

I'm glad you brought up the question of our investigations into the makeup of the Earth's interior.

我很高兴你们提出关于我们对地球内部组成的调查的问题。

In fact, since this is the topic of your reading assignment for next time, let me spend these last few minutes of class talking about it.

事实上，由于这是你们下次阅读作业的课题，让我花上这最后几分钟的课堂时间来谈一下它。

There were several important discoveries in the early part of this century that helped geologists develop a more accurate picture of the Earth's interior.

本世纪早期有一些重要的发现，能够帮助地质学家开发出一个更精确的地球内部的图片。

The first key discovery had to do with seismic waves.

第一个关键的发现同地震波相关。

Remember they are the vibrations caused by earthquakes.

要记得他们是地震引起的震动。

Well, scientists found that they traveled thousands of miles through the Earth's interior.

好的，科学家发现他们穿过地球内部通行数千英里。

This finding enabled geologists to study the inner parts of the Earth.

这个发现使得地质学家能够研究地球的内部。

You see, these studies revealed that these vibrations were of two types: compression or P waves and shear or S waves.

你看，这些研究显示这些震动是两种类型的：涨缩波或者说 P 波和畸变波或者说 S 波。

And researchers found that P waves travel through both liquids and solids, while S waves travel only through solid matter.

同时研究人员发现 P 波能穿过液体和固体两种，而 s 波只能穿过固体物质。

In 1906, a British geologist discovered that P waves slowed down at a certain depth but kept traveling deeper.

在 1906 年，一个英国地质学家发现 P 波在一定的深度会减速，但是会继续向更深的地方穿行。

On the other hand, S waves either disappeared or were reflected back, so he concluded that the depth marked the boundary between a solid mantle and a liquid core.

另一方面，S 波要么消失，或者被反射，所以他推断这个深度标示了固态地

幔和液态地核的界限。

Three years later, another boundary was discovered that between the mantle and the Earth's crust.

三年后，另一个在地幔和地壳之间的分界线被发现。

There's still a lot to be learned about the Earth.

关于地球还有许多要学习的。

For instance, geologists know that the core is hot. Evidence of this is the molten lava that flows out of volcanoes. But we're still not sure what the source of the heat is.

举例来说，地质学家知道地核是热的。这点的证据是火山中流出的熔岩。但我们依然不知道热源是什么。