



雨树落落

英国最具影响力的青少年科普读物之一

(英)索韦(Solway, A.) 著  
孙盛萍 译

# Castle under Siege!

【简单机械】

## 包围下的城堡



哈尔滨工业大学出版社  
HARBIN INSTITUTE OF TECHNOLOGY PRESS

# Castle under Siege!

【简单机械】

## 包围下的城堡

哈尔滨工业大学出版社

版权专有 侵权必究

---

图书在版编目 (CIP) 数据

包围下的城堡：英汉对照/(英)索韦(Solway, A.)著；孙盛萍译. —哈尔滨：哈尔滨工业大学出版社，2007.11

(雨树溶溶)

ISBN 978-7-5603-2620-7

I. 包… II. ①索…②孙… III. ①英语—汉语—对照读物②科学知识—青少年读物 IV. H319.4: Z

中国版本图书馆CIP数据核字 (2007) 第157881号

---

黑版贸审字08-2007-032号

Castle under Siege! by Andrew Solway

© Harcourt Education Ltd 2006

The moral right of the proprietor has been asserted.

英汉双语版由Harcourt Education Ltd. 授权哈尔滨工业大学出版社在中国大陆地区独家出版发行

---

责任编辑 孙 杰 田 秋

特约编辑 杨雪涛

美术设计 赵九军

出版发行 哈尔滨工业大学出版社

社 址 哈尔滨市南岗区复华四道街10号 邮编 150006

传 真 0451-86414749

网 址 <http://hitpress.hit.edu.cn>

印 刷 沈阳新华印刷厂

开 本 787×1092mm 1/16 印张 2 字数 50千字

版 次 2008年1月第1版 2008年1月第1次印刷

书 号 ISBN 978-7-5603-2620-7

印 数 1—5 000 册

定 价 16.80 元

---

(如因印装质量问题影响阅读，我社负责调换)

## Contents 目录

Every king should have one 每个国王都得有座城堡	4
Building a castle 建造一座城堡	6
Safe from attack? 城堡安全吗?	10
Under siege! 遭到围攻!	14
Clearing up 清理战场	22
Simple machines 简单机械	28
Glossary 词汇表	30
Want to know more? 想知道得更多吗?	31
Index 索引	32

有些单词被印刷成粗体，**就像这样**。你可以在第30页中找到它们的意思，还可以在单词第一次出现时，在相关书页下方的方框内发现它们的含义。

# Every king should have one

## 每个国王都得有座城堡

About 700 or 800 years ago, castles were really important. This time is known as the Middle Ages. Every ruler in the Middle Ages had a castle. Some kings or queens had a lot of castles!

Castles were built to be safe from attack. A ruler could control all the countryside around the castle. A castle was also the ruler's home. **Knights** lived there, too. The knights were trained to fight anyone who attacked the castle. Life in a castle was hard work unless you were the ruler. Most jobs had to be done by hand. **Simple machines** made some jobs easier. In this book we will learn about simple machines. We will also look at how simple machines were used to build, attack, and protect castles.

