

科学就是力量 ▼ 知识就是财富

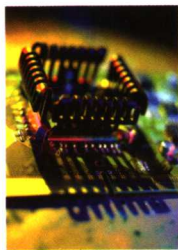
Science and Technology

科技卷

双语 十万个为什么

BILINGUAL SO MANY WHY

► 主编 / 谢志敏 ◀



- Why are paper's use very wide?
- 为什么纸的用途很广泛?
- Why was X-ray called Rontgen rays?
- 为什么X射线也叫伦琴射线?
- Why can lie detectors find out whether a person is telling the truth or not?
- 为什么测谎器能测试人是否撒谎?
- Why to produce the stotic electricity?
- 为什么会产生静电?
- Why are there a lot of wh and axles on a bicycle?
- 为什么自行车有很多轮轴



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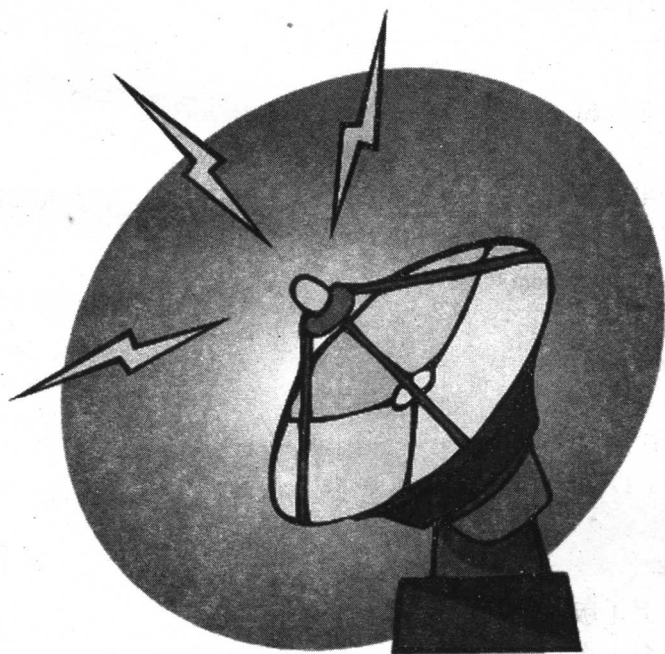
❀ 双语 ❀

十万个为什么

DOUBLE LANGUAGE
SO MANY WHY

科技

□主编 / 谢志敏



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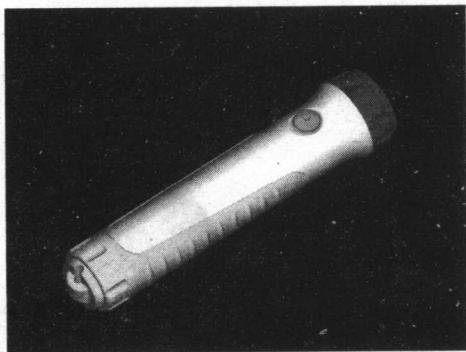




Why to Say an Ultrasonic Torch Is Blind People's Eyes

为什么说超声“电筒”是盲人的眼睛？

Blind people usually possess one advantage over other people who



can see. Their sense of hearing is far more acute.

Sounds which most others would miss can carry a great deal of information to a sightless person. For instance, teams of blind children can enjoy fast-moving games of

soccer with a bell inside the ball and a new hand-held ultrasonic device to guide them. And that sound location system could help to build up an even more complete sound picture of a blind person's surroundings.

盲人通常比其他视力正常的人有一种优势。即他们的听觉要比视力正常的人的敏锐得多,多数视力正常的人会忽略的声音对一位失去视力的人则能传送大量信息。





比如,如果在足球内装上铃铛并配备一种新式的手持式超声装置予以引导的话,一群盲童就能够欣赏一场高速运动的足球赛,而且那种声波定位系统甚至可以帮助盲人对其周围的环境形成更为完善的声像。

Bats, whose sight is poor, use a sound location system to help them avoid obstacles in the dark. They send out pulses of sound waves, pitched at 50,000 cycles per second, far above the limits of the human ear, which can hear sounds up to frequencies of about 20,000 cycles per second. As the echoes bounce back off obstacles such as trees and walls, the bats are able to take appropriate action.

