

关于电的令人震惊的事实 Shocking facts about electricity

Hello.

大家好。

This is 6 Minute English from BBC Learning English.

这里是 BBC 学习英语栏目的六分钟英语。

I'm Neil.

我是内尔。

And I'm Georgina.

我是乔治娜。

Now, Georgina, what do you know about AC DC?

乔治娜，你对 AC DC 了解多少？

You mean the Australian rock 'n' roll band?

你说的是澳大利亚的摇滚乐队吗？

Well, their 1979 hit 'Highway to Hell' stayed at No. 1 for eleven weeks...

嗯，他们1979年的热单“通往地狱的高速”在榜首待了11周……

No, no, no, not that AC DC, Georgina!

不不不，不是那个AC DC，乔治娜！

I'm not talking rock music here, I'm talking electrical currents-alternating current-AC, and direct current-DC, the two ways in which electricity flows.

我不是在说摇滚音乐，我说的是电流——交流电——AC，还有直流电——DC，电流流动的两种方式。

Oh, I see.

哦，我知道了。

No, I don't know anything about that AC DC!

不，我对那个交流电，直流电一无所知！

Well, don't worry, because in today's programme, we'll be finding out some quirky facts about electricity-how it differs across the world and why some countries have more complicated electrical systems than others.

嗯，不用担心，因为在今天的节目中，我们要了解一些关于电的离奇事实——它在全世界范围内有多么不同，以及为什么有些国家的电力系统比其他国家更复杂。

Hmmm, I have noticed that when I travel to another country I need a converter plug to connect my laptop.

嗯，我在去另一个国家的需要一个转换器来连接我的电脑的时候就已经觉到了。

Is that something to do with AC DC?

这个跟交流电，直流电有关吗？

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Yes, it could be.

嗯，有可能。

Of course, electricity itself doesn't change from country to country.

当然，电本身不会因国家而变化。

No. It's an invisible, natural force at work in everything from lightning storms to the electrical sparks firing in our brains.

是的。它是一个隐形的自然力，隐藏在一切事物里，从闪电暴风到我们大脑中的电火花。

But although it happens naturally, one scientist was credited with discovering electricity.

但是尽管它是自然产生的，有一位科学家因为发现了电而倍受赞誉。

Who?

是谁呢？

That's my quiz question—who discovered electricity?

这就是我的问题——谁发现了电？

Was it a) Thomas Edison, b) Alexander Graham Bell, or c) Benjamin Franklin?

是 A. 托马斯·爱迪生，B. 亚历山大·格雷厄姆·贝尔，还是 C. 本杰明·富兰克林？

I'm not a qualified electrician myself, Neil, but I'll say c) Benjamin Franklin.

我自己并不是一个合格的电工，内尔，但是我要选 C. 本杰明·富兰克林。

OK.

好的。

Well, one person who definitely is a qualified electrician is BBC presenter Gareth Mitchell.

嗯，BBC 的主持人加雷斯·米歇尔肯定是一个合格的电工。

So when BBC Radio 4's 'Science Stories' sent him to meet electricity expert Keith Bell, the conversation was, shall we say, sparky.

所以当 BBC 电台4频道的《科学故事》节目派他去见电学专家凯斯·贝尔时，他们的对话，我们应该说，精彩纷呈。

Standard frequency in the US is 60 hertz, actually I think in the US on the mainland, US main continent, there are three different synchronous areas.

美国的标准频率是60赫兹，事实上我认为在美国本土，美国大陆有三种不同的同步区域。

So although it's around 60 hertz, at any moment in time these three different areas, because they're not connected to each other, will be going at a slightly different frequency.

所以尽管频率是在60赫兹左右，在任何时刻都有三个不同的区域，因为它们没有互相连接，它们的频率略微不同。

There are bigger differences elsewhere.

别的地方差异更大。

So in Japan for example, I think one of the main islands is at 60 hertz and the other half of Japan is at 50 hertz.

所以以日本为例，我想主要岛屿之一是60赫兹，而日本的另一半地区是50赫兹。

That's a bit of a pickle!

这可有点麻烦。

Generally speaking, frequency means how often something repeats.

一般来说，频率指的是某个事物多久重复一次。

In the case of electrical currents, frequency is the number of times an electrical wave repeats a positive-to-negative cycle.

而说到电流，频率就是电波从正极到负极循环的次数。

It's measured in hertz (Hz) .

它的计量单位是赫兹（HZ）。

In the US, power is at 60 hertz and in the UK it's around 50 hertz.

在美国，电流频率是60赫兹，而在英国则是50赫兹左右。

So the US and UK are not in the same synchronous area-not occurring together at the same time and rate, or in this case, frequency.

所以美国和英国不是同步地区——没有同时发生，这里指的是频率不同。

Which means that to safely use a British electrical device in America, I need to convert the power supply.

