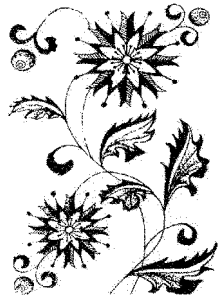
英汉平行对照趣味科普知识

现代科技之光

北京师联教育科学研究所　编译



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注:带'☆'内容有录音

Through the Earth's Crust

穿透地壳

Satellites orbiting round the earth have provided scientists with a vast amount of information about conditions in outer space. By comparison, relatively little is known about the internal structure of the earth. It has proved easier to go up than to go down. The deepest hole ever to be bored on land went down 25,340 feet considerably less than the height of Mount Everest. Drilling a hole under the sea has proved to be even more difficult. The deepest hole bored under sea has been about 20,000 feet. Until recently,

环绕地球运行的卫星,为科学家提供了浩如烟海的外层空间的资料,相比之下,对地球内部的结构则知之甚微。事实证明上天容易入地难。迄今为止,自地表往下钻孔,最深的仅达25,340英尺——远远比不上珠穆朗玛峰的高度。如果自海底钻孔,事实证明更为困难。至今海底钻孔最深者约为二万英尺。直到今日,科学家尚未能设计出一种能钻透极深处坚

scientists have been unable to devise a drill which would be capable of cutting through hard rock at great depths.

This problem has now been solved. Scientists have developed a method which sounds surprisingly simple. A new drill which is being tested at Leona Valley Ranch in Texas is driven by a turbine engine which is propelled by liquid mud pumped into it from the surface. As the diamond tip of the drill revolves, it is lubricated by mud. Scientists have been amazed to find that it can cut through the hardest rock with great ease. The drill has been designed to bore through the earth to a depth of 35,000 feet. It will enable scientists to obtain samples of the mysterious layer

硬岩石的钻探机。

此难题现已解决。科学家发现的方法听起来意想不到的简单。在得克萨斯州的里俄纳山谷牧场试验的一台钻探机系用一台涡轮机驱动。而涡轮机则由地面水泵灌进的泥浆推动。在金钢钻头转动之际,由泥浆予以润滑。科学家惊奇的发现,钻头轻而易举地钻透了最硬的岩石,该钻探机是为钻到地球 35000 英尺深度而设计的,它能使科学家们得到紧接地壳的那一神秘地层的地质样品。此层乃'莫霍洛维

which lies immediately below the earth's crust. This layer is known as the Mohorovicic Discontinuity, but is commonly referred to as "*the Moho*".

奇不接触面",通常称之为"莫霍面"。

Before it is possible to drill this deep hole, scientists will have to overcome a number of problems. Geological tests will be carried out to find the point at which the earth's crust is thinnest. The three possible sites which are being considered are all at sea: two in the Atlantic Ocean and one in the Pacific. Once they have determined on a site, they will have to erect a drilling vessel which will not be swept away by ocean currents. The vessel will consist of an immense platform which will rise to 70 feet above the water. It will be supported by six hol-

为钻到此等深度,科学家尚需解决一系列问题。必须进行多项地质试验,以发现地壳的最薄处。考虑中的三个可能处均在海底:两处位于大西洋,一处位于太平洋。一旦地点确定了,他们将建造一艘海洋冲不走的钻探船。该船将由一个升出水面 70 英尺的巨型平台组成,下面由六根沉入海面以下 60 英尺深的空心柱所支承,这六根柱子将固定于一巨大浮船上,一座近 200 英尺的高大

low columns which will descend to a depth of 60 feet below the ocean surface where they will be fixed to a huge float. A tall steel tower rising to a height of nearly 200 feet will rest on the platform. The drill will be stored in the tower and will have to be lowered through about 15,000 feet of water before operations can begin.