蝙蝠的视力很差但能借助一种声波定位系统避开黑暗之中的障碍物,它们发出强度高达每秒 50 000 周的声脉冲(远远高出人耳的听辨范围),而人的听力仅能识别每秒约 20 000 周的声音,当树木和墙这类障碍物造成的反射声波返回时,蝙蝠即能采取相应的行动。



The first steps to help blind people to see with sound are based on exactly the same principle. The sound is emitted by an ultrasonic torch. Shaped like a double-

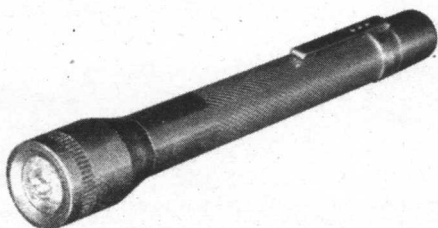


barreled version of a normal electric torch. It works in a similar way to a sonar unit on a warship or submarine.

帮助盲人利用声去“看”物体的最初做法是完全根据与蝙蝠相同的原理。声音是由电筒发射出去的,这种电筒的外形就像一个具有双筒的常用电筒,它的工作方式与装在战舰或潜艇上的声纳装置很相似。

The unit's transmitter sends out pulses of ultrasonic waves at the same frequency as the bat and the receiver picks up the returning echoes. Because these are still above the frequency at which the human ear can pick them up, the echoes are filtered through circuits which turn them into clearly audible “bleeps” before passing them into headphones.

该装置的发射器发出与蝙蝠声波频率相同的超声脉冲,而接收



器则接收返回的反射波,因为这些超声波的频率仍然超出人耳接收声波的频率,反射波经电路滤波后,被转换成清晰的声频信号声,然后再送入耳机。

This means that a person holding the torch can point it ahead of him and scan the area for obstacles over a range of about 25 feet. If there are no return echoes coming through the headphones, then there is nothing in the way.

这就意味着,手持这种电筒的人可将其指向前方并对 25 英尺范围内的障碍物进行扫描,如果无反射波进入耳机,那么在前边的路上便无任何障碍物。

If echoes do come back, then the closer the obstruction the faster



the succession of bleeps and the deeper the pitch of each bleep. With practice the torch could help a blind person to lead a more normal life, without needing a constant companion to guide him. Experienced operators of the torch system claim, they can distinguish grass from bushes, trees, posts and kerbstones.

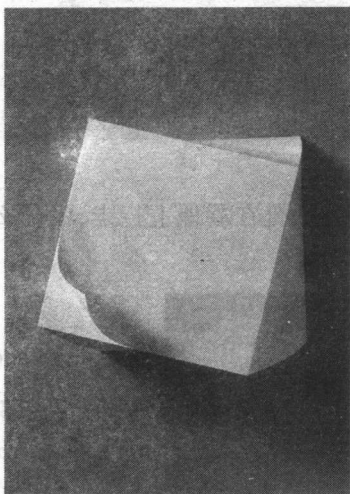
如确有反射波返回,则障碍物愈近,信号声连续速度愈快且每个信号的强度愈高。经过练习,盲人便可借助于这种电筒过上更为正常的生活,也就是说不需要有人常伴,为他们引路。据对这种系统的操作已具经验的人声称,他们甚至可区分出草地和灌木、树木、电线杆和道路边石。



Why Are Paper's Uses Very Wide

为什么纸的用途很广泛?

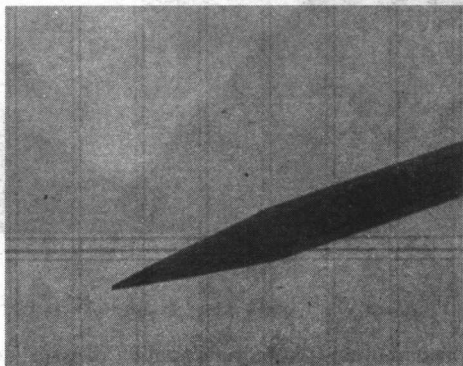
Paper was first made in China about 2000 years ago. It was made from the hairlike parts of certain plants. Paper was not made in southern Europe until about the year 1100.



