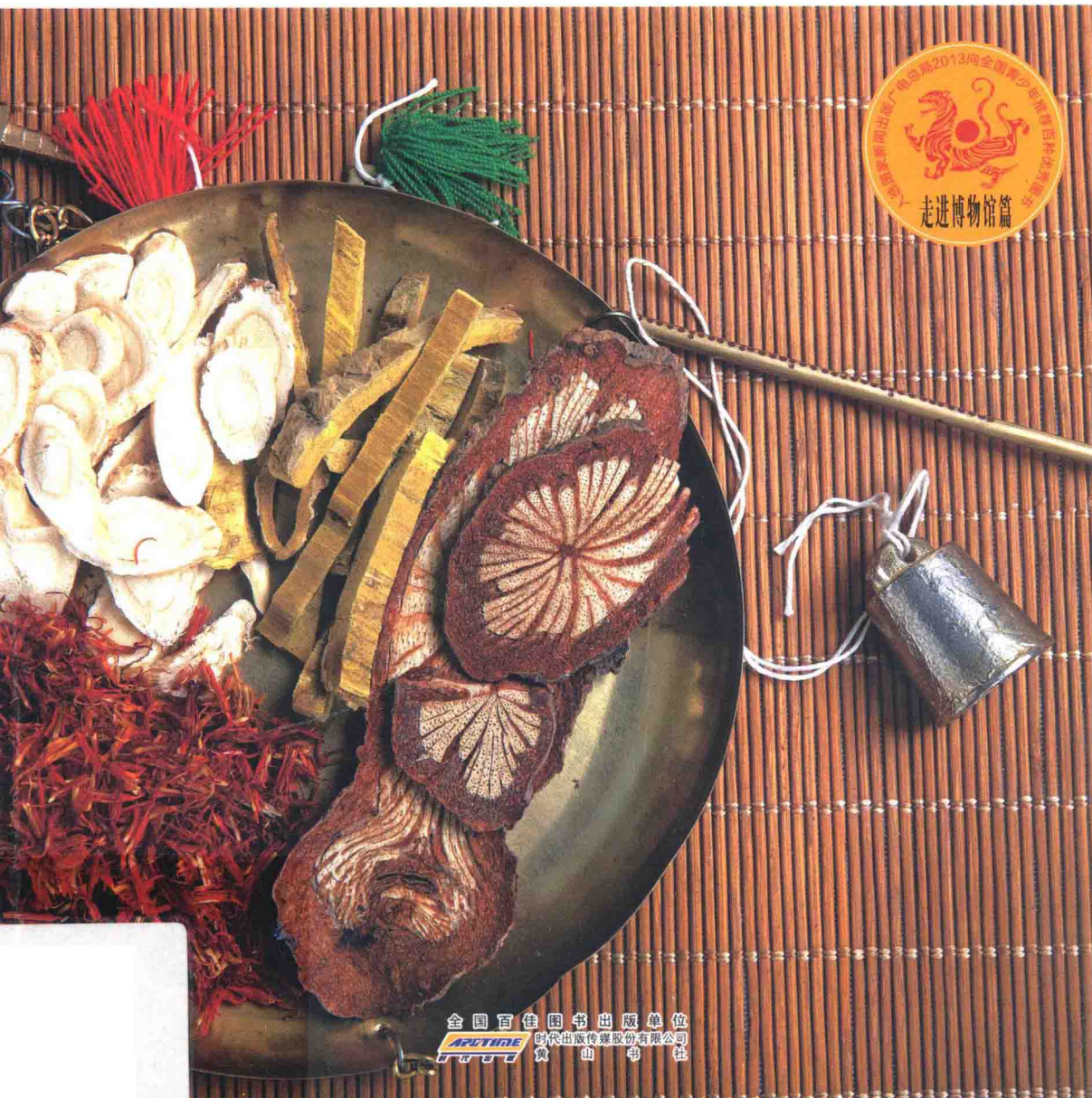


# Ancient Weighing Apparatus

# 古代衡器

简洁◎编著





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# 古代衡器

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简洁◎编著



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衡器是用来测量物体的长度、容量和重量的器具，在中国统称为“度量衡”。衡器虽然属于计量范畴，但却深深的扎根于历史文化之中。中国古代的衡器，其发展史本身就是一幅浓缩的古代社会的生活画卷。在中华五千年的文明中，衡器的发展经历了从粗略到精确、从单一到多样的变化。无论是距今四千多年的夏商周时

