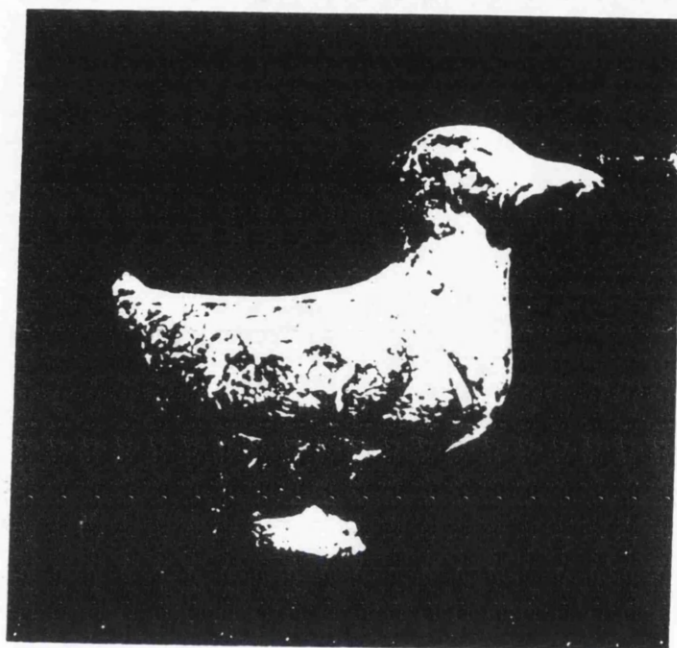


Diagram #10

A Goose
(The Quest For
Eternity, p.112)

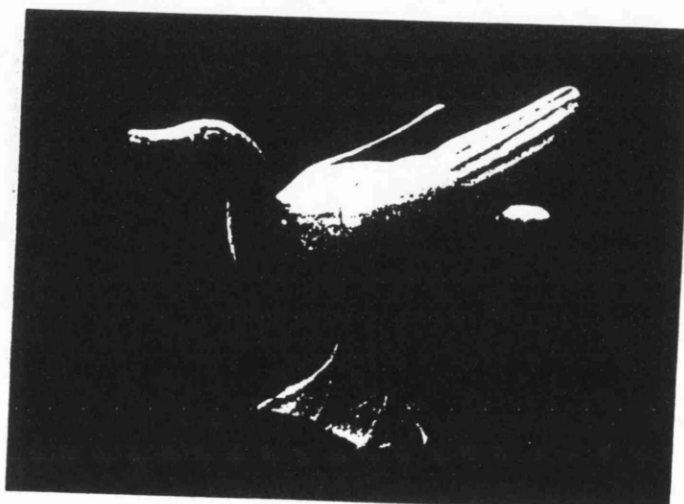




Diagram #11

A Ram
(Ming-Ch'i,
photo #18)



Diagram #12

A Fishmonger
Selling Fish
(Ming-Ch'i,
photo #15)

Diagram #13a

A Two-Story
Watchtower
(Metropolitan
Museum,
shelving #L1987
61.25)

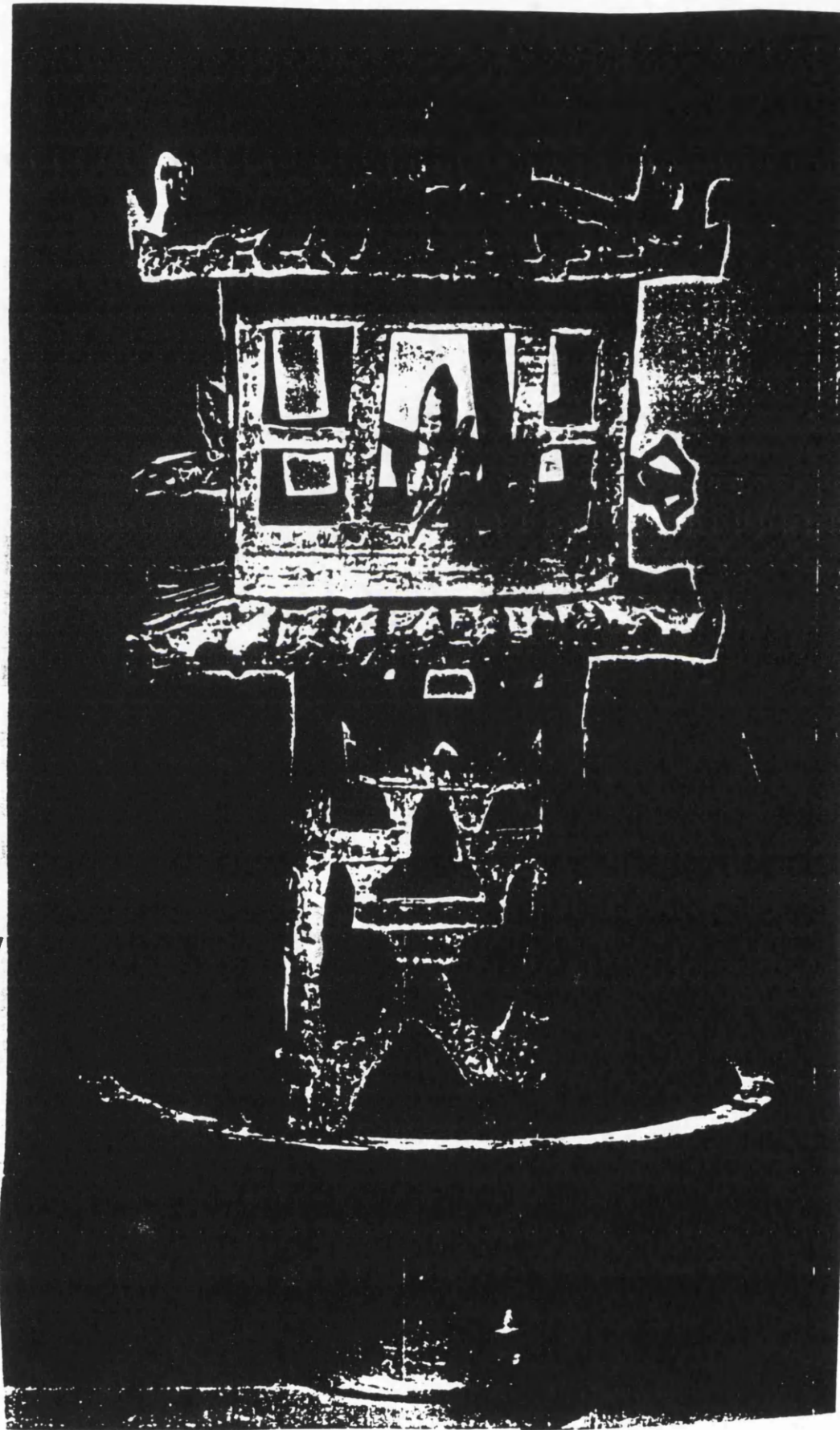


Diagram #13b

A Three-Story
Watchtower
(Ming-Ch'i,
photo #1)

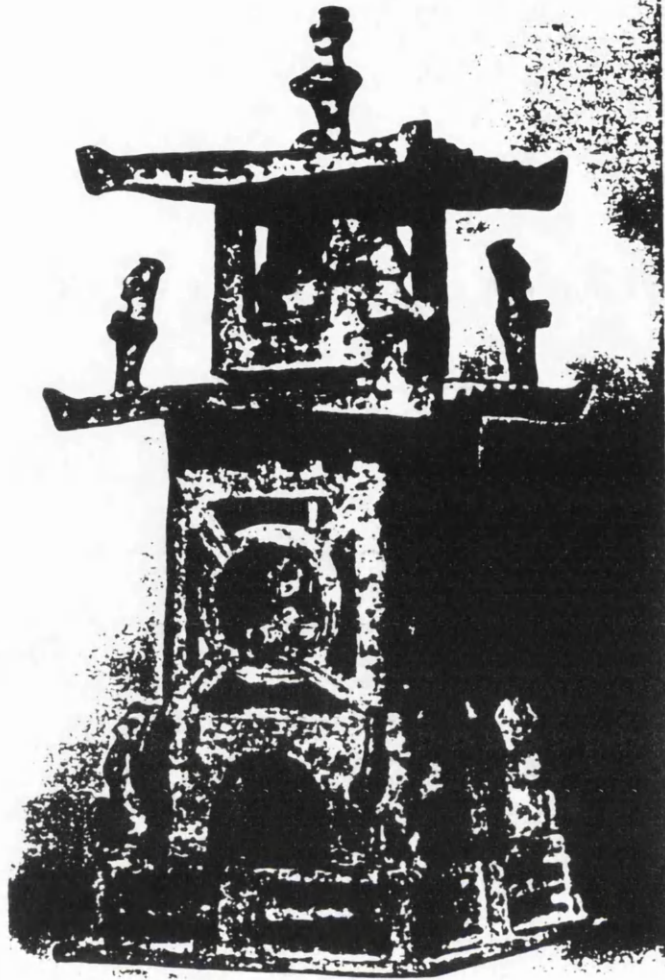


Diagram #14

A Communal
Stove
(Ming-Ch'i,
photo #13)

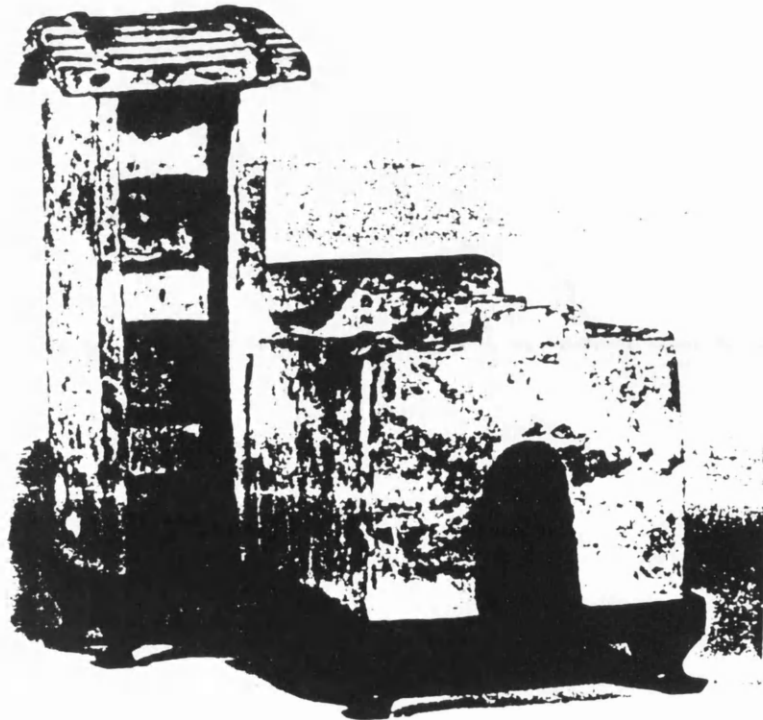


Diagram #15

A Granary Urn
(Ming-Ch'i,
photo #10)

