



雨树蓉蓉

英国最具影响力的青少年科普读物之一

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Forensic Investigator

刑侦探案【测量】



哈尔滨工业大学出版社
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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 contact leaves a trace

雁过留痕

There has been a robbery. The thief is gone. There were no witnesses. There is no video. How can the police find the thief? It is time to call in the **forensic investigators**. Forensic investigators use science to solve crimes.

Scientists want to find the answer to a question. So, they make a prediction. A prediction is a good guess. Then they find **evidence**. Evidence is information they can use to test their prediction. Scientists make **observations**. They take measurements. Taking careful notes and keeping good records are very important.

Forensic investigators also find evidence. They test it at crime labs. The evidence helps them find out who did the crime.

这里发生了盗窃案。窃贼早已逃之夭夭。没有目击者，更没有监控录像。警察怎样才能抓住罪犯呢？此时，就要找来**刑事侦查员**，采用科学方法侦破案件。

科学家想要有所发现，就要做出推断。推断是对未知事实进行有根据的猜想。然后他们着手寻找**证据**。证据就是证实推断的依据。仔细**观察**，模拟试验，认真记录并妥善保管都是非常重要的研究环节。

刑侦员也要寻找物证，然后在技术鉴定室里进行分析，并据此确定罪犯。

► Forensic investigators will look for clues that the thief left behind.

刑侦员会去搜寻罪犯留下的蛛丝马迹。



Casebook 卷宗

The thief left evidence at the crime scene. The scene left evidence on him, too. Forensic investigators will find this evidence. You can follow their investigation in this casebook.

窃贼在犯罪现场留下了物证。当然，在他身上也会留下犯罪现场的痕迹。刑侦员会找出这些蛛丝马迹。你可以通过“卷宗”了解破案的整个过程。

Making predictions

推断为根

Forensic investigators are scientists. They ask a question. Then, they predict (guess) what the answer will be. This prediction is called a **hypothesis**. In this case the question is, "Who is the thief?" One hypothesis could be that a certain **suspect** (person) did it. Now the hypothesis must be proved.

The forensic team look for **evidence** to prove the hypothesis. For example, they might look for hair or mud. They send it to the crime lab. Scientists there test it. Their careful notes and measurements are also evidence.

Forensic investigators may measure a footprint. They measure it to see if it matches a suspect's shoe. Sometimes they measure how far apart footprints are. This helps them **estimate** (guess) a person's height. They make sure their measurements are right. If they are wrong, the police might arrest the wrong suspect.

刑侦员也像科学家一样。他们提出问题，然后猜想可能的答案。这种推断叫做**推理**。在这起案件中，问题是：“谁是窃贼？”如果假定某人为**疑犯**，接下来就必须进行证实。

刑侦组要找到**证据**来证明推断。例如，他们可能会将现场勘察找到的头发或泥巴送到技术鉴定室，进行检测。专家们的记录与检测结果也将成为证据。

刑侦员会测量现场的足迹，并与疑犯的鞋子进行比较。有时他们也会量取足迹之间的距离，据此**推算**疑犯的身高。不过测量数据必须准确，否则，就可能会抓错人。

► Even tiny pieces of evidence are useful. This investigator is looking for fingerprints.