在七八百年前的中世纪，城堡是非常重要的建筑物。那个时期，每个国王都有属于自己的城堡，有些国王或女王的城堡还不止一座呢！

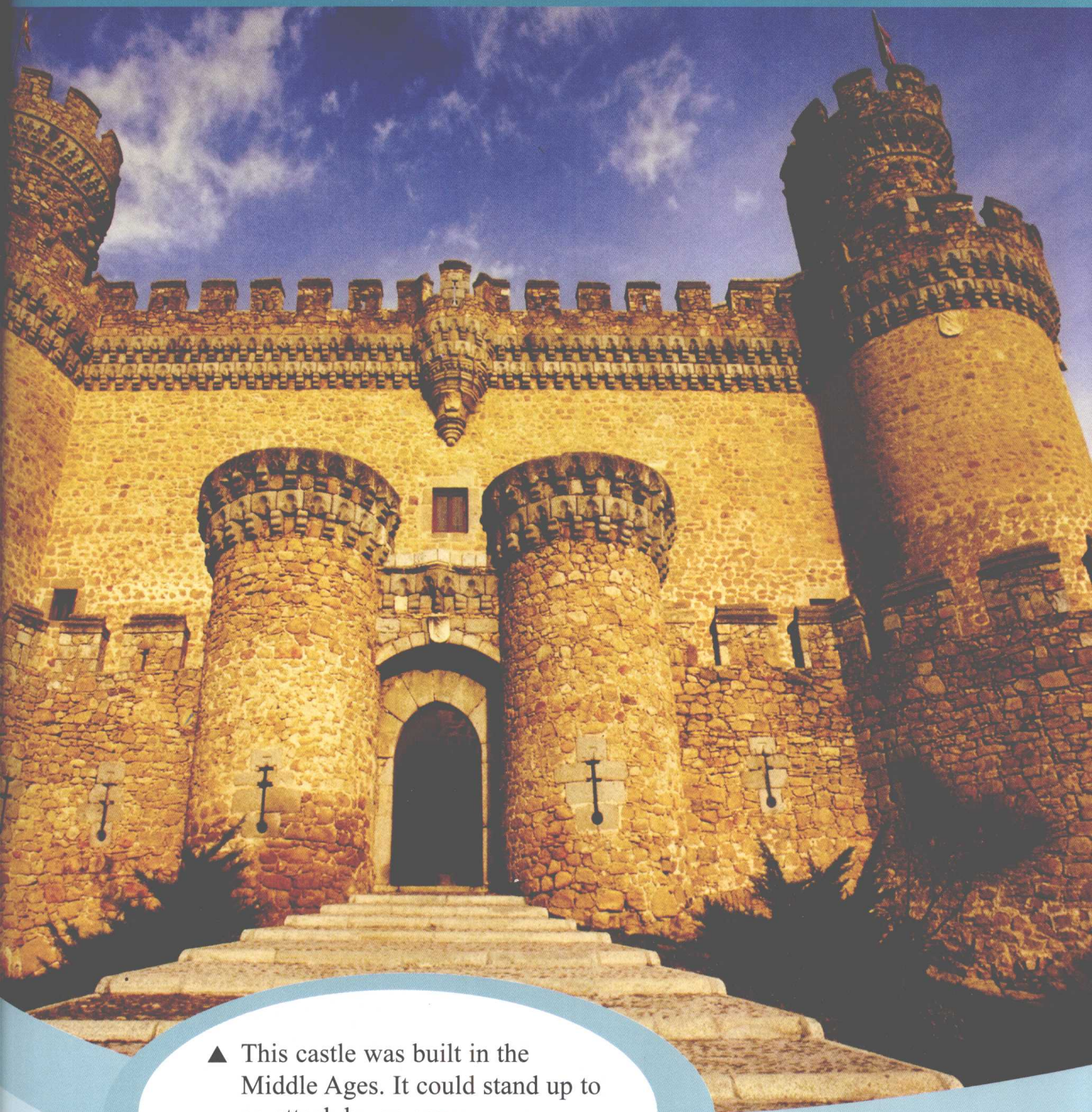
城堡是用来抵御侵略的工事。国王不仅控制城堡，还会控制城堡周围的村落。对国王来说，城堡就是他的家。城堡里还住着骑士。骑士是一些经过专门训练，能够和侵略者作战的人。除了统治者，住在城堡中的其他人的生活十分艰苦，因为大部分工作必须靠人力完成。使用一些简单机械可以让有些工作干起来容易点。在这本书里，我们就来学习关于简单机械的知识，并且来了解一下怎样利用简单机械建造、进攻和保卫城堡。

### Hard work! 艰苦的工作！

Building a castle was hard work! Most jobs were done by hand. Many workers were needed. A castle could take 10 years to build. It might need 2500 workers.

建造城堡可是一项艰苦的工作！大部分工作都得靠人力来完成。因此，建一座城堡需要很多人。如果用2500个人来建一座城堡的话，还得用十年的时间。





- ▲ This castle was built in the Middle Ages. It could stand up to an attack by an army.