The weighing apparatus refers to appliances used for measuring the length, capacity, and weight of objects. And it's collectively known as *Du Liang Heng*, namely linear measurement, capacity measurement, and weight measurement. Although the weighing apparatus are tools for measuring, it is deeply rooted in Chinese history and culture. The history of Chinese ancient weighing apparatus itself is a scroll of condensed daily-life painting. In the civilization of five thousand years, it has been through the changes from roughness to preciseness and from simpleness to diversity. The importance of the weighing apparatus in ancient time is embodied in its emergence in the period of Xia Dynasty (approx. 2070 B.C.-1600 B.C.), Shang Dynasty (1600 B.C.-1046 B.C.), and Zhou Dynasty (1046 B.C.-256 B.C.) over four thousand years ago, and the unification of measurement by Qin Shihuang, the first emperor of Qin



期的衡器问世，还是秦始皇统一度量衡，以及之后各个朝代对度量衡制度的完善，都体现了衡器在古代社会的重要性。

本书向读者全面介绍了中国衡器的发展历程、单位名称、种类，以及衡器上的纹饰等内容，并辅以直观精美的图片，希望通过这些能够引领读者了解中国的衡器知识、感受博大精深的中国传统文化。

Dynasty, and the improvement done by the successive Dynasties.

Accompanied by exquisite illustrations, this book overall introduces the development history, units, category and the motif of Chinese weighing apparatus. Also the visually delicate pictures are attached in this book. Hope the reader can get a further understanding on Chinese weighing apparatus and experience the extensive and profound Chinese culture.



## 千年衡器

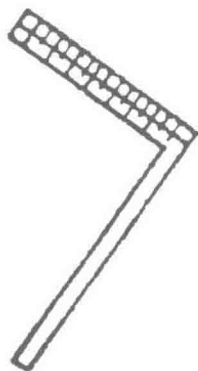
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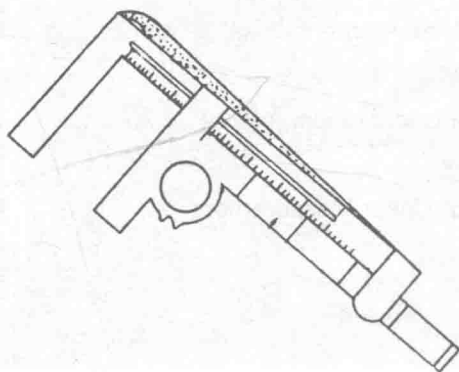
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# 千年衡器

## Weighing Apparatus of Thousand Years

衡器是与人类生活密切相关的测量器具，是古代农业文明与科学研究的基础，也是一种独特的文化载体。尽管早在父系氏族社会末期，中国就已经开始了测量活动，但是衡器的出现并不是一蹴而就的，而是古人在长期的劳动过程中逐渐创造出来的，并在不断的演化中形成了全面的制度体系。

The weighing apparatus is the measuring device closely related to the life of the humankind, and it is the basis of the ancient agricultural civilization and scientific research and also a unique cultural carrier. Although the measure activity began early at the end of the patriarchal society (approx. 5500-4000 years ago), the emergence of the weighing apparatus was not accomplished at one stroke, but created gradually in the long-term labor process of ancient people. And the overall institutional system was formed during the continuous evolution.







## > 衡器的起源

四五千年前的父系氏族社会末期，古老的中国已经开始抒写衡器的历史篇章。虽然计量始于何时、源自何人至今尚无定论，但可以肯定，衡器是人类劳动文明的结晶。

原始人群在生产实践中，逐步形成了对事物数量和形状的直观感受。特别是学会记数之后，人们对数和量的认识由感觉转向客观，并产生了许多表示数量的方法，如结绳记事和按量分堆等。而古人对长度的测量和容积的计算是出于生活的需要，如离开天然洞穴后，在建造能够遮风挡雨的房屋时，需要对房屋样式、面积、间距、大小等做出考虑，由此便加深了对数和量的认识。在中国氏族社会，稳定的农业生产使氏族公社有了充足的食

## > Origin of Weighing Apparatus

At the end of the patriarchal society about four to five thousand years ago, the weighing apparatus began to appear in ancient China. There is not the last word for its exact birth time and inventor. However, it's certain that the weighing apparatus is the fruit of the labor civilization of humankind.