任何蛛丝马迹都可以帮助破案。这个刑侦员在寻找遗留的指纹。



First things first

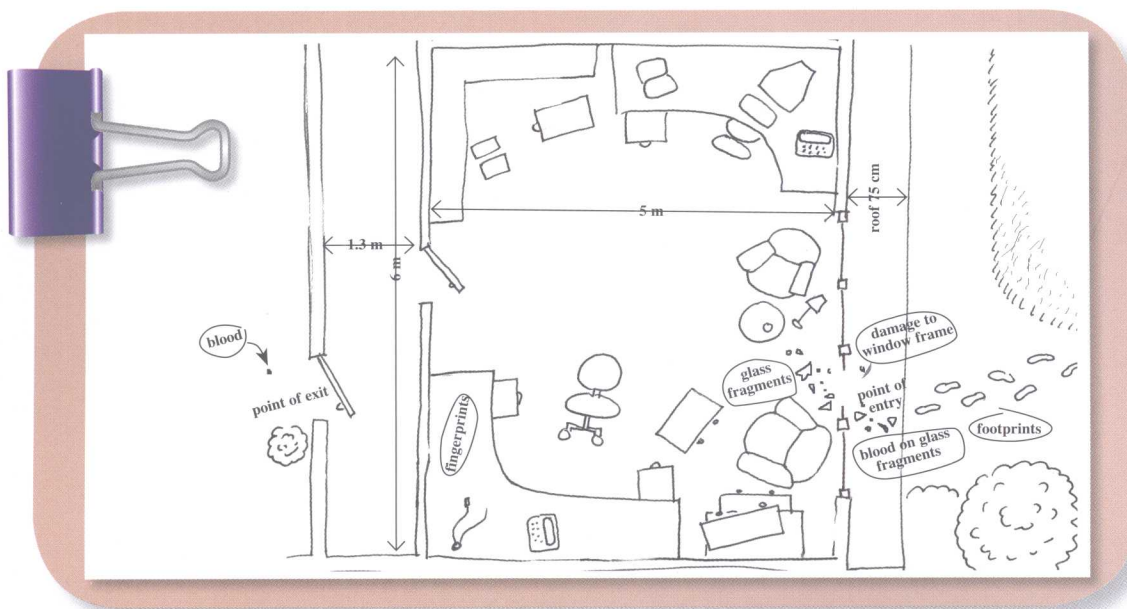
重者先行

After a crime the police are called. First, they tape off the crime scene. They make sure no one touches anything. That would make it harder to get **accurate** (correct) measurements.

Next, the police call the forensic team. The forensic team are **scientists** who look for **evidence** to help solve the crime. The **forensic investigators** take photos. They make sketches of the scene. They carefully measure the room. Their sketches will show the size of the room in metres and centimetres. The drawing helps people at the lab picture the crime scene.

案件一旦发生，警察立即赶到，封锁并保护现场，防止被人破坏，影响现场勘查的**准确性**。

接下来，警察找来刑侦组，请他们找出**线索**协助破案。**刑侦员**拍摄现场照片，绘制现场草图，仔细测量房间，并以米和厘米为单位标注草图上房间的大小。这些草图有助于他们还原犯罪现场。



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In this case the thief broke a window to get in. This is a good place to look for footprints and fingerprints. The team looks around the window. They carefully record everything they find.

这起案件中，窃贼破窗而入。因此，窗子附近就成了足迹和指纹取样的最佳地点。刑侦员查看窗子四周，认真记录每一个细节。

▼ Forensic investigators bring a number of tools to the crime scene.

刑侦员携带一些检测仪器来到现场。

True crime 真案缉贼

Investigators once found a thief's wallet by a broken window. It fell out when he squeezed through. A card in the wallet gave them his name and address!

一起案件中，刑侦员在破碎的窗子附近找到了窃贼的钱包。这是窃贼挤进窗口时掉落的。在钱包里的一张卡片上竟然记录了窃贼的姓名和住址！

Fingerprints

指纹

Fingerprints are good **evidence**. They can be used to identify the person who left them. That is because no two people have the same prints. Everyone's fingerprints are different.

The team uses magnifying glasses to help find prints. **Magnifying** glasses make things look larger. This makes things easier to see. The prints get brushed with powder. Then, they are lifted with tape. The team takes photos of the prints.

Police keep a file of fingerprints. Computers can tell if a fingerprint matches one from the file. They do this by comparing different parts of the print. They compare the shape and size of the print.

指纹是用来确认疑犯的很好**证据**。任何两个人的指纹都不会相同，即使同一个人不同手指的指纹也有差异。

刑侦员用放大镜寻找指纹。**放大镜**可以放大物体的影像，使其更易于观察。他们用刷子蘸粉末刷指纹，然后用胶带将指纹取下，并照相取证。

警察局建有指纹资料库。计算机可以将现场指纹和资料库的指纹进行比较。具体说来，是比较指纹的不同部分以及指纹样本的形状和大小。



whorl
斗型纹




arch
弧形纹



loop
正箕纹

▲ There are three main shapes of fingerprint: whorls, arches, and loops. Which type do you have? You may have a mix.