这座城堡建于中世纪，非常坚固，可以抵挡住侵略者整支军队的进攻！

# Building a castle

## 建造一座城堡

**Stonemasons** were very important. They built the castle's huge stone walls and towers.

A stonemason's most useful tools were **wedges**. Wedges were triangle-shaped pieces of wood. They were thin at one end and wide at the other. Wedges were used to cut stone.

A wedge is a **simple machine**. It turns a downwards push into an outwards push.

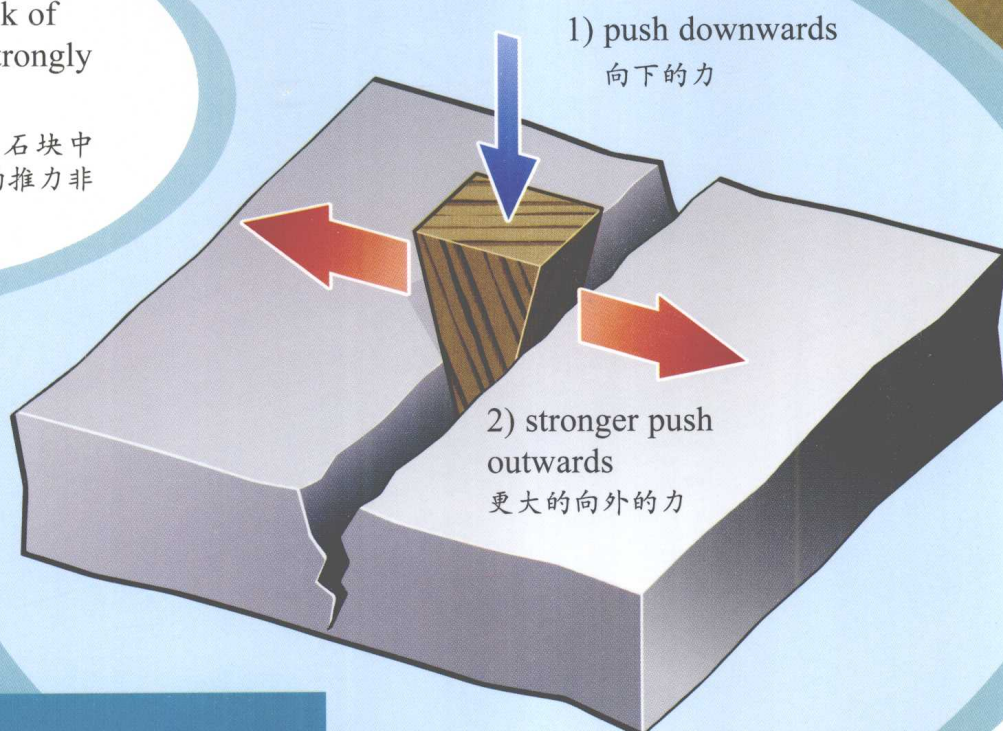
建造城堡时，石匠的作用举足轻重，是他们建造了城堡巨大的石墙和塔楼部分。

对石匠来说，最好用的工具就是楔子。它是一个三角形的木块，一头扁一头宽，石匠可以用它来劈开石头。

楔形工具属于简单机械，它能把向石头施加的向下的压力变成向外侧的推力。

When a wedge is pushed ► downwards into a block of stone, it pushes very strongly outwards.

当把一块木楔向下砸入石块中时，它所产生的向外侧的推力非常大。





Stonemasons cut stone ▲  
into blocks. They used a  
hammer and chisel. A chisel  
is a type of wedge.

石匠使用锤子和凿子把石料分割  
成一块块石块，凿子也是一种楔  
形工具。

# Moving the stones 搬运石头

The cut stones had to be carried to the castle. They were usually carried in carts. The carts were pulled by horses.