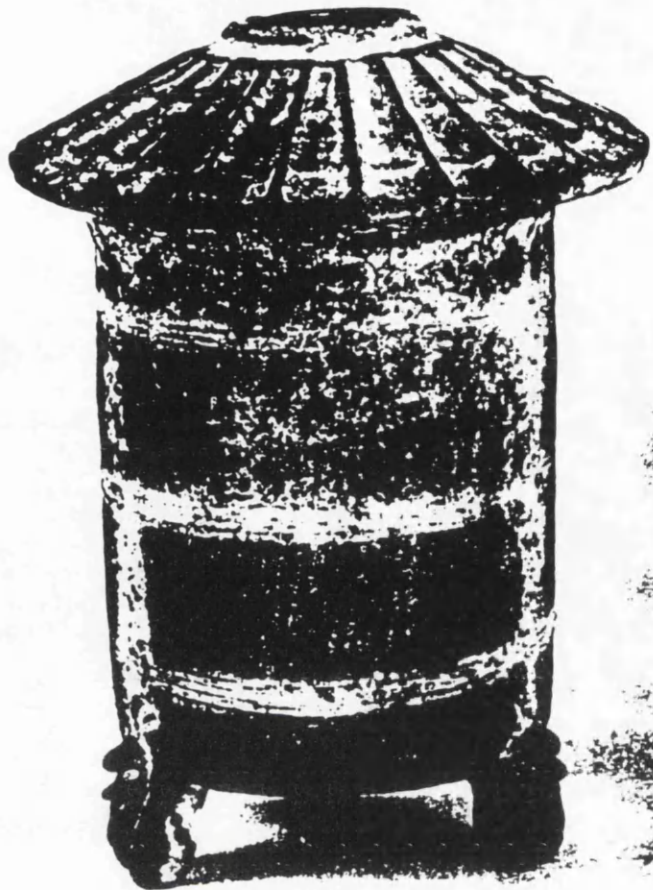


Diagram #16

A Wellhead
(Ming-Ch'i,
photo #11)

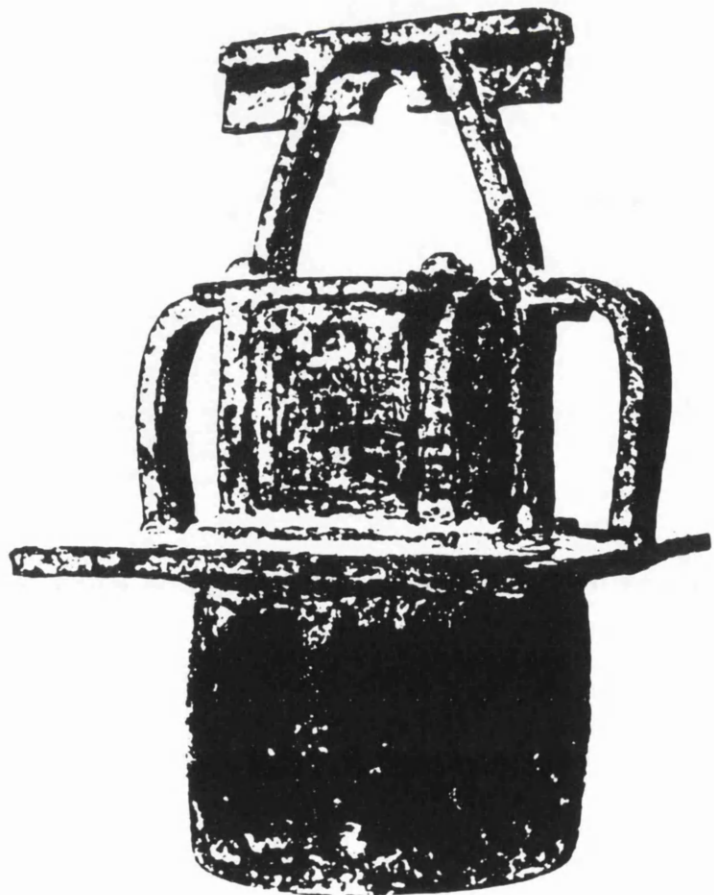


Diagram #17

A Grain Mill
(Ming-Ch'i,
photo #12)

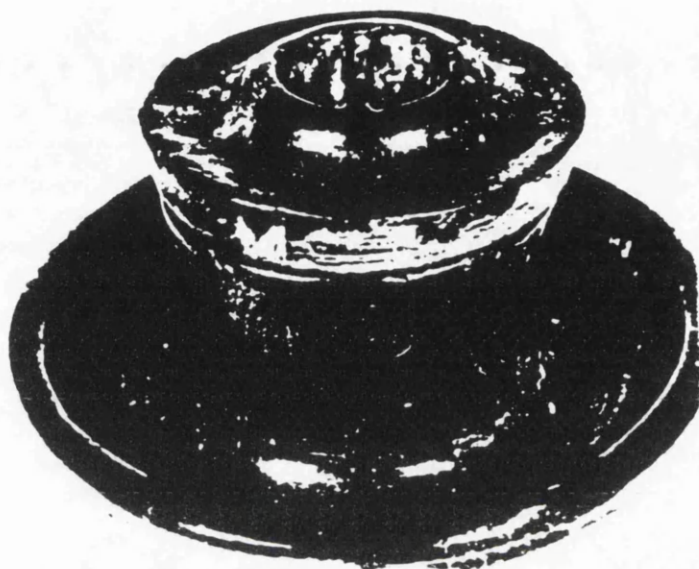


Diagram #18

A Rice Huller
and Winnow
(The Quest For
Eternity, p.112)

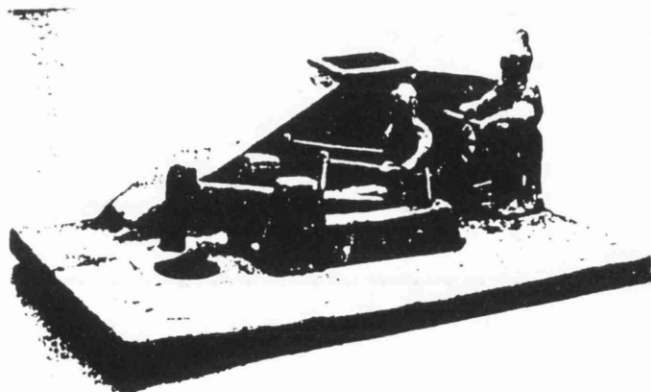


Diagram #19

A Circular Pond
(The Quest For
Eternity, p.115)



Diagram #20

Winter Rice
Paddies
(The Quest For
Eternity, p.115)

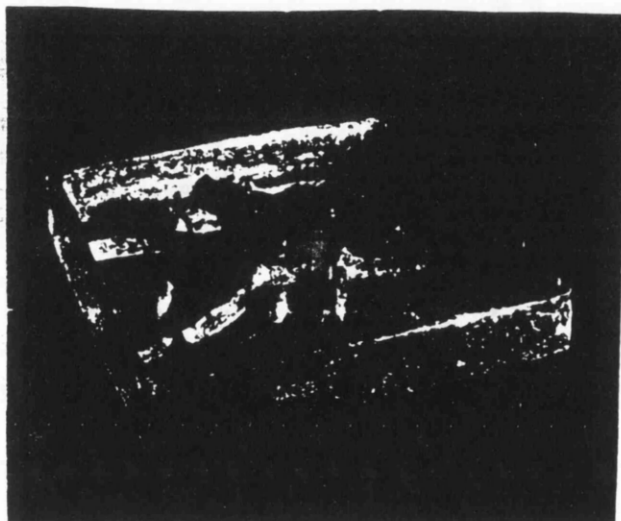
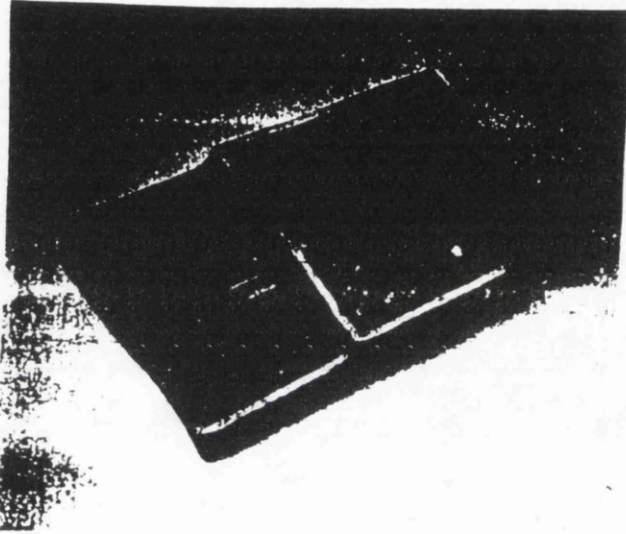


Diagram #21

Two Fields and
a Reservoir
(The Quest For
Eternity, p.115)



Appendix B The Diagrams Accompanying Chapter 13

Diagram #1

Sowing Wheat
in Rows
(The **Fan**
Sheng-zhi Shu,
p.79)

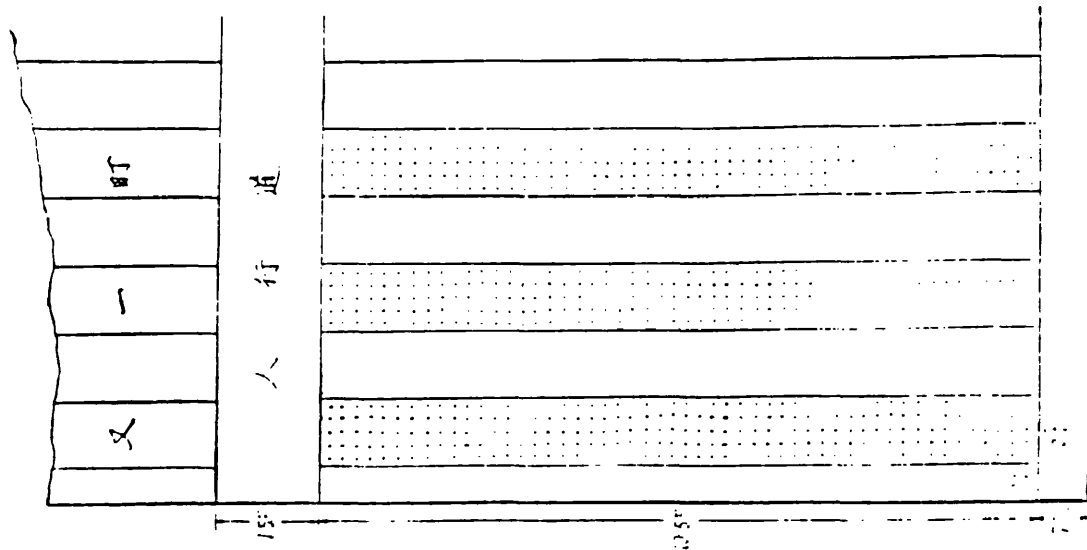


Diagram #2

Cultivation
in Square
Pits on the
Field of the
Farmer of the
First Rank
(The **Fan**
Sheng-zhi Shu,
p.83)