In the labor practice, the primitives group gradually formed the intuitive experience on the quantity and shape of the objects. Especially after the people learnt to count, the cognition to number and quantity transformed from intuitive to objective, and many methods used for expressing the quantity emerged, such as remembering by knotting rope and piling by quantity. However, the measurement for the length and the calculation for capacity by the ancient people is out of



#### • 原始村落模型

原始的先民们建造房屋时需要充分考虑到房屋的大小、形状、容纳人数、距离水源远近等问题，从而建造一个生活相对便利的居住场所，而这些因素的考虑都离不开对测量的应用。

#### Model of Primitive Village

Because of the low productivity and inconvenient transportation in primitive societies, in order to build a convenient inhabitancy, the ancients need to take into thorough consideration of some factors, such as the size, appearance, and capacity of the house and distance from the sources of waters, which closely rely on the appliance of measurement.

物。随着私有观念的发展，按照分工不同进行分配食物的方法渐渐取代了平均分配的制度。分配制度的变化要求氏族首领对量的多少有相对稳定的概念，保留几件固定的专用测量器具则成为必然。由于年复一年的使用，氏族首领用于测量食物的陶器在人们的心中也有了一定的权威性。虽然这个时期的陶器不是真正意义上的度量衡器

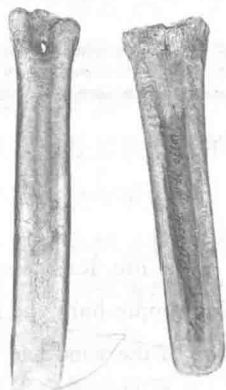
the need of the life, for example, when the ancient people built the house for keeping out of the wind and rain after moving away from the natural cave, they needed to consider the style, area, space for single room, size, etc. Therefore, the cognition on number and quantity was strengthened. In the clan society of China, the stable agricultural production ensures the clan community abundant food. With the development of the





具，但是它的使用却孕育了衡器诞生的条件。

关于衡器的记载，从卷帙浩繁的史书里可见一二。中国现存最早的史书《尚书》中的《舜典》一篇，则提及作为部落联盟首领的舜把各部族千差万别的度量衡协同起来；西汉时期编订的典章制度书籍《礼记·五帝德》中说皇帝设立了度、量、衡、里、亩五个量。



#### • 骨铲（新石器时代）

这两只骨铲为新石器时代的生产工具，长宽相当，形状规整，是古人经过比较测量而制成的。

Bone-made Shovel (Neolithic Age, approx. 10,000-4,000 years ago)

This pair of bone-made shovels is a tool of production used in the Neolithic Age (approx. 10,000-4,000 years ago). With the same length and width, these two regularly-shaped shovels are made by the ancients after comparison and measurement.

private concept, the average distribution was gradually replaced by the method of distribution according to the different divisions of labor. The change of the distribution system requires the clan chieftain to have the relatively stable concept to the quantity. Therefore, it becomes necessary retaining a few fixed special measuring devices. The pottery used for measuring the food by the clan chieftain had certain authoritativeness in the people because of the use year after year. Although the pottery in this period was not the measuring device in real sense, its use was pregnant with the birth conditions of the weighing apparatus.

Some records on the weighing apparatus can be seen in a variety of history books. *The Book of Rites-Virtues of Five Emperors*, the book on decrees and regulations compiled in Western Han Dynasty (206 B.C.-25 A.D.), says that the emperor set up five measures: *Du*, *Liang*, *Heng*, *Li* (a measure for length), *Mu* (a measure for area of the land). *The Standard Work of Shun*, an article in the *Book of Shang*, the existing earliest history book, mentions that Shun, as the chieftain of the league of the tribes, coordinated the various measures of all the tribes. The Chinese weighing



中国的衡器从诞生的那天起，就决定了它的与众不同：衡器以量化的古老符号，以及精妙规整的独特韵味，于数字之上表现出中国的尺度与分量。

apparatus is determined to be unusual from that day when it was born: With the quantized ancient symbols and the exquisite and orderly unique lasting charm, the weighing apparatus showed Chinese measurement and weight on the numbers.



#### • 陶器（新石器时代）

此陶器高15厘米，直径27厘米。

Pottery Ware (Neolithic Age, approx. 8000 years ago)

This pottery ware is 15cm in height and 27cm in diameter.