纸是大约在 2000 年以前最早由中国造出来的。它是由某种像头发丝一样的某些植物制成的。直到公元 1100 年南部欧洲才开始造纸。

When we think of paper, we think of newspapers, books and writing-paper. But there are many other uses. Only half of the paper is used for books

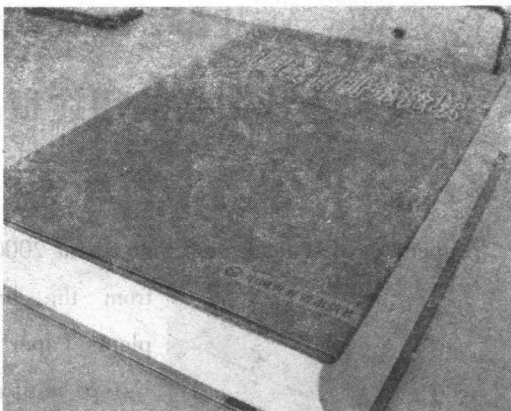
and magazines. Paper is very good for keeping you warm. Houses are often insulated with paper. You may see some people asleep on a large number of newspapers. They're insulating themselves from the cold. In Finland the





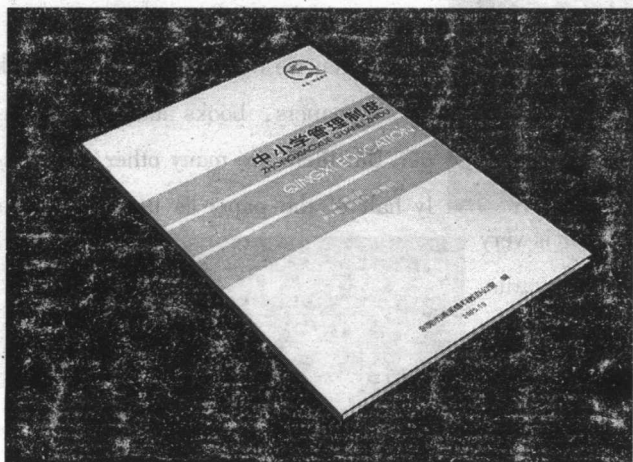
temperature is sometimes -40° centigrade. The farmers wear paper boots in the snow. Nothing could be warmer.

当我们想到纸, 我们就会想到报纸、书和稿纸。但纸还有其他许多用途, 仅只有一半的纸用于印制书和杂志。纸还是很好的保暖材料, 房子常常用纸隔起来。也许你看到一些人睡在报纸堆里。



他们用纸御寒。芬兰

气温有时候在零下 40 摄氏度, 农民穿着纸靴在雪地上行走, 没什么比这更暖和的了。



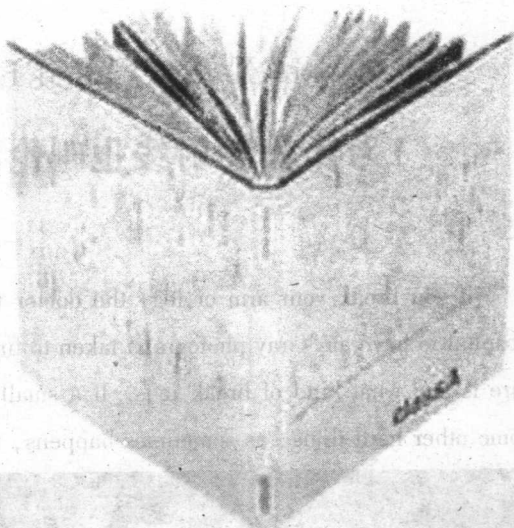
Each year more and more things are made of paper. We have had paper cups and plates for a long time. Now we hear that chairs,

tables and even beds can be made of paper. With paper boots and shoes, you can wear paper hats, paper dresses and paper raincoats. When you



have used them once, you throw them away and buy new ones.