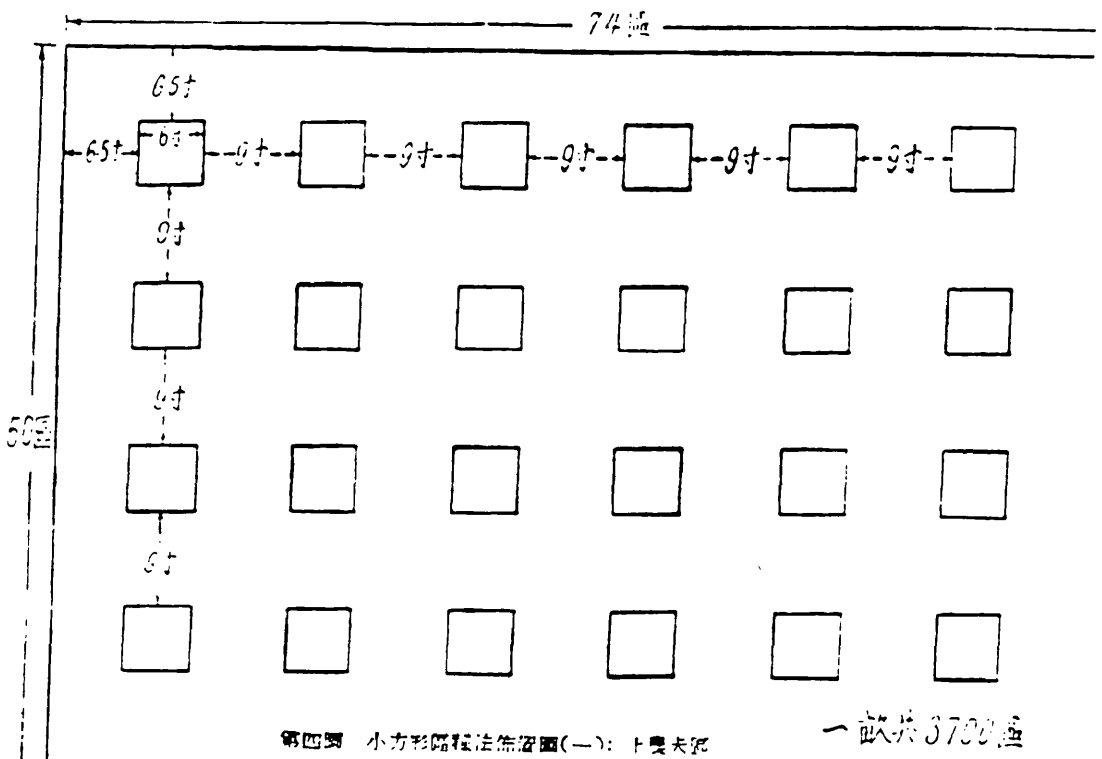
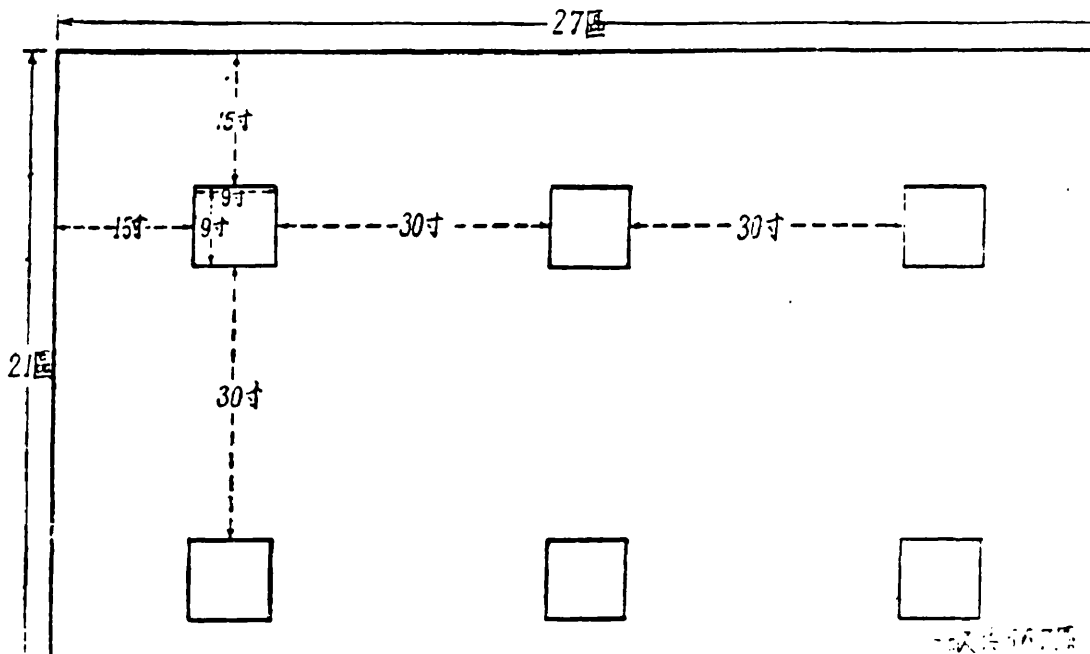


Diagram # 4

Cultivation in Square Pits on the Field of the Farmer of the Second Rank (The *Fan Sheng-zhi Shu*, p.84)

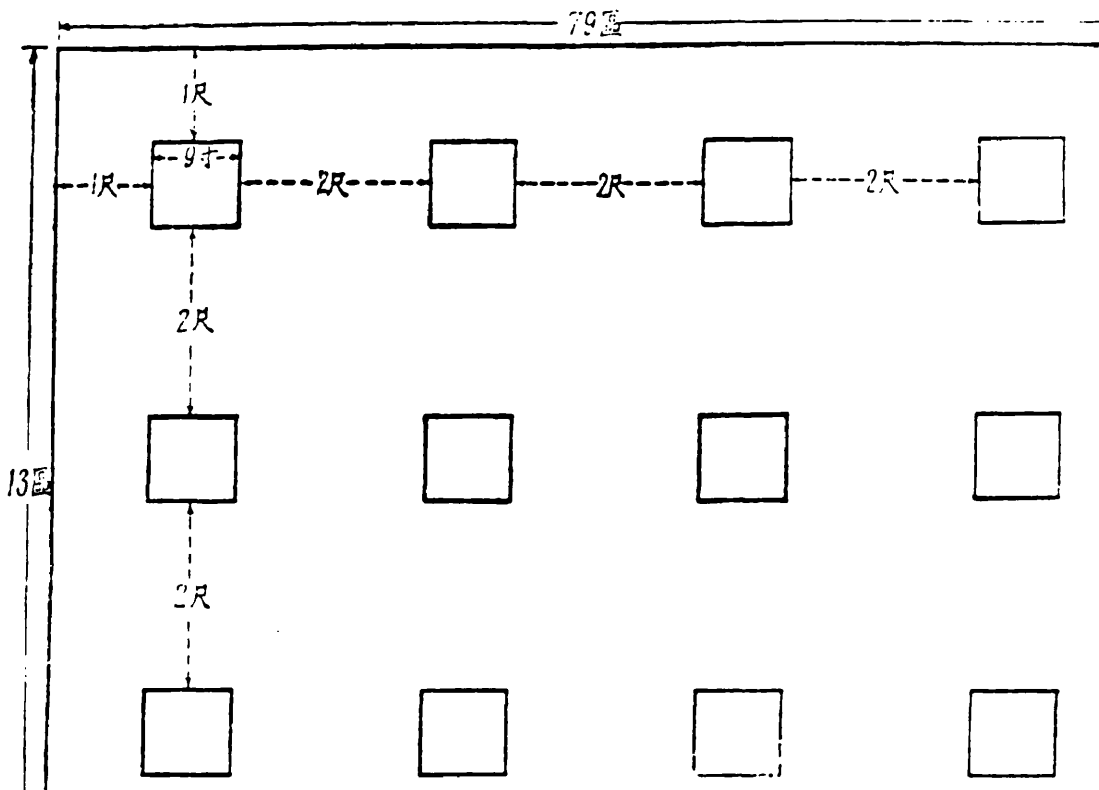


第六圖 小方形區種法佈置圖(三): 下農夫區

一畝共 60 區

Diagram # 3

Cultivation in Square Pits on the Field of the Farmer of the Third Rank (The *Fan Sheng-zhi Shu*, p.85)



第五圖 小方形區種法佈置圖(二): 中農夫區

一畝共 102 區

Diagram #5

A Flour Mill
(Metropolitan Museum,
shelving #L1986. 61.26)

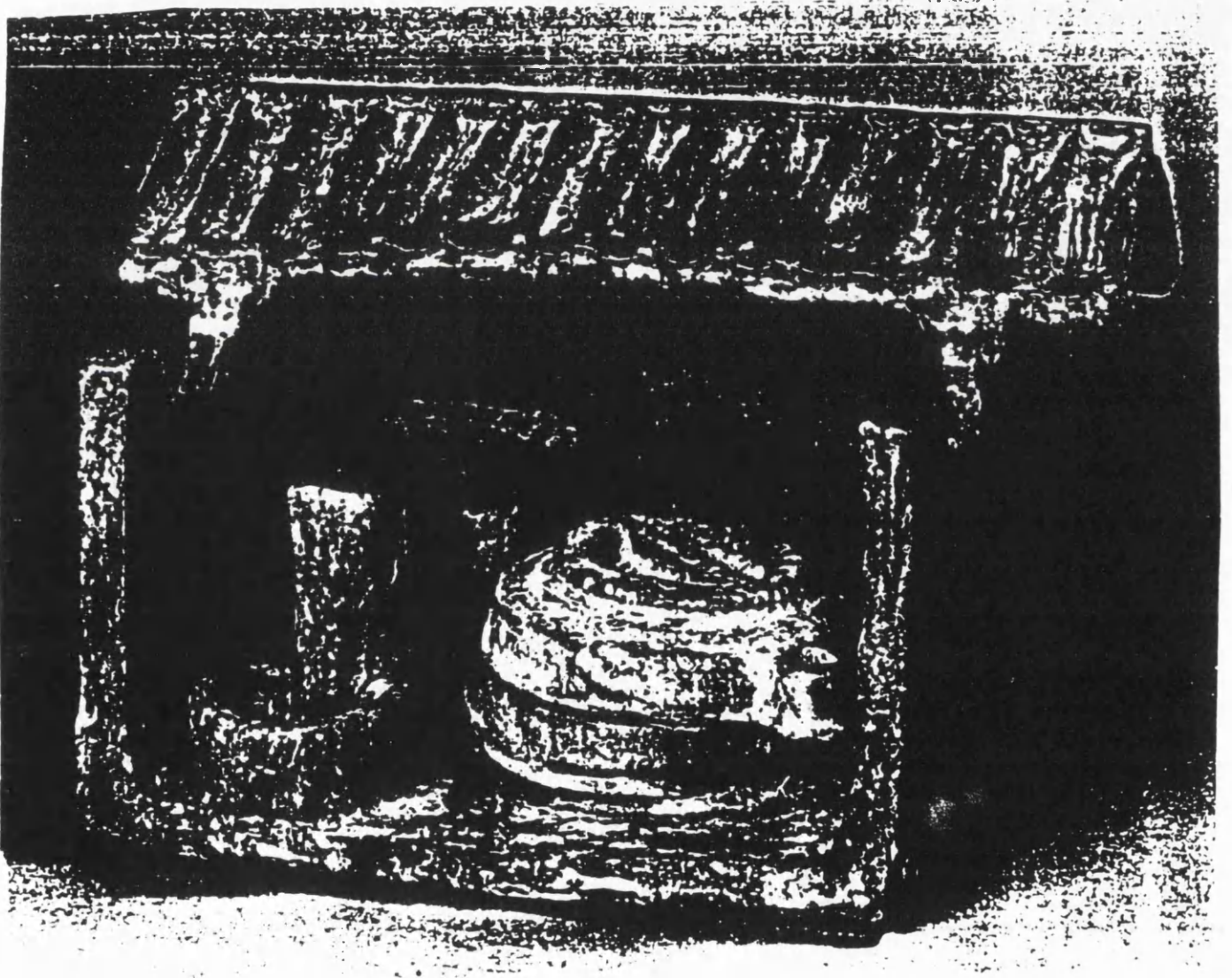


Diagram #6

Sheep in a Semi-circular Courtyard
(Metropolitan Museum,
shelving #L1987. 61.29)