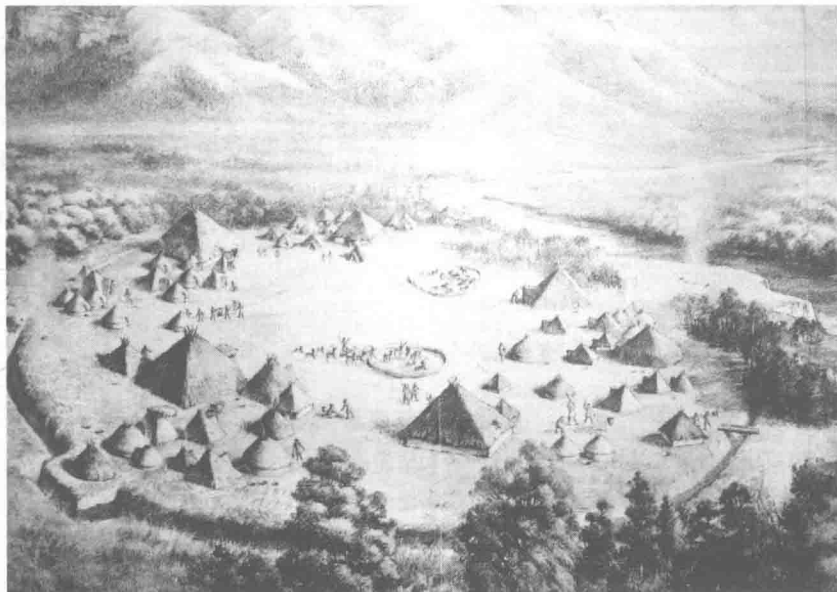
### 原始建筑与度量衡

原始村落的建筑形式包括半地穴式和地面建筑，虽然构造简单，但是在建造时却难以脱离度量衡的使用。半地穴式的房屋以坑为墙，上面覆盖屋顶，从穴底到顶部的高度约为200厘米，可容纳正常身高的人自由活动，房屋的大小和高度在设计时充分考虑到人的身高。地面建筑的规模较大，以陕西临潼姜寨原始村落为例，从已发掘的8000平方米的面积内发现90多座房屋，三座大房子面积均在80平方米左右，且有一座房屋的四面边长均为9.1米，统一的面积和长度规划对测量的要求更高，是古人在生活中对于度量衡的直接运用。

### Primitive Construction and Measurement

The construction forms in the primitive village included half-crypt style and ground construction. Although the structure was simple, they were hard to exist independently without measures. For the house in half-crypt style, the pit was regarded as the wall, which was covered with the roof. The height of the person was considered sufficiently when the house was designed for the size and height. The height from the bottom to the roof was about 200 cm, and it can allow a

person with normal height to move freely. The ground construction was in large scale. Take the primitive village in Jiang stockade village, Lintong City, Shaanxi Province for example, over 90 houses were found in the area of 8,000 square meters unearthed. The 3 big houses each was 80 square meters or so, and for one of them, the length of the four sides each was 9.1 meters. The overall planning of the area and length had higher requirements for measurement. It's the direct application of measures in the life of the ancient people.



• 陕西临潼姜寨原始村落

Primitive Jiang Stockaded Village (stockade village having residents with same family name, Jiang) in Lintong City, Shaanxi Province



## > 衡器的发展历程

衡器并不是中国的独创，世界上的文明古国均能追寻到它的踪迹。如大约在公元前1500年，古埃及就出现了天平；古代美索不达米亚的度量衡单位制是研究许多数

## > Development of Weighing Apparatus

The weighing apparatus is not the original creation of China. It can be traced back in all the countries with ancient civilization in the world. For example, the balance appeared in ancient Egypt about 1500



• 古埃及壁画中的天平

Scale in Ancient Egyptian Mural



学原理的关键；古巴比伦则形成了比较完善的度量衡体制，其中的一些度量衡单位还传到了古希腊。然而，伴随着古文明的消失，许多地方的衡器也失去了发展的连续性，唯独华夏文明能够将度量衡的体制连绵不断地延续下来。纵观中国衡器的发展史，发展特点就在于其独立性与连续性。另外，衡器的繁荣与混乱均与当时的政治形态有关。

中国的衡器器具在夏商周时期出现。公元前2070年，禹建立中国第一个世袭王朝——夏朝（约前2070—前1600）。而禹之所以被舜选为继承人，主要在于他治水有功。禹在治水的过程中，创造出修建水利工程所必须用到的测量工具，并以自己的身高、体重作为长度和重量标准，这就是衡器最早的实物标准。商周时期的农业文明已经发展到了很高的程度，统治者将土地划分成等量方田分配给臣下作为俸禄。为了准确地丈量土地，尺作为专门的测量长度的工具成为度量衡的一个组成部分。至于商周时期出现的大型宫殿，则显现出各种测量工具的进步与发展。此外，得