这意味着为了能在美国安全地使用英国的电器，我需要转换电源。

If not, it won't work or even worse, it could break.

如果不这样的话，它就不能工作，或者更糟，它会坏掉。

And a broken laptop could leave you in a bit of a pickle-an informal expression meaning a difficult situation with no obvious answer.

而一部坏掉的手提电脑可能会让你陷入小麻烦中——这是一个非正式的表达，意思是没有明显答案的困境。

Here's Gareth and Keith again talking about more differences.

以下是加雷斯和凯瑟谈论更多的差异。

I'm pretty sure when I go to the United States, my electric toothbrush doesn't charge up at 60 hertz-110 volts, but my laptop still works.

我非常确信，当我去美国的时候，我的电动牙刷无法在60赫兹——110伏特的电压下充电，但是我的手提电脑还是能工作。

Maybe you have no comment, Keith, but I'm just saying...one of these anomalies that I seem to have found.

也许你不置可否，但是我只是在说.....我发现的异常现象之一。

So, I'm not sure about the electric toothbrush, but I know a lot of our power supplies for laptops and stuff are solid state, you know-they've got electronics in that do all the conversion for you, so basically it ends up with a DC supply into the machine itself.

我不是很了解电动牙刷的情况，但是我知道很多手提电脑，还有别的东西的电源是晶体管，你知道的——它们里面有电子元件能够为你转换，所以基本上机器本身就有个直流电源在里面。

So there's a little converter in there and it's designed so it doesn't care what frequency the AC input is.

所以里面有一个小转换器，而且它这样设计就可以不在乎输入的交流电的频率是多少了。

Gareth noticed that in the United States his toothbrush doesn't always fully charge up-get the power needed to make it work.

加雷斯注意到，在美国他的牙刷总是无法充满电——获得足够的电量来工作。

Electric toothbrushes which don't fully charge and differences between electrical frequencies are good examples of anomalies-things which are different from what is usual or expected.

无法充满电的电动牙刷以及电流频率之间的差异是异常现象——跟通常情况或预期的情况不同的事物——的很好的例子。

But with modern technology, these anomalies are becoming less and less commonplace.

但是利用现代技术，这些异常现象变得越来越少见了。

For example, computer companies have started making laptops with solid state electronics-electronics using semiconductors which have no moving parts and can automatically convert different electrical currents.

比如，电脑公司已经开始制造有晶体管电子元件——使用没有移动部位并且能够自动转化各种电流的半导体电子元件——的手提电脑了。

Meaning I can use my laptop to google the answer to your quiz question!

意味着我可以用的手提电脑来查一下你问题的答案！

Ah, yes.

啊，是的。

I asked you which scientist was credited with discovering electricity.

我之前问你哪位科学家因为发现了电而倍受赞誉。

And you said?

你说的是？

C) Benjamin Franklin-and I already know I'm right because I googled it on my solid state laptop! To show that lightning was electricity, Franklin attached a metal key to a kite and flew it during a thunderstorm.

C.本杰明·富兰克林——而且我已经知道我答对了，因为我在我的晶体管电脑上查到了！为了证明闪电就是电，富兰克林在一只风筝上装上了一个金属钥匙，然后在暴风雨中把它放上了天空。

The key conducted electricity and gave him a shock!

那把钥匙传导了电，然后把他电到了！

Hmm, not an experiment I recommend trying at home!

嗯，我不建议在家做这个实验！

Today we've been talking about anomalies, or unexpected differences in electrical currents between countries.

今天我们一直在谈论异常现象，或者说国家之间电流的意料之外的差异。

Electrical currents are measured in frequencies-the number of times a wave repeats a positive-to-negative cycle.

电流用频率测量——电波从正极到负极循环的次数。

These can be different if two countries are not synchronous-occurring at the same rate, for example, Britain and the United States.

如果两个国家不同步——以同样的速率发生——的话，频率可能不同，例如英国和美国。

Different frequencies may mean your electrical devices like your laptop, phone and toothbrush won't properly charge up-get the power to function, in other countries.

不同的频率可能意味着你的电器，比如你的手提电脑，手机和牙刷在其他国家无法正常充电——获得电力来工作。

And having a phone with no power could leave you in a bit of a pickle-a difficult situation.

而手机没电可能会让你陷入小麻烦——困境。

Fortunately, many modern devices use solid state electronics-non-moving semiconductors inside the machine which automatically convert the electrical current.

幸运的是，很多现代设备使用晶体管电子元件——机器内部能够自动转换电流的不移动的半导体。

So you'll never miss another edition of 6 Minute English again!

所以你永远不会错过下一期的六分钟英语！

That's all for today.

今天就到这里。

See you soon at BBC Learning English for more interesting topics and related vocabulary.

下期在 BBC 学习英语栏目遇见更多有趣的话题和相关词汇吧。

Bye for now!

再见啦！

Bye!

再见！