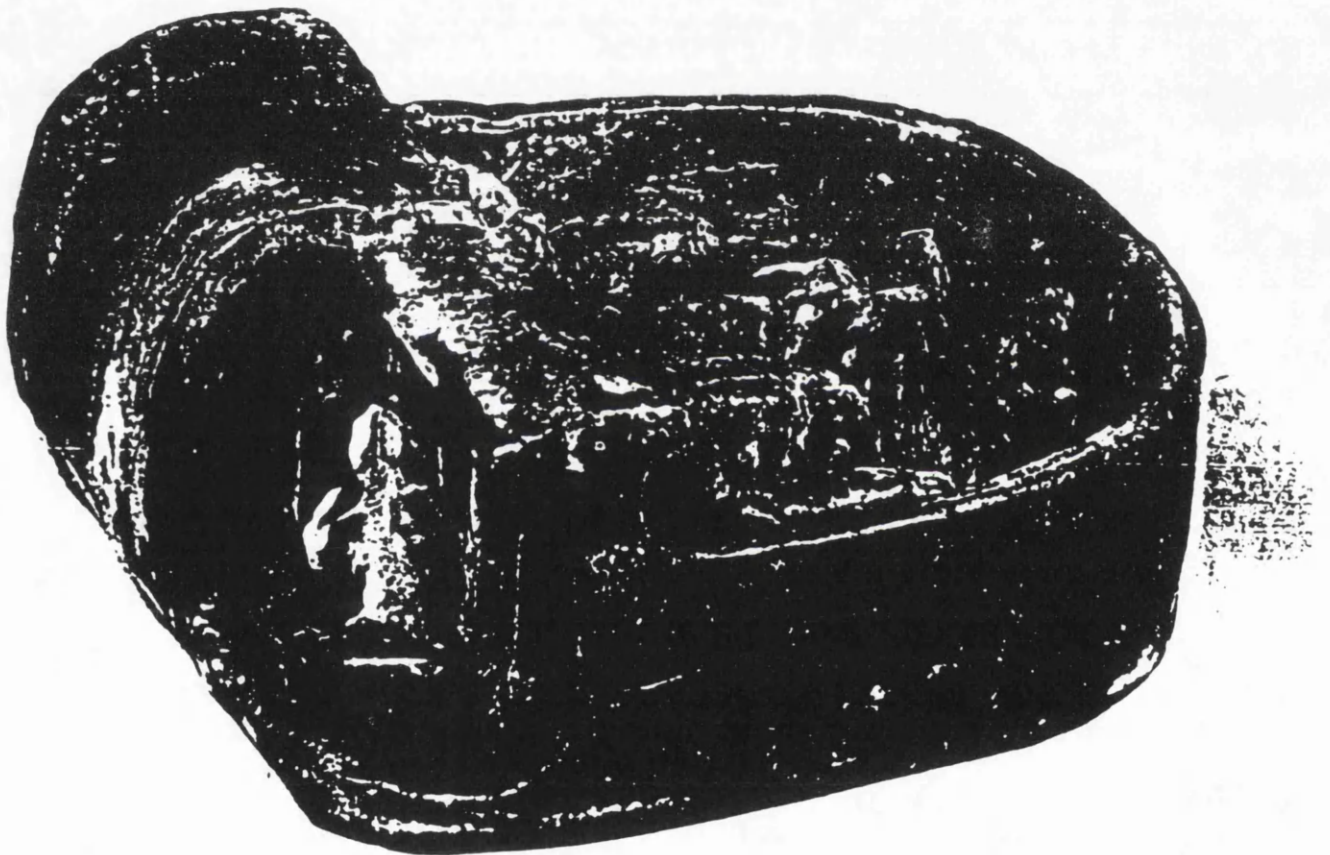


Diagram #7

Rams in Pens
(Metropolitan Museum,
shelving #L1987. 61.30)

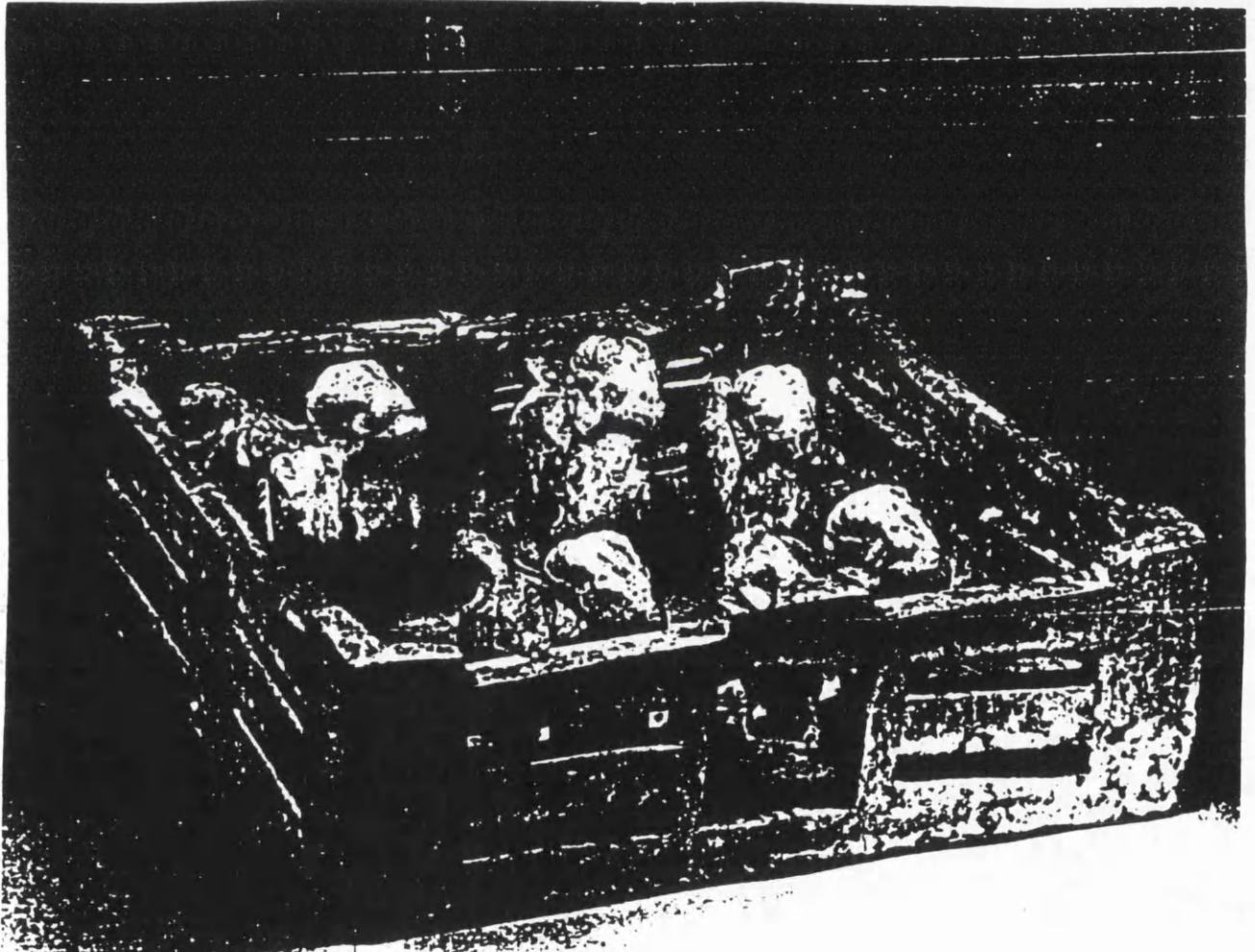


Diagram #8

A Farmer Riding a Ram
(Metropolitan Museum,
shelving #L1987. 61.31)