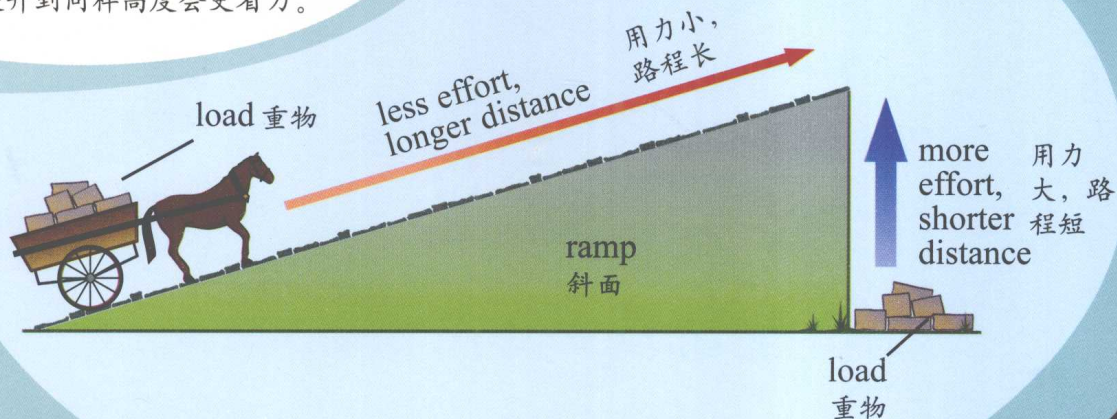
Most castles were built on a hill or high ground. The sloping road leading up to the castle was a **simple machine**. The sloping road was a **ramp**. A ramp has one end higher than the other. Lifting a heavy load is hard work. Moving a heavy load up a ramp is easier. But a load has to travel further when you use a ramp.

马车是把开凿出的石料运到城堡里的主要的运输工具。

大多数城堡都建在高耸的山地上。通往城堡的坡路也是简单机械的一种，我们把它叫做斜面。斜面的一端比另一端高，如果把石料从低处搬运到高处，将是件很费力的工作。但是如果把石料沿着一个斜面推动上去，就会容易得多，虽然移动的距离会远很多。

Moving heavy stones up a ramp is easier than lifting the stones to the same height.

把沉重的石块沿斜面提升上去比垂直提升到同样高度会更省力。





◀ There is a path leading up to this castle. The path is a type of ramp.  
这条通往城堡的路就是一个斜面。

# Safe from attack?

## 城堡安全吗？

There were wars in the Middle Ages. Armies often tried to capture enemy castles. This was not easy! Soldiers would usually have to get up a steep hill. They would then have to get over a deep moat (lake). The castle's stone walls were too thick to be knocked down. The soldiers inside the castle could fire arrows at attackers.

One way to capture a castle was to surround it with an army. The army stopped people going in or out. This was called a **siege**.

The people in the castle might run out of food. They might run out of water if the siege lasted a long time. But castles could store enough food to last for months. Most castles also had a well so that they would not run out of water.