每年,用纸做材料制造成的东西越来越多了。很久以来,我们就已经有了纸杯、纸盘。现在我们听说椅子、桌子甚至床铺都可以用纸制成。有了纸靴、纸鞋,你还可以戴纸帽,穿纸衣,以及纸雨衣。当你把这些东西用过一次后,你就可以丢掉再买新的。

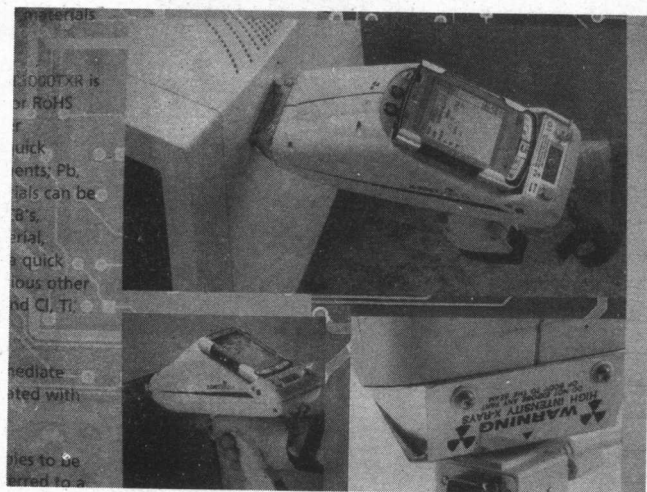




Why Were X-rays Called Rontgen Rays

为什么 X 射线也叫伦琴射线?

If you break your arm or leg, the doctor will probably send you to hospital to have an X-ray photograph taken to find out just where the fracture is and what kind of break it is. If a small child swallows a coin or some other hard thing, as sometimes happens, the doctor will take an X-



ray
photograph
to find out
just where
the object
has got to in
the child's
body. Every
hospital has
an X-ray de-
partment,

and doctors now depend on these photographs for giving them information about their patients. Dentists also take X-rays of people's jaws to find out if there is anything wrong with a tooth which can not be detected by external examination.

如果你的腿或胳膊骨折了,医生会让你去拍 X 光片,以查明骨折



的位置和骨折的性质。如果小孩不慎误吞了硬币或其他硬物——这是常有的事,医生也会用 X 光来查明物体在孩子体内的位置。每家医院都设有 X 光科,如今医生们根据 X 光片来诊断病人的病情。牙医也经常采用 X 光来拍摄病人的下颚,以便查出外部检查手段无法检测的牙病。

X-rays
were first
discovered
by a German
scientist,
Wilhelm
Konrad
Röntgen, in
1895, almost
by accident.
He and sev-
eral other
scientists
were experi-



menting with passing electric currents through certain gases in a special glass tube from which the air had been removed. One day Röntgen noticed that, even when the tube was covered with black paper, some strange kind of radiation was coming through and making a screen nearby glow. Röntgen could not see anything coming out of the tube, but then he discovered that if he put the screen in the next room on the other side of a closed door, the rays still seemed to affect it. The glowing screen showed that the rays could pass not only through black paper but also



through wood.

X 光最早是由一个名为威廉·K·伦琴的德国物理学家于 1895 年几乎是偶然发现的。当时,他和其他几位科学家正在做一个实验。他们在一个特制的真空玻璃管内装上某些气体,然后观察电流在这些气体中的流动情况。一天,伦琴发现,即使玻璃管被黑纸封住,一种奇特的辐射线也总是能够穿透黑纸,照亮放在旁边的一个屏幕。伦琴无法用肉眼看到射出的东西,但当他将屏幕移入隔壁房间的另



一边并关上房门,此射线似乎仍能对屏幕产生影响。发光的屏幕表明该光线不仅能穿透黑纸,还能穿透木头。

The

next thing he found out was that if he put his hand between the rays and a photographic plate, the rays would print a shadow of the bony framework of his hand on the plate. In fact, the rays could pass as easily through the fleshy part of his hand as through the black paper, but hardly at all through the bone.

接着他又发现,当他把手放在射线和摄影感光盘之间时,射线就会将手部骨架的影子印在感光盘上。实际上,这些射线能像穿透黑纸一样轻易地穿透手的肌肉,但无法穿透骨骼。

When Rontgen wrote an account of what he had discovered, he