指纹主要有三种类型：斗型纹、弧形纹和正箕纹。那么你的指纹属于哪种？很可能是混合型的。



▼ Forensic investigators brush fingerprints with a special powder. It makes them easier to see.

刑侦员用一种特制的粉末刷指纹（由于汗液凝固的原因，粉末显示指纹的形状），使指纹更加清晰可见。

Casebook 卷宗

Fingerprints were found and sent to the lab. The computer found two matches. One print matches suspect (person) A. The other matches suspect B. Both worked here months ago as furniture movers. Did one come back to steal?

指纹被取样并送往鉴定室。计算机发现了两个相匹配的指纹。一个指纹与疑犯A的相符；另一个与疑犯B的相符。两个疑犯在几个月前都曾在这里做过搬运工。是哪一个人回来做的案？

Footprints

足迹

The team finds a footprint in the mud. It is by the broken window. They measure it carefully. This is so they can find out the shoe size. They can even work out what type of shoe made the print.

The team takes photos of the print. They place a measurement scale next to the footprint. The scale looks like a ruler. It shows the size of the footprint.

在破碎的窗子旁边的泥地上，刑侦组发现一个足迹。经过仔细测量，他们确认鞋子的尺码，甚至推断出鞋子的类型。

刑侦组给足迹拍照时，足迹旁边放上一个类似于格尺的标尺，以显示足迹的大小。

▼ A ruler is put next to the footprint. It shows how big the footprint is.

足迹旁边放上一个标尺，以显示足迹的大小。

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Investigators also make a **cast** (hard copy) of the footprint. They mix powder with water. They pour it into the print. It hardens to make a cast. The cast shows more detail than a photo.

刑侦员也给足迹做个**印模**。他们把粉末和水混合，然后倒入印模中，液体凝固，成了一个脚模，可以显示照片中无法得到的细节。

▼ Investigators mix water with white powder to make a cast of the footprint.

刑侦员将白色粉末与水混合做成足迹的印模。

Casebook 卷宗

A footprint cast is taken. It is the right size for both suspects. There are no shoe matches yet.

对足迹取样。两个疑犯都有可能留下这样大小的足迹。但是还没有发现与之相符的鞋子。

Tools and tool marks

作案工具和现场痕迹

The thief tried to force the window open.
The tool he used left a mark in the wood.
Investigators measure the mark. They make
a **cast** (hard copy). They send it to the lab.

窃贼试图撬开窗子，他使用的工具在木制窗框上留下了痕迹。刑侦员测量这个痕迹，也做成印模，送到技术鉴定室。

▼ Tools can be matched to marks they leave at the scene.