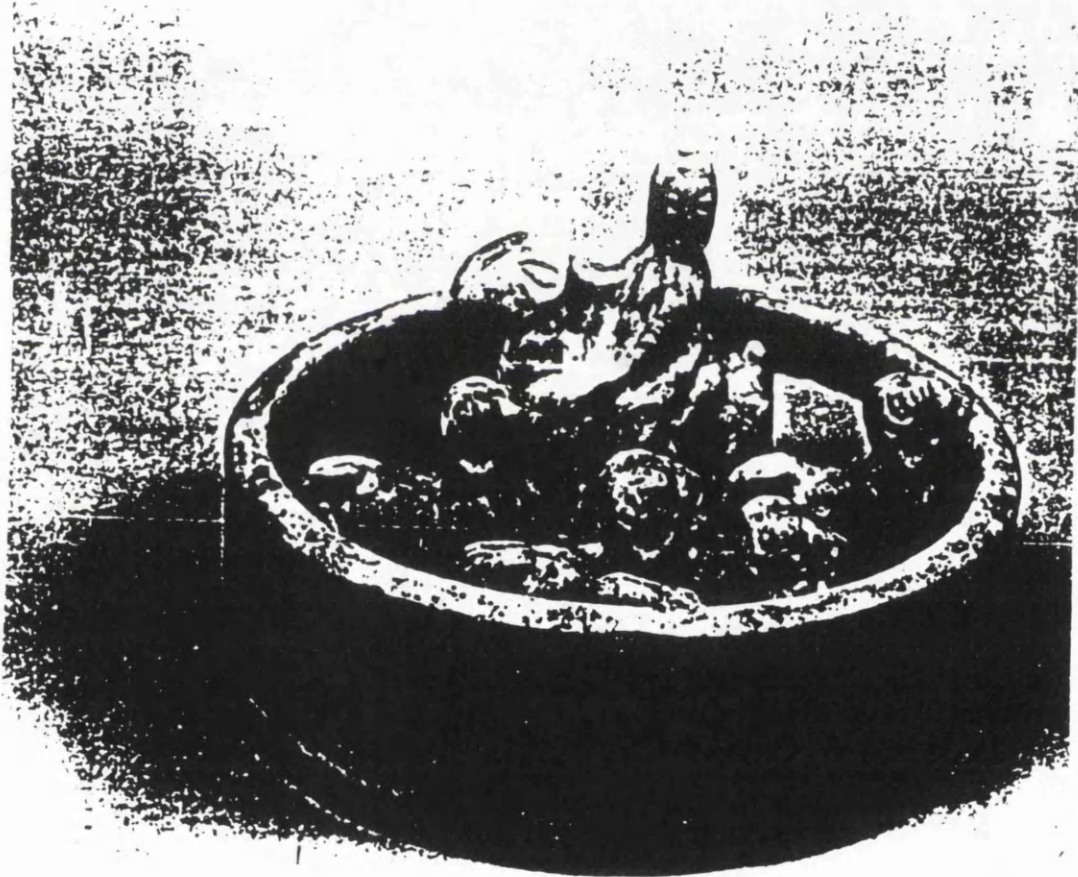
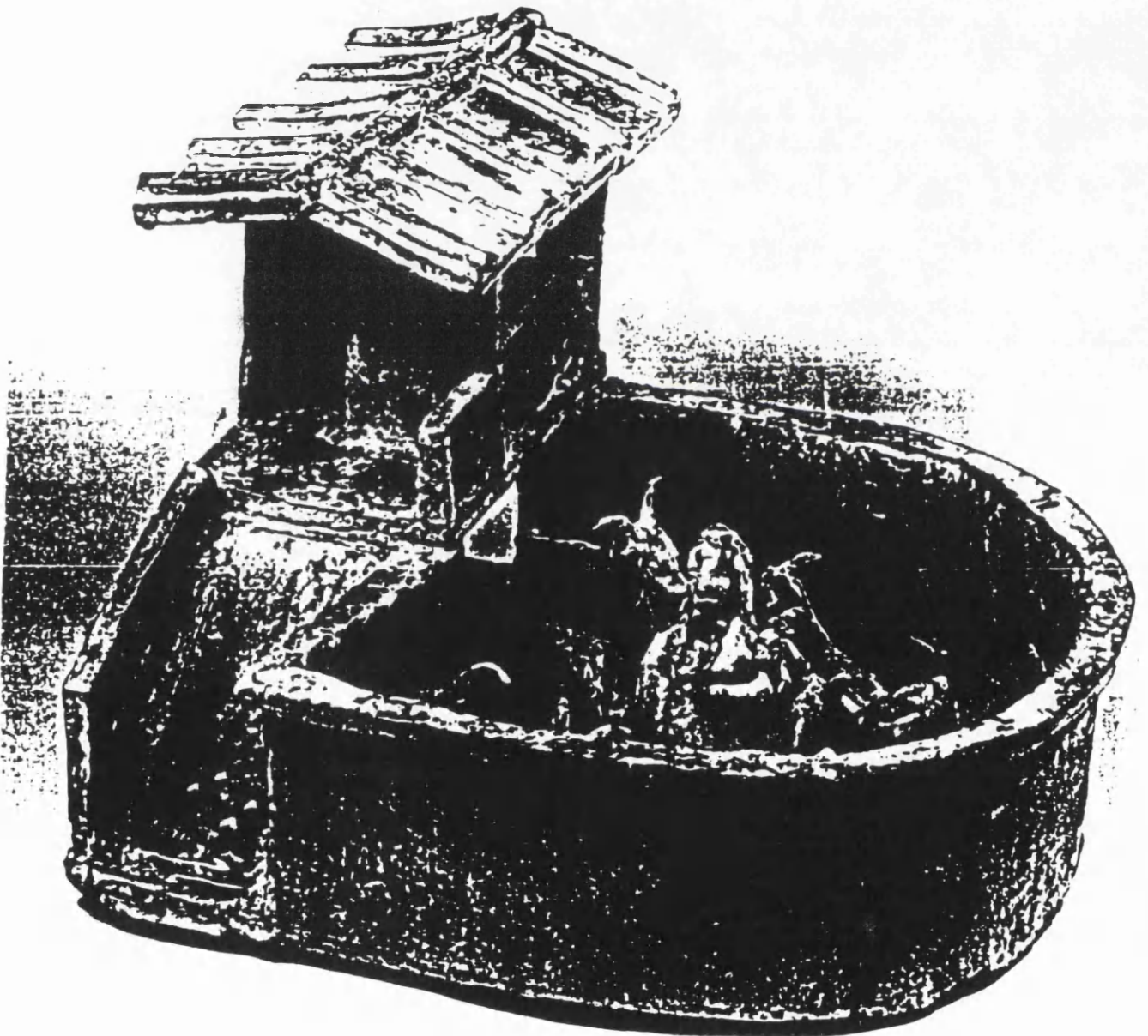


Diagram #9

Goats in a Semi-Circular Courtyard
(Metropolitan Museum, shelving #L1987. 61.28)



Appendix C The Position of the Farmers' Wives and Daughters

A limited amount of material in the tablets from Yun Meng and the Han Shu provides an insight into the position of the farmers' wives and daughters. These texts emphasize their rights with respect to marriage, their low place in society, and their worth.

With respect to marriage, the farmers' wives and daughters, like all other women, have no choice but to marry. During the period, this is not only a societal obligation, but a political obligation, as well. For example, during Emperor Hui's reign, a large fine must be paid to the government if a woman doesn't marry between the ages of fifteen and thirty. According to the Hui Di Ji chapter of the Han Shu, "女子年十五以上至三十不婚, 五算。" (p.62) ("If a woman doesn't marry between fifteen and thirty years of age, a fine must be paid of six-hundred coins.")¹ Though intended as a measure to increase the population, it is possibly viewed as oppressive by the small number of women who either do not desire to marry or desire to marry after thirty.

In addition, married women are viewed as their husbands' property to the extent that they are not allowed to leave their husband without their consent. Thus, for instance, in the Fa Lū Da Wen, "女子甲為人妻, 去亡, 得及自出, 小未盈六尺, 當論不論? 已官, 當論; 未官, 不當論。"

" (p.222) ("If a young woman (A), who is someone's wife and not yet six feet in height^(i.e., under fifteen years of age), runs away from her husband and is caught, is she guilty or not guilty of a crime? If the government has a record of her marriage, she is guilty. If not, she is not guilty.")

Even newly divorced women are not allowed freedom of movement. For example, if a husband wants to divorce his wife, he must report this to the local government office to

¹ "Suan" is equivalent to one-hundred and twenty coins.

prevent her from leaving her town or village. Thus the political freedom of farmers' wives and daughters appears to be little, if any, at all.

The above illustrates the low status of most women in the Guan Zhong area. Their treatment as "second class citizens" results in a number of measures to exclude even those of higher status from "male life", including the regulation restricting them from riding in special carriages. (The Fa Lū Da Wen, p.226)

Lastly, as one might expect, women are forbidden from engaging in "male" activities and confined to cloth production and other domestic activities. Thus women engage in cloth production while men farm. This is considered the proper division of labour according to the **Shang Nong** chapter of the Lū Shi Chun Qiu. "... 丈夫不織而衣, 婦人不耕而食." (p.8a) ("...Husbands do not weave and are clothed, while wives do not till the soil and are fed.")

The cloth production activities in which farmers' wives and daughters engage probably take place during much of the year. In the **Shang Nong**, there is a reference to the female involvement in the production of hemp and silk throughout the year. Thus the women labour even in winter. In the **Shi Huo zhi**, "冬... 婦人同巷相夜績." (p.507) ("In winter...The women in the same village spin thread together at night.

Women skilled in cloth production are valued to the point where (according to the **Guan Shi** tablets) female government slaves expert in weaving cannot be ransomed.

Appendix D The Influence of Slavery on the Farmers

Under the Qin:

The Yun Meng tablets reveal that Qin farmers have a unique relationship with slavery as both small "slave borrowers" and as possible future slaves. The borrowing of hereditary government slaves indicates that the farmers are integrated into the slave system and willing to become slave owners, if only temporarily. The Cang Lū tablets from Yun Meng show that the lending of female slaves not yet of age is part of the lender/borrower relationship between the farmers and the government. "孝未使而衣食公，百姓欲取(假)之，令就衣食焉，使輒被事之。" (p.48) ("A

female slave provided for by the government and not yet old enough to perform corvee labour can be lent by the government to the people if they desire her. The government orders the people to feed and clothe her until she reaches the age when she can labour [on behalf of the government].")¹ This refers to female^{child} slaves.

What they could do is speculative. Whether they do any work on the farm or are involved in only domestic activities is not certain. Also, though only female slaves are referred to in this context, there is the possibility that young, male slaves are also lent by the government.

Farmers would generally volunteer to become government slaves in one of the below cases. In the first instance, farmers who (due to years of crop failure or other reasons) lack the means to repay debts to the government, or who lack the means to pay the demanded ransom or fine, after committing what is considered to be a crime, have no alternative but to

¹ Hulsewe (1985) suggests the above doesn't refer to a young child. There is some validity in this. However he doesn't offer an acceptable alternative interpretation.

offer their services to the government in payment. Each day of their labour is worth eight coins, or six coins if they are fed.^{1a}

After the required amount of money is earned by labour, the farmers are free to return home. The length of time in government service depends upon the severity of the crime. Thus free farmers are only a step away from becoming slaves themselves.

The second case refers to farmers labouring for the government to atone for the crimes of older or female relatives (who have been sentenced to labour sentences as bond servants or slaves). Volunteering to substitute one's labour for others is permitted in certain circumstances. In each case, the labour value of the person who volunteers to be a substitute must be greater than that of the person for whom he is substituting. For example, one young man cannot substitute for another young man, however he can substitute for an old man.² A young man can also substitute for a female relative, provided she is not unusually skilled in cloth production. For example, in the Si Kong tablets from Yun Meng, "有姓有田及同姓(生)為妻妾,非適身(也)而欲為之是五歲毋責與田,以免一人為人,許之。

..." (p.91) ("If a common person has a mother or sister who is a bond woman slave, he hasn't committed a crime, and wants to work on the frontier [i.e., do frontier corvee] for five years without receiving corvee credit for his period of labour to free her; this is permissible.")³ There is no indication of the frequency of corvee substitution. However, its appearance in the Qin laws indicates that it does occur,

² The Yao Lu tablets from Yun Meng, p.86.

³ Bond women are the female equivalent of one kind of penal labourer. Though some might have committed serious crimes, many more are probably serving the government to repay debts or pay for the crimes of relatives under the mutual responsibility system.

and is possibly more common in cases where one or both of one's parents are serving periods of penal servitude. Because at least one young man is needed on a farm, it seems likely that a young farmer would be unable to substitute for either of his parents if there were no other able men at home (either because other young, male members are serving penal labour or because there are no other young men), despite his willingness.

One piece of evidence indicating that many government slaves are farmers is the law in the Si Kong that allows those serving sentences of penal servitude to return to their farms during the busiest part of the farming season for designated periods.²³ If few government slaves are farmers, the government would not need to make such allowances.