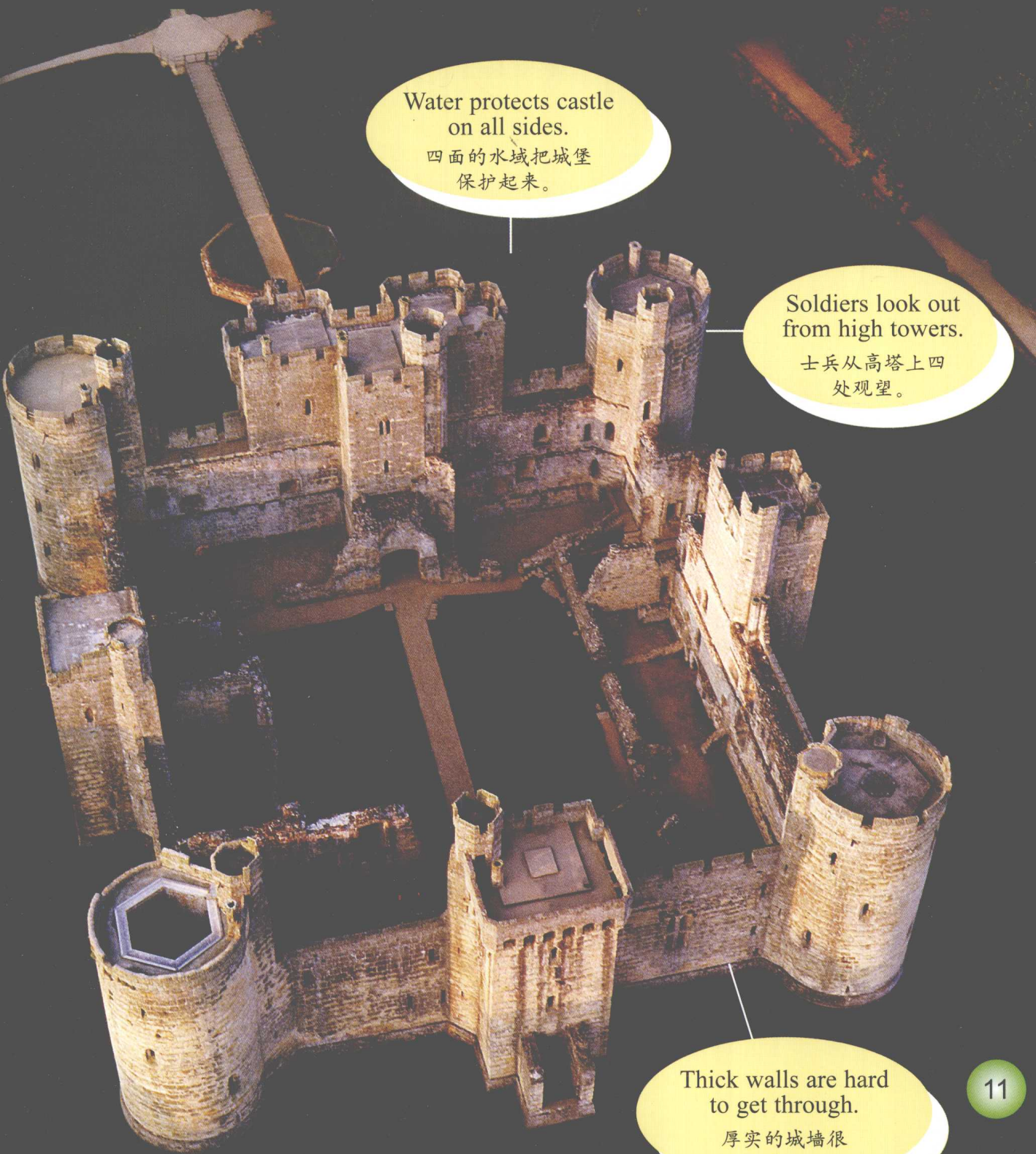
在中世纪，经常爆发战争。进攻的军队通常都想攻占敌人的城堡。这可不那么容易！攻城士兵要爬上陡峭的山坡，跨过深深的护城河，最后还要冒着被城堡内敌人的弓箭射杀的危险，设法突破城堡厚重的石墙。

另一种攻占城堡的方法是用军队包围它，禁止人员的出入，这叫**围攻**。

被围困的城堡可能会出现断粮的危险，如果被围困的时间过长，也可能发生断水的情况。但通常城堡都会储存够几个月吃的粮食，而且大多数城堡中还有水井，以防断水。

A castle is protected from ►  
attack in many ways.

有许多种保卫城堡的方法。



Water protects castle  
on all sides.

四面的水域把城堡  
保护起来。

Soldiers look out  
from high towers.

士兵从高塔上四  
处观望。

Thick walls are hard  
to get through.

厚实的城墙很  
难攻入。

# Lifting the drawbridge

## 拉起吊桥

So, what actually happened in a siege? Usually, the only way into a castle was the drawbridge. If the castle was attacked, the drawbridge was lifted. Then no one could get in.

Most drawbridges worked using two long pieces of wood. These pieces of wood are **levers**. Levers are **simple machines**. Each lever was fixed at a point called the **fulcrum**. The levers moved around the fulcrum.