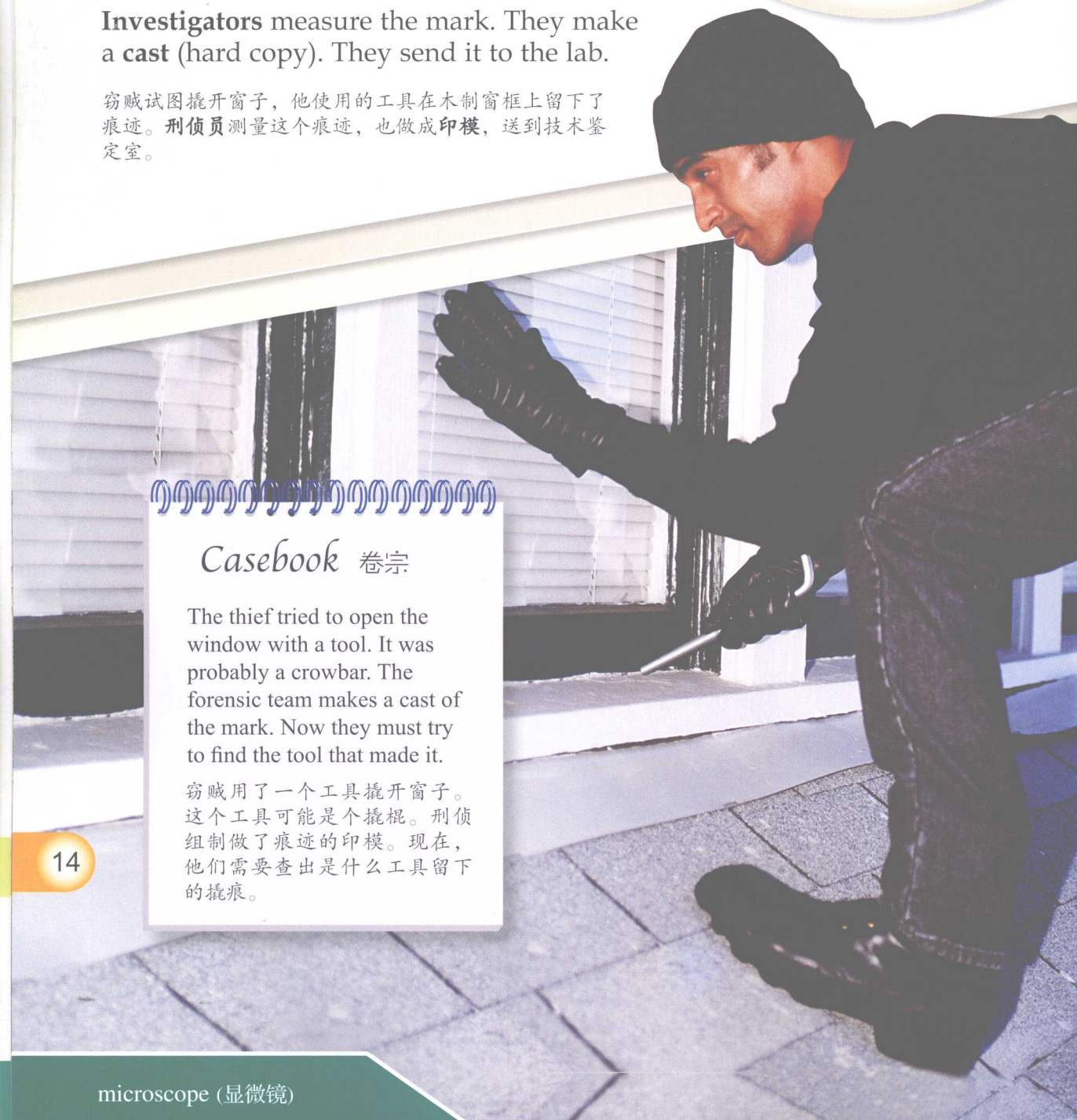
可以通过犯罪现场留下的痕迹推测出作案工具。

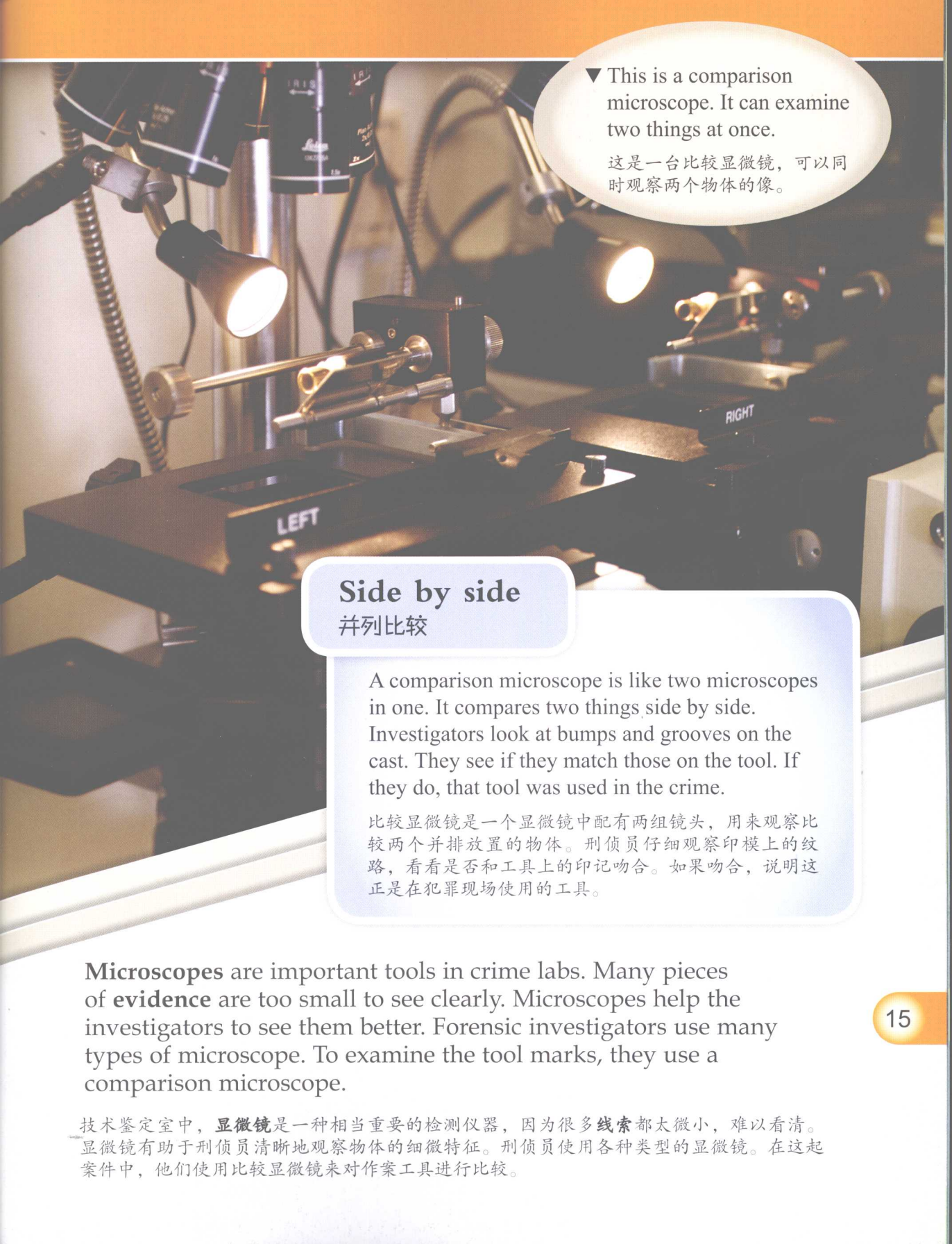


Casebook 卷宗

The thief tried to open the window with a tool. It was probably a crowbar. The forensic team makes a cast of the mark. Now they must try to find the tool that made it.

窃贼用了一个工具撬开窗子。这个工具可能是个撬棍。刑侦组制作了痕迹的印模。现在，他们需要查出是什么工具留下的撬痕。





▼ This is a comparison microscope. It can examine two things at once.

这是一台比较显微镜，可以同时观察两个物体的像。

Side by side 并列比较

A comparison microscope is like two microscopes in one. It compares two things side by side.

Investigators look at bumps and grooves on the cast. They see if they match those on the tool. If they do, that tool was used in the crime.

比较显微镜是一个显微镜中配有两组镜头，用来观察比较两个并排放置的物体。刑侦员仔细观察印模上的纹路，看看是否和工具上的印记吻合。如果吻合，说明这正是在犯罪现场使用的工具。