Under The Han:

During the Western Han, there are a number of ways poor or average farmers become both government and private slaves. The first concerns their ability to ransom themselves. As during the Qin period, many serious punishments can be eliminated by payment of specific fines. This kind of ransom is generally permitted by the government during times of economic decline. For example, the Hui Di Ji chapter of the Han Shu mentions that during the first year of Emperor Hui's reign, people deserving of the death penalty can pay the equivalent of buying the thirtieth rank.²⁴ Again, in the fourth year of the reign period "tian han" in Emperor Wu's reign (i.e., approximately 97 B.C.), guilty people can ransom themselves from the death penalty by paying fifty thousand pieces of money. (p.100) In both cases, only the small number of wealthy farmers will be able to pay these high fines. Most farmers will receive the death penalty, be

banished, or enslaved, depending upon the crime concerned.⁴

Those who serve the government to pay for crimes (such as non-payment of certain debts) are engaged in public work projects, such as the building of "imperial tomb towns".^{3a} Though it is not stated who the prisoners are who build Yang Ling Tomb (in Emperor Jing's reign) and other structures, the frequency with which the common people become slaves suggests that many of them are farmers.

In addition to the large numbers of farmers who become government slaves is a larger number of farmers who become private slaves to increasingly independent landlords. An example is during Emperor Wu's reign, when many farmers flee from Guan Dong and other impoverished areas to Guan Zhong. At this time, many farmers leave the areas in which they are registered as "free farmers" for areas in which their status is not registered. A large number of landlords, realizing there is no register in Guan Zhong that can verify they were once free men, frequently take advantage of these poor farmers and enslave them (Ge, 1986, p.118).

Prior to approximately 179 B.C., in Emperor Wen's reign, it can be assumed that some farmers' families are enslaved after family members are convicted of crimes. However, after that time this kind of enslavement is outlawed.

⁴ Though such fines are generally mentioned in the *Han Shu* in conjunction with the death penalty, it is possible that fines are an acceptable means of ransom for lesser punishments, as well.

Appendix E The Role of Natural Events in the Farmers' Lives

The types of natural changes that consistently appear at approximately the same time each year serve as positive indicators in signalling the time to engage in certain farming activities. Available texts reveal two kinds of correlations: the loose correlation between the natural events assigned to specific months and the activities taking place in those months; and the one-to-one correlation of natural events with farming activities. Unfortunately the only extant references that assign groups of natural events to months of the year are in some contemporary calendars. However, because the Yue Ling Calendar appears to have been written in the Guan Zhong area and non-calendrical references that correlate specific natural events with farming activities are in agreement with the Yue Ling Calendar, I believe that this calendar can serve as a fairly reliable indicator of the types of natural events that accompany the spectrum of farming events in a given month.¹ For example, in the first month, "東風解冰。蟄蟲始振。魚上冰。" (p.2a) ("The eastern wind thaws the ice. Hibernating animals begin to move. Fish rise and near the ice.")² These natural events are loosely correlated with activities taking place this month, such as the teaching of planting techniques to the people by the Tian official. References to the eastern wind thawing the ice also appear in numerous non-calendrical texts, such as the *Fan Sheng-zhi Shu*,

¹ Only in this capacity can it serve as a primary source.

² The image of fish nearing the ice is one of many images also found in the earlier calendar, the *Xia Xiao Zheng*, which appears to have been written in or near the southern part of Guan Zhong.

³ The wind associated with the first month in earlier texts as the southern wind is referred to as the eastern wind in the Yue Ling Calendar. This appears to have been a result of the developing of correlative thinking. However, the change in the name of the wind does not altar the presence of wind.

in connection with farming activities.^{3a} It is possible that if more contemporary agricultural works survived, there might be descriptions of monthly natural events similar to those in the Yue Ling Calendar.

Table A - Natural Phenomena Loosely Correlated With
Agricultural Events in the Yue Ling Calendar

<u>The First Month</u> the eastern wind thaws the ice; hibernating animals begin to move; fish rise and near the ice; otters kill fish	<u>The Seventh Month</u> a cool wind approaches; white dew falls; 'cold cicadas' sing
<u>The Second Month</u> rain begins; peach flowers blossom	<u>The Eighth Month</u> insects prey; a gale comes
<u>The Third Month</u> 'tong' trees blossom; rainbows appear; duckweed grows	<u>The Ninth Month</u> wolves kill smaller animals; hibernating animals sleep; chrysanthemums flower; vegetation withers
<u>The Fourth Month</u> frogs sing; bitter herbs flower; 'wang' melon grows; earthworms appear	<u>The Tenth Month</u> water freezes; the ground freezes; rainbows cannot be seen
<u>The Fifth Month</u> cicadas sing; deer lose antlers; 'ban xia' grows; hibiscus flourish	<u>The Eleventh Month</u> deer lose their antlers; ice is firm; icy ground cracks; tigers mate; rapeseed grows; lichee appears; ants wiggle in the ground; spring water flows
<u>The Sixth Month</u> a warm wind approaches; crickets live in walls; rotten grass has fireflies	<u>The Twelfth Month</u> water congeals in ponds

Non-calendrical, agricultural texts contain numerous instances of one-to-one correlations between specific natural events and designated farming activities. These natural events appear to serve as time indicators, to the extent that calendrical indicators are occasionally omitted altogether.

This is because natural events are a more accurate means of determining when to conduct specific agricultural activities in a large geographical area. Variations in location and climate frequently result in slight differences in the timing of the natural phenomena that signal specific farming activities (Zhu, 1979, p.442).

Fan Sheng-zhi mentions the accuracy of natural events as time indicators. This explains why he sometimes refers to only natural time indicators in relating when to carry out specific activities. For example, in the following he correlates the blossoming of apricot flowers with the initial tilling of light soils. "否始華榮, 輒耕輕土, 弱土。

" (p.25) ("When the apricot tree begins to flower, one goes to the fields to till light and soft soils.") Because other sources refer to the blossoming of apricot flowers in the third month, it appears the above activity occurs sometime within this month. Again, the thawing of ice in spring is correlated with the tilling of rice fields. "種稻, 春凍解, 耕反其土." (p.121) ("[As for] planting rice, one tills and turns the soil when the ground thaws in spring.") The image of "thawing" is generally associated with the first month, indicating that the tilling of rice fields takes place in approximately the first month, and possibly the beginning of the second month, depending upon the location.

Other texts directly correlating specific natural events with agricultural events include the Ren Di chapter of the Lū Shi Chun Qiu. This work associates the growing of cattail weeds with the initial tilling of fields. "冬至後五旬七日, 蒿始生 ... 於是始耕." (p.12a) ("Fifty-seven days after the winter solstice, cattail weeds begin to grow. Thus one begins to till the soil.") Though the calendrical day is mentioned here (i.e., the twelfth day of the first month), the association of the activity with a specific kind

of natural event suggests that the tilling might occur slightly earlier or later if cattail appears earlier or later.

The above types of regular, natural events are very important as time indicators of specific farming activities. It is not necessary for the farmers to consult a calendar via lower overseers to determine when to begin various activities if they know the kinds of visible natural changes that regularly appear when the respective activities should be conducted. Although available works do not provide a one-to-one correlation of all farming activities with natural events, it can be inferred from extant references that the Guan Zhong farmers possibly make use of natural indicators in determining farming activities a great deal of the time, especially where more crucial events, such as tilling, are concerned.

The natural world does not always play a positive role in the Guan Zhong farmers' lives. The many natural disasters occurring in or near the Guan Zhong region (especially after the Unification) naturally incite the farmers' fear of the natural world. This is understandable since natural disasters, such as floods and droughts, threaten the farmers' livelihood. The *Han Shu* contains many examples of natural disasters, some of which suggest the effects they have upon the Guan Zhong farmers. For example, according to the *Gao Hou Ji* chapter of the *Shi Ji*, during the seventh year of Emperor Gao's reign, "夏,江水,漢水溢流蕩餘家." (p.65) ("In summer, the Han and Yangtze rivers overflowed, destroying over ten-thousand homes.") Since the southern part of Guan Zhong isn't far from Han Zhong prefecture and Guan Zhong's soil has become increasingly fertile by the beginning of the Han, it is possible that a large number of farmers whose fields and homes are affected by such flooding emigrate north to Guan Zhong, thereby adding to the large number of new immigrants from the recently impoverished Guan Dong area. Thus floods leave the affected farmers homeless, as well as

destroy their crops. Flooding also occurs in this area in the third year of Emperor Gao's reign when the Yangtze overflows leaving over forty-thousand homeless.^{3b} The southern Guan Zhong farmers cannot but be affected by these floods. Furthermore, though major flooding in the Guan Zhong area is not recorded in the Han Shu annals, it is possible that there are minor floods which cause the same kind of damage that are not recorded.

Other kinds of natural calamities that appear to affect a large area of northwest China include locusts, droughts and abnormal or severe weather conditions. For instance, in the sixth year of the "jian yuan" (建元) reign period of Emperor Wu's reign (i.e., approximately 135 B.C.), "夏大旱,蝗。" (p.87) ("In summer, there was a great drought and locusts.") The combination of drought and locusts would destroy the farmers' crops.⁴ Again, in the sixth year of the reign period "yuan shuo" in Emperor Wu's reign (i.e., approximately 122 B.C.), "十二月大雨雪,民凍死。" (p.87) ("In the twelfth month, there were heavy rains and snow, and people froze to death.")⁵ Though there is no specification of exactly where the above two disasters occur, recorded instances of natural disasters and/or famines in the Guan Dong

⁴ Because locusts would destroy all the grain crops, the government provided people in affected areas with aid whenever possible. In the Qin Shi Huang Ben Ji chapter of the Shi Ji, in the fourth year of the King of Qin's reign, "十月庚寅,蝗蟲多從東方來,蔽天。天下疫。百姓內粟千石..." (p.224) ("In the tenth month, at the time of "geng yin", locusts came [to the west] from the east and covered the sky. The [people in the] kingdom suffered from epidemics. The people were thus given one-thousand "dan" of grain...") This reveals a limited attempt of the Qin government to aid the farmers during a time of crisis.

⁵ There is no mention of the effects of unusual natural phenomena, such as the blossoming of peach and plum flowers in the tenth month in the fifth year of Emperor Hui's reign. However, they probably disrupt agriculture.

region in the Han Shu, and the possibility that a large percentage of the recorded natural disasters are relatively near to the capital suggest that the area or areas in question frequently include the Guan Zhong region and/or nearby regions.

Contemporaries attribute natural disasters to several major causes. One is the ruler's lack of virtue. For example, in response to years of flooding and earthquakes (that result in famine), Emperor Wen makes a proclamation (in the eighth year of the reign period "qian yuan" in which he blames himself and his bureaucracy.^{5a} A second cause is the ending of a reign. In historical texts, eclipses and earthquakes frequently signal the end of a reign.^{5b} In addition, poor crops are also attributed to improper farming techniques. This belief is inherent in numerous agricultural texts. For example, in the Fan Sheng-zhi Shu, "早種則蟲..." (p.110) ("If [the farmers] sow too early, there will be [harmful] insects.") Insect pests can be avoided if the farmers sow on time.