Soldiers pulled down on one end of the lever. The other end went up. This lifted the drawbridge.

那么，在攻城过程中会发生什么事呢？通常通往城堡的唯一通路是吊桥。如果城堡遭受攻击，首要的任务是要把吊桥拉起来，这样就没有人能够进得来城堡了。

大多数吊桥靠两根长木头来收放。这两根长木头都是杠杆。杠杆也是简单机械的一种。杠杆有一个固定的点，叫支点。杠杆围绕支点运动。

士兵们把杠杆一端往下拉，另一端就会抬起来，这样吊桥就被拉起来了。

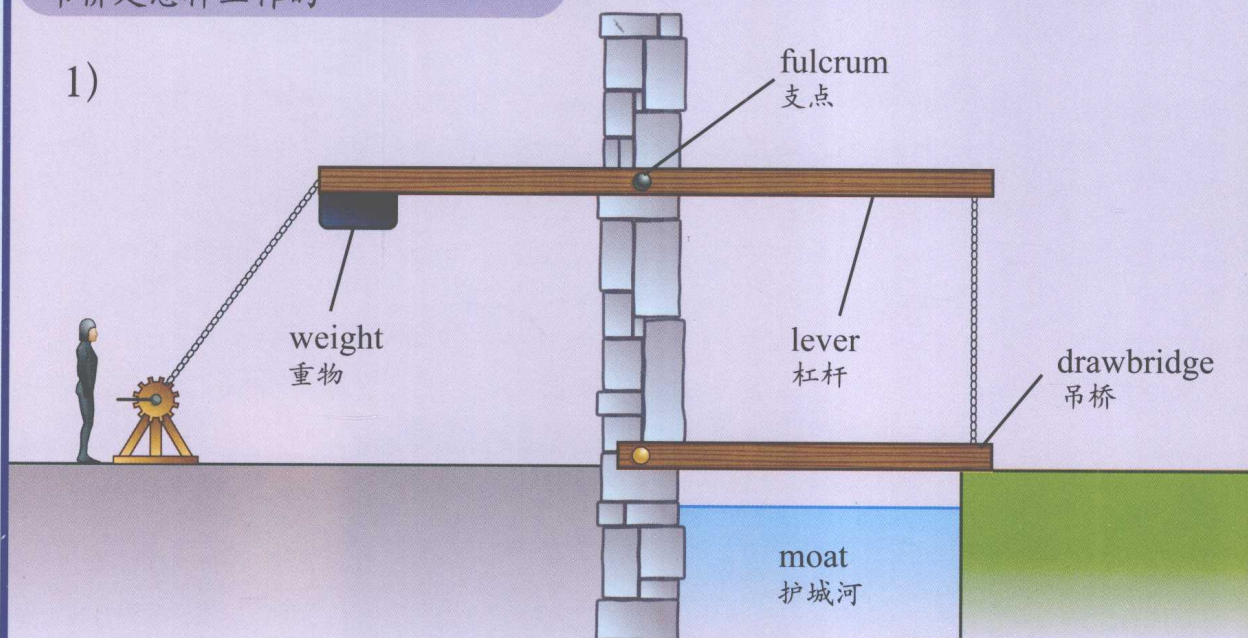
◀ The drawbridge was a narrow wooden bridge over the castle moat (lake).