Microscopes are important tools in crime labs. Many pieces of **evidence** are too small to see clearly. Microscopes help the investigators to see them better. Forensic investigators use many types of microscope. To examine the tool marks, they use a comparison microscope.

技术鉴定室中，**显微镜**是一种相当重要的检测仪器，因为很多**线索**都太微小，难以看清。显微镜有助于刑侦员清晰地观察物体的细微特征。刑侦员使用各种类型的显微镜。在这起案件中，他们使用比较显微镜来对作案工具进行比较。

DNA

DNA破案

The team finds an important clue. It is on the broken window. The thief cut himself on the glass when he climbed through. There is blood on the glass. The investigators take a sample of the blood.

刑侦组在打碎的玻璃窗上发现了重要线索。窃贼爬过窗子时被划伤，并在窗子上留下血迹。刑侦员对血迹进行取样。

Casebook 卷宗

Blood from the crime scene is sent to the lab for DNA testing (see box on page 17). DNA samples are taken from both suspects. One of them may be a match.

犯罪现场的血样被送到鉴定室做DNA检测（参考第17页的方框）。同时，从两个疑犯身上取到DNA样品，或许其中一个人的DNA与现场血迹的DNA相吻合。

▲ DNA can be found in blood, hair, or saliva (spit).

在人的血液、毛发或者唾液(口水)中都可以提取到DNA。