Appendix F How Guan Zhong Farmers Interpret Bird Movements

There is limited evidence that tells us how the Guan Zhong farmers view the appearance and disappearance of birds throughout most of the year.

The Yue Ling Calendar follows the tradition of the older Xia Xiao Zheng Calendar in recording both understandable and unexplainable bird movements. The kinds of bird movements familiar to the farmers, such as the visible migrations of certain kinds of birds, are used to signal a change of seasons in the calendar, as well as serve as natural indicators of monthly events. For example, the northerly migration of geese represents the transition from winter to the first month of the new year.^{1a}

Bird movements and habits that cannot be observed are interpreted in non-scientific ways that reveal the limits of human understanding. For instance, in the first month, in contrast to the observable geese migration, is a description of the transformation of the hawk into the pigeon.^{1b} This serves to explain the unwitnessed disappearance of the hawk and appearance of the pigeon. The popular belief in natural transformations appears to have resulted from the inability of early Chinese in the Huai River area to witness the hawk's and the pigeon's migrations.^{1c} The belief also provides an explanation of the transition from a harsh season (i.e., winter) to a mild and tranquil one.

Below is a list of the birds recorded in the Yue Ling Calendar throughout the year.

The First Month
pheasant
goose, ringed-
pigeon, chicken

The Second Month
pigeon, swallow¹

The Third Month
quail, pigeon²,
'dai sheng' bird³

The Fourth Month
none

The Fifth Month
pigeon, shrike,
hawk, Chinese
blackbird⁴

The Sixth Month
hawk

The Seventh Month
hawk

The Eighth Month
quail, wild
goose, swallow

The Ninth Month
wild goose,
pheasant

The Tenth Month
none

The Eleventh Month
'ge dan' bird

The Twelfth Month
hawk, magpie, pheasant

¹ This is in a ritual context--i.e., the sacrifice to Gao Mou.

² The flapping of its wings is symbolic of the speed of agricultural activities.

³ This bird is associated with sericulture activities.

⁴ It is silent at this time.

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GLOSSARY

The following is a select glossary of book titles, names and other miscellaneous terms mentioned in the text.

ai 艾

An Guo-jun 安國君

Ba 巴

Ba Guan 八觀

Ban Gu 班固

Bian Tu 辨土

Bu Shi 卜式

Cang Lü 倉律

chang cheng 長城

Chang Le Palace 長樂宮

Cheng 丞

cheng dan 城旦

Da Fu 大夫

dai tian 代田

dan 石

dou 斗

Emperor Gao Hou 高后帝

Emperor Hui 惠帝

Emperor Jing 景帝

Emperor Wen 文帝

Emperor Wu 武帝

Emperor Xuan 宣帝

Emperor Yu 禹

Emperor Zhao 昭帝

Empress Lü 呂太后

Er Shi 二世

fa 法

Fa Lü Da Wen 法律答問

Fan Sheng-zhi Shu 記勝之書

Fang Ling 房陵
 Fen River 汾
 Feng 豐
 Gao Hou Ji 高后記
 Gao Ling 高陵
 Gao Zu 高祖
 Gao Zu Ben Ji 高祖本紀
 gou 溝
 Gu Jin Shuo Bu Cong Shu 古今說部叢書
 Guan Zhong 關中
 gui xin 鬼薪
 guo 國
 Han Fei Zi 韓非子
 Han River 漢水
 Han Shu 漢書
 Han Zhong 漢中
 hao 蒿
 He Kou Granary 河口倉
 He Qu Shu 河渠書
 Henan 河南
 hou guo 候國
 Hou Ji 后稷
 hou yuan 后元
 Hu Bei 胡北
 Huai Nan Zi 淮南子
 huang long 黃龍
 hui 滄
 Hui Di Ji 惠帝紀
 Ji Yuan Lü 既苑律
 jian yuan 建元
 Qiang 姜
 Jin Bu Lü 金布律
 Jin Cang 禁藏
 Jing Di Ji 景帝記
 Jing River 涇水

Jing Shi Granary 京師倉
 jun 郡
 Kao Gong Ji 考工記
 King Zhuang Xiang 莊襄
 Li 吏
 Li Si 李斯
 Li Zheng 立政
 Liu Bang 望邦
 Loyang 洛陽
 Lü Bu-wei 呂不偉
 Lü Shi Chun Qiu 呂氏春秋
 Luo River 洛河
 Meng Zi 孟子
 mu 畝
 Mu Chuan 田畝田川
 Nei Shi 內史
 nou 耨
 ou geng 耦耕
 Pei 沛
 Qi Min Yao Shu 齊民要書
 qian yuan 前元
 Qin Lü Shi Ba Zhong 秦律十八種
 Qin Lü Za Chao 秦律雜抄
 Qin Shi Huang 秦始皇
 Qin Shi Huang Ben Ji 秦始皇本紀
 Qing Zhong 輕重
 Qiu Feng 邱鋒
 qu tian fa 區田法
 Ren Di 任地
 Ri Shu 日書
 Se Fu 耨夫
 Shaanxi 陝西
 Shan Dong 山東
 Shang Jun Shu 尚君書
 Shang Nong 上農

Shang Yang 商鞅
 Shen Shi 審時
 sheng 升
 Sheng Guan 省官
 Shi Huo Zhi 食貨志
 Shi Ji 史記
 shi wu 十五
 Shi Ze 時則
 Shu 蜀
 Shui Yu 水虞
 Shuo Shu 碩鼠
 Si Bu Bei Yao 四部備要
 Si Ma-qian 司馬遷
 Si Shi Zhi Jin 四時之禁
 Sichuan 四川
 Song Qi 宋祁
 sou zhong fa 搜種法
 Tai Yi 太一
 Tao Zhu-gong 陶朱公
 tian han 天漢
 Tian Lü 田律
 Tian Se Fu 田耆夫
 Ting Se Fu 亭耆夫
 wang 王
 Wang Xian-qian 王先謙
 Wei 危
 Wei River 渭
 Wen Di Ji 文帝記
 Wu Di Ji 武帝記
 Wu Xing 五行
 Wu Xing Calendar 五行
 xia 夏
 Xia Xiao Zheng 夏小正
 xian 縣
 Xian Se Fu 縣耆夫

Xian Yang 咸陽
 xiang 鄉
 Xiang Se Fu 鄉耆夫
 Xiang Yu 項羽
 Xiao Dai Li Ji 小戴禮記
 Xiao Guang 小匡
 Xiao He 蕭荷
 Xiao Jing Ben Ji 孝景本紀
 Xiao Wen Ben Ji 孝文本紀
 Xiao Wu Ben Ji 孝武本紀
 Xiong Nu 匈奴
 Xuan Di Ji 宣帝紀
 Yan Zhou 兗州
 Yang Yang Jing 養羊經
 Yang Yu Jing 養魚經
 Yang Zhai 陽翟
 Yangtze River 江水
 Yao Lü 徂律
 Ye Jin 野禁
 yi 邑
 Yin 尹
 Yin Du Wei Shu 尹都尉書
 Ying Chuan 穎川
 Yong Chi 雍齒
 Yu Han Shan Fang Ji Yi Shu 玉函山房集逸書
 Yu Shi 魚師
 yuan guang 元光
 yuan shuo 元狩
 Yue Ling 月令
 Yun Meng 雲夢
 Yun Meng Shui Hu Di 雲夢睡虎地
 Zhao 趙
 Zhao Di Ji 昭帝紀
 Zheng Dang-shi 鄭當時
 Zheng Guo 鄭國

Zhong Shan 中山

zhong yuan 中元

Zhou Li 周禮

Zhou Li Di Guan 周禮地官

zhu guo 諸國

Zi Chu 子楚



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1a- p.135, para.2, line 7.
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SUPPLEMENTARY FOOTNOTES

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- 0a Gao Min, 1979, 49.
- 0b Shi Ji, Lü Bu Wei Lie Zhuan, p.2511.
- 0c Ibid., p.2510.
- 0d ibid.
- 0e Shi Ji, editor's preface, p.1-2.
- 0f Fairbanks, 1978, p.67.
- 0g Shi Ji, Gao Zu Ben Ji, p.381-9.
- 0h Shi Ji, Xiao Wen Ben Ji, p.414.
- 0i Ibid., p.418, 427-8.
- 0j Shi Ji, Xiao Jing Ben Ji, p.445-8.
- 0k Shi Ji, He Qu Shu, p.1405-15.
- 0l Ibid., p.1410-12.
- 1a Han Shu, Gao Hou Ji, p.63; The Cambridge History of China, volume 1, p.136.
- 1b Ibid., p.64-5.
- 1c Han Shu, Gao Hou Ji, p.65.
- 1d Han Shu, Wu Di Ji, p.84.
- 1e Han Shu, Zhao Di Ji, p.104.
- 1f Han Shu, Xuan Di Ji, p.111,115.
- 1g Fan Sheng-zhi Shu, p.1.
- 1h Han Shu, Yi Wen Zhi, p.889.
- 1i Fan Sheng-zhi Shu, p.4.
- 1j Loewe, 1973, p.72.
- 1k Fairbank, 1978, p.37.
- 1l Guan Zi, volume 1, p.15b-16a.
- 1m Guan Zi, volume 5, p.1a-6b.
- 1n Han Shu, Gong Sun Hong Bu Shi Er. Kuan Zhuan, p.1198,1202.
- 2a Gu Jin Shuo Bu Cong Shu, juan 1, p.1a.
- 2b ibid.
- 2c ibid.
- 3a Zheng Qiao, Wei Shu Tong Kao.

Chapter 3:

- 1a Shi Ji, Shang Jun Lie Zhuan, p.2230.
- 1b Shui Hu Di Qin Mu Zhu Jian, Jin Bu Lü, p.60.
- 1c Shi Ji, Shang Jun Lie Zhuan, p.2230; Gao, 1978, p.45.
- 1d Gao, 1979, p.45.
- 1e Shi Ji, Shang Jun Lie Zhuan, p.2230.
- 1f ibid.
- 1g Shui Hu Di Qin Mu Zhu Jian, Chuan Shi Lü, p.105; Shui Hu Di Qin Mu Zhu Jian, Xiao Lü, p.133.
- 1h Shui Hu Di Qin Mu Zhu Jian, Ji Yuan Lü, p.30.

Chapter 4:

- 0a Shi Ji, Qin Shi Huang Ben Ji, p.246, 252; Gao, 1979, p.176; Li Xue-qin, 1985, p.209; Lewis, 1990, p.10.
- 0b Shi Ji, Qin Shi Huang Ben Ji, p.227, 232.