吊桥是架在护城河上的窄木桥。

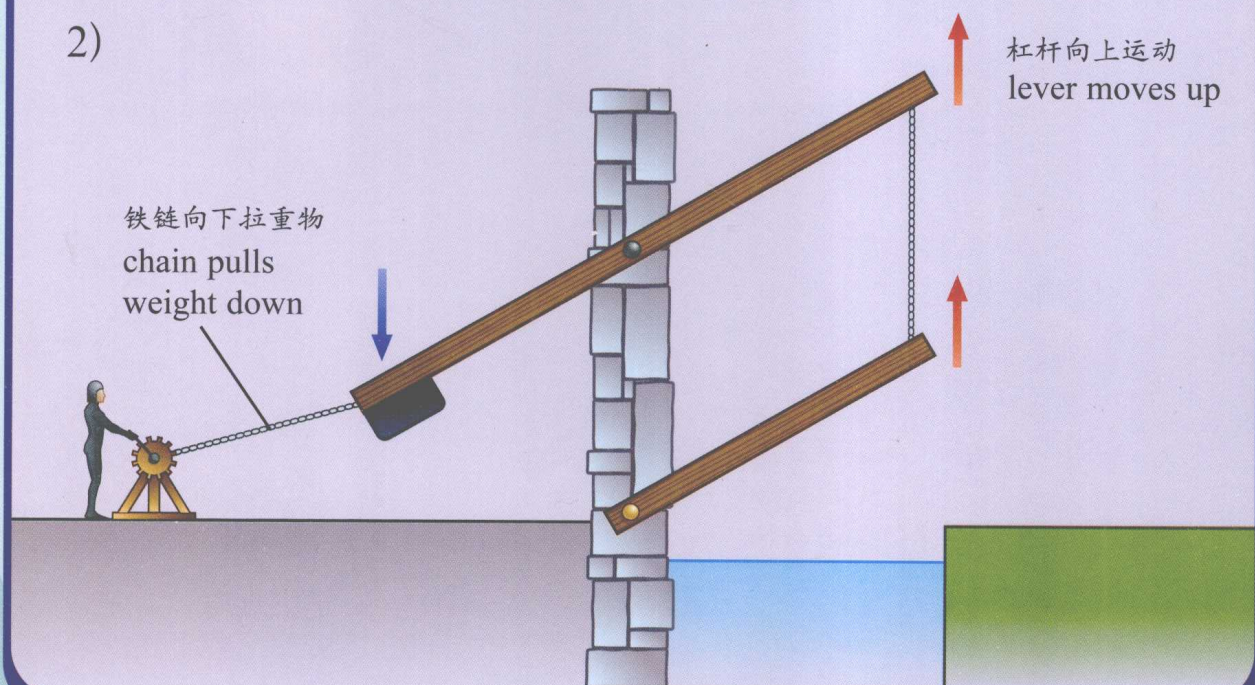
## How a drawbridge works

吊桥是怎样工作的

1)



2)



# Under siege!

## 遭到围攻！

In a siege, the attackers surrounded the castle. But they didn't get too close. The castle soldiers had crossbows!

Crossbows were deadly weapons. This was because a crossbow was very stiff. It was so stiff that an **archer** could not pull the string back with his hands. The archer turned a handle to pull back the string. The handle turned a screw. A **screw** is a rod of metal with a spiral cut into it. The string was pulled back when the archer turned the handle. The string wrapped around the screw. The string moves more slowly than if it was pulled in a straight line. But the pull is much stronger.

在围城时，进攻的军队会把城堡团团围住，但他们不会靠得太近，因为城里的士兵有十字弩！

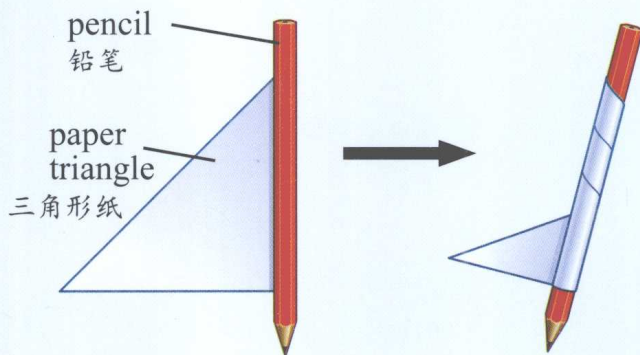
十字弩是一种硬弓，是一种可以致命的武器。弓箭手根本无法单单凭借手臂的力量来拉开弓弦，他需要通过转动一个手柄来拉动弓弦。手柄带动一个**螺杆**，螺杆是一个上面有螺旋线的金属棒，当弓箭手转动手柄的时候，弓弦就会被向后拉开。弓弦缠绕在螺杆上，这样弓弦的移动虽然比直接向后拉要慢得多，但拉力却强得多。

