# Lesson 30
# Exploring the sea-floor
# 海底勘探

First listen and then answer the following question.
听录音，然后回答以下问题。

How did people probably imagine the sea-floor before it was investigated?

Our knowledge of the oceans a hundred years ago was confined to the two-dimensional shape of the sea surface and the hazards of navigation presented by the irregularities in depth of the shallow water close to the land. The open sea was deep and mysterious, and anyone who gave more than a passing thought to the bottom confines of the oceans probably assumed that the sea bad was flat. Sir James Clark Ross had obtained a sounding of over 2,400 fathoms in 1839, but it was not until of deep soundings was obtained in the Atlantic and the first samples were collected by dredging the bottom. Shortly after this the famous H. M. S. Challenger expedition established the study of the sea-floor as a subject worthy of the most qualified physicists and geologists. A burst of activity associated with the laying of submarine cables soon confirmed the challenger's observation that many parts of the ocean were two to there miles deep, and the existence of underwater features of considerable magnitude.

Today, enough soundings are available to enable a relief map of the Atlantic to be drawn and we know something of the great variety of the sea bed's topography. Since the sea covers the greater part of the earth's surface, it is quite reasonable to regard the sea floor as the basic form of the crust of the earth, with, superimposed upon, it the continents, together with the islands and other features of the oceans. The continents form rugged tablelands which stand nearly three miles above the floor of the open ocean. From the shore line, out a distance which may be anywhere from a few miles to a few hundred miles, runs the gentle slope of the continental shelf, geologically part of the continents. The real dividing line between continents and oceans occurs at the foot a steeper slope.

This continental slope usually starts at a place somewhere near the 100-fatheom mark and in the course of a few hundred miles reaches the true ocean floor at 2,500-3,500 fathoms. The slope averages about 1 in 30. but contains steep, probably vertical, cliffs, and gentle sediment-covered terraces, and near its lower reaches there is a long tailing-off which is almost certainly the result of material transported out to deep water after being eroded from the continental masses.

T.F.GASKELL Exploring the Sea-floor from Science Survey

New words and expressions 生词和短语

navigation
n. 航海
sounding
n. 水深度
fathom
n. 寻（1 寻等于 1.8 米）
porcupine
n. 箭猪
dredge
v. 挖掘
expedition

n. 远征
physicist
n. 物理学家
magnitude
n. 很多
topography
n. 地形
crust
n. 地壳
rugged
adj. 崎岖不平
tableland
n. 高地
sediment
n. 沉淀物
terrace
n. 阶地
erode
v. 侵蚀

参考译文

100 年前，我们只知道海洋是二维平面形的，以及靠近陆地浅水区的深浅不一能给航行带来危险。无边无际的海洋深邃而又神秘，凡是稍稍想过大海海底的人大概都会认为海底是平坦的。1839 年，詹姆斯.克拉克.罗斯爵士曾测得海水深度超过 2，400 英寻；但直到 1869 年，皇家学会用英国“豪猪”号舰艇进行了几次巡航后，才在大西洋测得一个海水深度，同时能过挖掘海底，取得了研究海底的首批样品。此后不久，英国著名的“挑战者”号舰艇对海底的那次考察，把对海床的研究确立为一个值得一流物理学家和地质学家从事的研究课题，铺设海底电缆的热潮很快证实了“挑战者”号的观察结果：海洋中很多地方可深达两三英里，水下特征差异极大。

现在已有足够的水深测量数据来绘制一张大西洋洋底地形图，而且我对海底地形的千变万化也有了一定的了解。既然海洋覆盖着地球的大部分表面，因此完全有理由把海床看作地壳的基本模壳，上面附加着大陆以及岛屿和海洋的其他形态。大陆是崎岖不平的高地，高出辽阔的海洋海底近三英里。从海岸线向大海延伸几英里到几百英里的区域是大陆架慢坡，从地质学上来说，它是大陆的一部分。大陆和海洋的真正分界线是在陡破脚下。

大陆架慢坡一般是从差不多 100 英寻水深的地方开始的，一直延伸到几百英里远深达 2，500 至 3，500 的地方，那里才是真正的海底。坡度平均约为 1/30，但其中包括陡峭的、乃至垂直的峭壁和沉积物覆盖的缓和的阶梯地带，在这个地带的低处是很长的一段尾沙地段，基本上可以断定这个地段是大陆块体上侵蚀下来的物质被水冲到深水处形成的。