- 0c Tang, 1985, p.171, 193; Gao, 1979, p.148-50.
 2a Shi Ji, Qin Shi Huang Ben Ji, p.225.
 2b Gao, 1979, p.92.
 The "xian" and the "jun" were the largest territorial divisions. (Shi Ji, Qin Shi Huang Ben Ji, p.239.) The "jun" was slightly more important than the "xian". The "xian" are rarely mentioned in extant contemporary records. (Zhong Guo Li Shi Di Tu Ji, 1982, p.1.)
 2c Gao, 1979, p.186.
 2d Ibid., p.181.
 2e Ibid.
 2f Gao, 1979, p.93.
 2g Ibid.
 3a Fairbank, 1978, p.57.
 3b Shi Ji Qin Shi Huang Ben Ji, p.239.
 3c Ibid.
 3d Ibid; The Cambridge History of China, volume 1, p.55.
 3e The Cambridge History of China, volume 1, p.281.
 3f Ibid., p.61.
 3g Shi Ji, Qin Shi Huang Ben Ji, p.271.
 3h Ibid, p.255; Fairbank, 1978, p.57.
 3i The Cambridge History of China, volume 1, p.28-9; Shi Ji, Qin Shi Huang Ben Ji, p.254; Shui Hu Di Qin Mu Zhu Jian, Cang Lü, p.48.
 4a Hulsewe, 1985, p.14.
 4b Li Xue-qin, 1985, p.214.
 4c Shui Hu Di Qin Mu Zhu Jian, Guan Shi, p.71; Shui Hu Di Qin Mu Zhu Jian, Fa Lü Da Wen, p.160.
 4d Shui Hu Di Qin Mu Zhu Jian, Fa Lü Da Wen, p.177.
 4e Gao, 1979, p.93.
 5a Shui Hu Di Qin Mu Zhu Jian, Qin Lü Za Chao, p.134.
 5b Shi Ji, Qin Shi Huang Ben Ji, p.230-6; The Cambridge History of China, volume 1, p.64.
 5c Shi Ji, Qin Shi Huang Ben Ji, p.271; The Cambridge History of China, volume 1, p.66.

Chapter 5:

- 0a Gao Min, 1978, p.21-4.
 0b The Cambridge History of China, volume 1, p.542.
 2a Shui Hu Di Qin Mu Zhu Jian, Yao Lü, p.77.
 5a Shi Ji, Qin Shi Huang Ben Ji, p.271; Shui Hu Di Qin Mu Zhu Jian, Fa Lü Da Wen, p.217.
 6a This refers to the above example.
 7a Shui Hu Di Qin Mu Zhu Jian, Jin Bu Lü, p.61.
 7b Shui Hu Di Qin Mu Zhu Jian, Ji Yuan Lü, p.32.
 7c The Cambridge History of China, volume 1, p.61.
 8a Ibid., p.557.
 8b Shi Ji, Qin Shi Huang Ben Ji, p.71.

Chapter 6:

- 0a Shui Hu Di Qin Mu Zhu Jian, Cang Lü, p.39.
 0b Shi Ji, He Qu Shu, p.1407.

- 0c Ibid., 1408.
- 1a Guan Zi, volume 14, p.11b.
- 3a Shui Hu Di Qin Mu Zhu Jian, Ji Yuan Lü, p.30.
- 5a Shui Hu Di Qin Mu Zhu Jian, Tian Lü, p.26.
- 7a Shui Hu Di Qin Mu Zhu Jian, Cang Lü, p.42.
- 7b The Cambridge History of China, volume 1, p.61.

Chapter 7:

- 1a Shi Ji, Zhou Ben Ji, p.112.
- 3a Shui Hu Di Qin Mu Zhu Jian, Cang Lü, p.37.
- 3b Ibid., p.42.
- 3c Li Ji, volume 5, p.7b.
- 3d The Cambridge History of China, volume 1, p.52.
- 4a Shui Hu Di Qin Mu Zhu Jian, Cang Lü, p.41-2.
- 6a Shui Hu Di Qin Mu Zhu Jian, Chuan Shi Lü, p.105.
- 7a Li Ji, juan 5, p.7b.
- 7b Shui Hu Di Qin Mu Zhu Jian, Yao Lü, p. 76-7.

Chapter 8:

- 0a Shi Ji, Gao Zu Ben Ji, p.378.
- 0b Ibid., p.362.
- 1a Han Shu, Hui Di Ji, p.61; The Cambridge History of China, volume 1, p.105.
Loewe, 1973, p.69.
- 1b Shi Ji, Gao Zu Ben Ji, p.385.
- 1c Ibid.
- 2a Ibid, p.379; Zhong Guo Li Shi Di Tu Ji, 1982, p.1.
- 2b Shi Ji, Gao Zu Ben Ji, p.389.
- 2c Han Shu, Gao Hou Ji, p.64.
- 2d Ibid., p.65; Han Shu, Wen Di Ji, p.73; Han Shu, Jing Di Ji, p.82,85,99; Han Shu, Xuan Di Ji, p.117.
- 3a Ge, 1986, p.51; Shi Ji, He Qu Shu, p.1409-10; Loewe, 1973, p.168.
- 3b Loewe, 1973, p.60.
- 3d Ge, 1986, p.66.
- 3e Loewe, 1973, p.58.
- 3f Shi Ji, Gao Zu Ben Ji, p.380; The Cambridge History of China, volume 1, p.157.
- 3g Fairbank, 1978, p.61.
- 3h Loewe, 1973, p.60.
- 3i One or two degrees are granted. Usually only one degree is granted. Han Shu, Hui Di Ji, p.60-1; Han Shu, Gao Hou Ji, p.64.
- 3j This refers to the first reign period of Emperor Wen.
- 3k Shi Ji, Xiao Wen Ben Ji, p.418.
- 3l Ibid., p.427-8.
- 3m Ge, 1986, p.16.
- 4a Shi Ji, He Qu Shu, p.1409-10; Bray, 1984, p.263.
- 4b Ge, 1984, p.51, 53.

Chapter 9:

- 2a Han Shu, Gao Di Ji, p.61.
- 3a Han Shu, Jing Di Ji, p.84.
- 4a Han Shu, Xuan Di Ji, p.111.
- 5a Han Shu, Zhao Di Ji, p.105
- 7a Han Shu, Jing Di Ji, p.82.
- 7b Yu Han Shan Fang Ji Yi Shu, volume 69, p.1b.

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- 0a Han Shu, Wu Di Ji, p.92; Han Shu, Zhao Di Ji, p.106; Han Shu, Xuan Di Ji, p.111.
- 1a Han Shu, Wen Di Ji, p.72.

Chapter 11:

- 1a Fan Sheng-zhi Shu Jie Shi, p.3; Yu Han Shan Fang Ji Yi Shu, volume 69, p.2a; Gu Jin Shuo Bu Cong Shu, volume 1, p.1b.
- 1b Fan Sheng-zhi Shu Jie Shi, p.4.
- 1c Zhou Li, volume 16, p.12b.
- 1d Zhou Li, volume 30, p.6a.
- 1e Ge, 1984, p.118.

Chapter 12:

- 1a Schloss, 1975, photo #7 explanation.
- 2b The Quest For Eternity, 1987, p.110.
- 5a Schloss, 1975, photo #15 explanation.
- 5b Ibid., photo #1 explanation.
- 5c The Quest For Eternity, 1987, p.112.
- 5d Ibid.
- 6a Ibid., p.115.
- 6b Ibid., p.116.

Chapter 13:

- 0a Fan Sheng-zhi Shu Jie Shi, p.23.
- 0b Guan Zi, volume 8, p.7a.
- 0c Fan Sheng-zhi Shu Jie Shi, p.121, 132.
- 0d Bray, 1984, p.168.
- 3a Ibid.
- 3b Han Shu, Shi Huo Zhi, p.513. (note: "Dai ti" is a misprint "dai tian".)
- 3c Loewe, 1975, p.169.
- 3d Han Shu, Shi Huo Zhi, p.513. (page error)
- 4a Ibid.
- 5a Yu Han Shan Fang Ji Yi Shu, volume 69, p.4a.
- 5b Lü Shi Chun Qiu, volume 26, p.11a; Guan Zi, volume 5, p.7a. (note: "Chao" is a misprint for "Zhao".)
- 8a Fan Sheng-zhi Shu Jie Shi, p.63.
- 9a Ibid., p.68-71.
- 9b Ibid., p.63.
- 9c Ibid., p.164.

- 9d Ibid., p.110, 149.
- 9e Yu Han Shan Fang Ji Yu Shu, volume 69, p.3a
- 9f Han Shu, Shi Huo Zhi, p.506.
- 9g Bray, 1984, p.511.
- 9h Fan Sheng-zhi Shu Jie Shi, p.129.
- 9i Ibid., p.130; Yu Han Shan Fang Ji Yi Shu, volume 69, p.1a, 1b, 5b.
- 9j Li Ji, volume 5, p.6a.
- 10a Fan Sheng-zhi Shu Jie Shi, p.152.
- 13a Zhou, 1980, p.205.
- 14a Li Ji, volume 5, p.11a.
- 14b Fan Sheng-zhi Shu Jie Shi, p.110.
- 15a Ibid., p.43.
- 16a Li Ji, volume 5, p.19b.
- 16b Shui Hu Di Qin Mu Zhu Jian, Cang Lü, p.35.
- 16c Shui Hu Di Qin Mu Zhu Jian, Xiao Lü, p.96-7.
- 17a Hu, 1984, p.308.
- 17b Ibid.
- 17c Ibid., p.309.
- 17d Ibid.
- 17e Li Ji, volume 5, p.8b.
- 17f Shui Hu Di Qin Mu Zhu Jian, Cang Lü, p.30.
- 17g Ibid., p.48.
- 19a Yu Han Shan Fang Ji Yi Shu, volume 69, p.1a.
- 19b Ibid., p.2a.
- 21a Han Shu, Shi Huo Zhi, p.506.
- 21b Shi Ji Zhuan, edited by Zhu Xi. (Taipei: Zhong Hua Press, 1978), p.92; Cui Shi, Si Min Yue Ling (Beijing: Zhong Hua Press, 1965), p.34, 43, 166.
- 21c Fan Sheng-zhi Shu Jie Shi, p.166.
- 21d Yu Han Shan Fang Ji Yi Shu, volume 69, p.4a.
- 25a Da Dai Li Ji, edited by Wang Ou. (Beijing: Zhong Hua Press, 1983), p.160.

Appendices:

Appendix D:

- 1a Shui Hu Di Qin Mu Zhu Jian, Yao Lü, p.90.
- 2a Shui Hu Di Qin Mu Zhu Jian, Si Kong, p.88.
- 2b Han Shu, Hui Di Ji, p.61.
- 3a The Quest For Eternity, p.18.

Appendix E:

- 3a Fan Sheng-zhi Shu Jie Shi, p.32.
- 3b Han Shu, Gao Di Ji, p.64.
- 5a Han Shu, Wen Di Ji, p.74.
- 5b Han Shu, Hui Di Ji, p.62.

Appendix F:

- 1a Li Ji, volume 5, p.2a.

- 1b Correction-This occurs in the second month in the Yue Ling Calendar, as opposed to the first month in the Xia Xiao Zheng. (Li Ji, volume 5, p.4b.)
- 1c Xia Wei-ying, Xia Xiao Zheng Jing Wen Jiao Shi. (Beijing: Qin Ping Press, 1981), p.12.