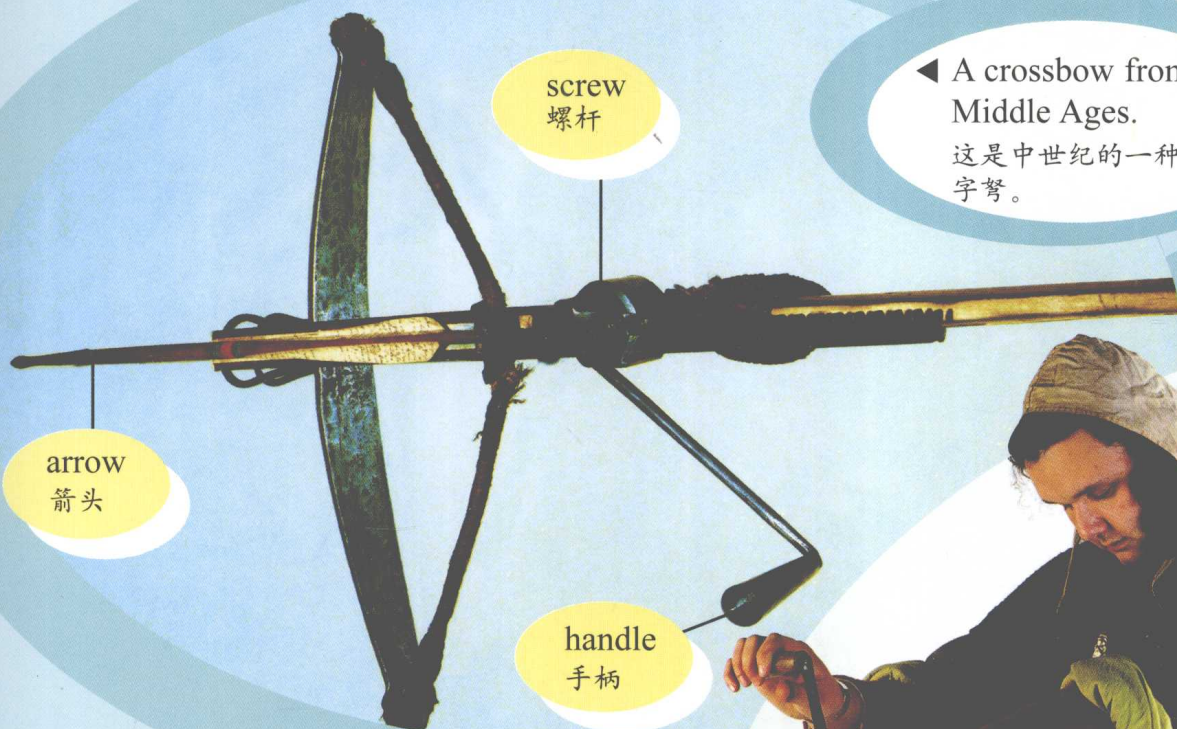
### Make a screw!

#### 做一个螺杆！

A screw is a rod with a ramp rolled around it. You can make a screw with a pencil and some paper. Cut a triangle shape out of paper. Starting at the wide end, roll the triangle around a pencil. This is a screw!

螺杆是上边有螺旋线的圆棒，你可以用一支铅笔和一张纸来做一个螺杆，把纸裁成一个直角三角形，沿着一条直角边，把这张三角形的纸卷到铅笔上，这样就做成了一个螺杆！





◀ A crossbow from the Middle Ages.

这是中世纪的一种十字弩。

arrow  
箭头

screw  
螺杆

handle  
手柄

This is a different type of ► crossbow. The archer is turning the handle to tighten the string.  
这是另外一种十字弩，弓箭手正转动手柄，拉紧弓箭！



Siege towers had wheels and ►  
axles. This meant they could  
be moved close to castle walls.

攻城塔楼有轮子和轮轴，可以移动到城墙前。