B.C.; the unit system of measurement in ancient Mesopotamia is the key in the researches on many mathematical principles; the relatively perfect measure system was formed in ancient Babylon, and some of the units of measurement were spread to the ancient Greece. However, with the disappearance of the ancient civilization, the development of the weighing apparatus in many areas lost the continuity, only the measure system in Chinese civilization continued always. Throughout the development history of Chinese weighing apparatus, the characteristic of the development is the independence and continuity. Furthermore, the prosperity or chaos was related to the political situation at the time.

Chinese weighing apparatus appeared in the period of Xia Dynasty (approx. 2070 B.C.-1600 B.C.), Shang Dynasty (1600 B.C.-1046 B.C.), and Zhou Dynasty (1046 B.C.-221 B.C.). The Xia Dynasty, the first hereditary dynasty in China, was established by the leader Yu in 2070 B.C. The main reason why Yu was chosen to be the successor by the former leader Shun was his achievement in river regulation. In the process of river regulation, Yu





created the measuring tools necessary for building and guiding river regulation engineering, and took his own height and body weight respectively as the standard of length and weight. This is the earliest physical standard of the measuring devices. The agricultural civilization in the period of Shang Dynasty and Zhou Dynasty had developed to a very high level. The governor divided the land into the square fields in equal area to distribute them to the subordinates as the salary. In order to measure the land accurately, *Chi* (a unit of length, equaled to 0.231 meters) became an integrant of the measures as the special tool for measuring length. The large palaces appeared in the period of Shang Dynasty and Zhou Dynasty showed the progress and development of a variety of measure tools. Furthermore, people who got the land should pay physical taxes in a certain quantity to the slaveholder power according to a certain proportion of the income. In this process, the container became the indispensable device measuring the quantity of the grain. At the same time, the units of capacity also came into being with it. From the records about that the royal family of Zhou gave reward of land and copper



#### • 大禹画像

史书记载，大禹身高九尺九寸。

#### Portrait of Da Yu

According to historical records, Da Yu is 9 *Chi* (1 *Chi* equaled 0.231 meters) and 9 *Cun* (1 *Cun* equaled 1/10 *Chi*, about 0.0231 meters) in height.

到土地的人，则要按照收入的一定比例向奴隶主政权缴纳定量的实物税收。在此过程中，容器成为衡量



• 高柄陶权（商）

此陶权是目前发现较早的一枚测重器具，重1斤。

**High-Handled Pottery Quan (weight)**  
(Shang Dynasty, 1600 B.C.-1046 B.C.)

This pottery weight, weighing 1 *Jin* (*Jin*, a unit of weight 1 *Jin*=1/2 kilogram), is one of the oldest unearthed weighing apparatus.



• 帽形陶权（周）

帽形陶权重2斤，整体形态似一个帽子。

**Hat-shaped Pottery Quan (weight)** (Zhou Dynasty, 1046 B.C. - 221 B.C.)

Weighing 2 *Jin* (*Jin*, a unit of weight 1 *Jin*=1/2 kilogram), it looks like a hat.

粮食多少的必不可少的器具，同时容量单位也应运而生。根据西周青铜铭文中出现的关于周王室赏赐给臣下田地和铜器的记录，可以得知，在商朝（前1600—前1046）后期至西周（前1046—前771）早期的上层社会中，重量单位已经产生并得到普遍应用。考古发掘出的青铜器上刻有的“匀”、“𠂔”等重量单位，无疑是最有力的证明。商周时期的衡器管理制度已经比较完善，据史书记载，当时中央和地方政府均设有专门负责度量衡标准器

ware to the subordinates appeared in the inscription of bronze in Western Zhou Dynasty (1046 B.C.-771 B.C.), it can be known that the weight units appeared and was used widely in the upper classes of the society in the late Shang Dynasty to the early Western Zhou Dynasty. The weight units, such as *Yun*, *Lüe*, engraved on the bronze from the archaeological excavations are undoubtedly the most powerful proof. The system of measuring devices management had been relatively perfect in the period of Shang Dynasty and Zhou Dynasty. According to the historical records, the central and local