钢塔将置于平台之上，钻探机将安置于塔内。操作前钻头将伸入深约 15，000 英尺之水中。

Within the tower, there will be a laboratory, living accommodation and a helicopter landing station. Keeping the platform in position at sea will give rise to further problems. To do this, scientists will have to devise methods using radar and underwater television. If, during the operations the drill has to be withdrawn, it must be possible to re-insert it. Great

塔内将有实验室，膳宿处，及直升飞机降落站。固定此平台于海上不动将会遇到新问题，科学家们必须设计某些使用雷达与水下电视的方法来做到这一点。钻探时，如钻头必须抽回，则必须保证能够重新插入原处，因而必须采取周密的措施以确保平台稳固，

care will therefore have to be taken to keep the platform steady and make it strong enough to withstand hurricanes. If the project is successful, scientists will not only learn a great deal about the earth, but possibly about the nature of the universe itself.

并能经受飓风的袭击。如该项工程得以成功，则科学家不仅能获得大量有关地球的知识，而且也将增进对宇宙本身的了解。

From the Earth: *Greetings*

来自地球的问候

Radio astronomy has greatly increased our understanding of the universe. Radio telescopes have one big advantage over conventional telescopes in that they can operate in all weather conditions and can pick up signals coming from very distant stars. These signals are produced by colliding stars or nuclear reactions in outer space. The most powerful signals that have been received have been emitted by what seem to be truly colossal stars which scientists have named "*quasars*". A bet-

射电天文学广为深邃地增进了我们对宇宙的认识。射电望远镜较常规的望远镜有一显著的优点,此种望远镜能全天候工作,并能收到来自十分遥远星球的信号,这些信号系外层空间星球相撞或核反应所产生的。迄今为止所收的最强信号似乎是一些巨大的星球发出的,科学家称这些星球为"类星体"。更好地理解这些

ter understanding of these phenomena may completely alter our conception of the nature of the universe. The radio telescope at Jodrell Bank in England was for many years the largest in the world. A new telescope, over twice the size, was recently built at Sugar Grove in West Virginia.

现象可以完全改变我们关于宇宙性质的观念。多年来英国焦德雷尔斑克的射电望远镜一直是世界上最大的望远镜。最近在西弗吉尼亚州的休格克罗夫新建成了一台望远镜,其大小为前者的两倍多。

Astronomers no longer regard as fanciful the idea that they may one day pick up signals which have been sent by intelligent beings on other worlds. This possibility gives rise to interesting speculations. Highly advanced civilizations may have existed on other planets long beforms fore intelligent forms of life evolved on the

天文学家对于有朝一日他们收到其他星球上智慧生物发出的信号的想法不再认为是荒诞无稽的。这种可能性引起了有趣的设想。很可能远在地球上智慧生物进化之前,其他行星就已享有高度文明。反之,遥远星球刚开始孕育着

earth. Conversely, intelligent beings which are just beginning to develop on remote worlds may be ready to pick up our signals in thousands of years' time, or when life on earth has become extinct. Such speculations no longer belong to the realm of science fiction, for astronomers are now exploring the chances of communicating with living creatures (if they exist) on distant planets/ This undertaking which has been named Project Ozma was begun in 1960, but it may take a great many years before results are obtained.

的智慧生物,或许将在数千年后,甚至要在地球上生命绝迹后,才可能有条件接收我们发去的信号。此种猜测不再属于科学幻想小说之范畴,因为天文学家正探索与遥远行星上的生物(如果它们存在的话)通讯的可能性。此项被命名为奥斯玛计划的课题已于1960年着手研究,可能若干年后才能获得成果。

Aware of the fact that it would be impossible to wait thousands or millions of years to receive an answer from a distant planet, scientists engaged in Project Ozma are concentrating their attention on stars which are relatively close. One of the most likely stars is Tau Ceti which is eleven light years away. If signals from the earth were received by intelligent creatures on a planet circling this star, we would have to wait twenty-two years for an answer. The Green Bank telescope in West Virginia has been specially designed to distinguish between random signals and signals which might be in code. Even if contact were eventually established, astronomers would not be able to rely on language to communicate with other beings. They would use math-

从事奥斯玛计划的科学家们意识到,他们不可能等待几千年或数百万年去接受来自遥远星球的回音,故他们将注意力集中于一些较为靠近的星球上。距地球 11 光年的鲸鱼座 τ 星是最可能的星球之一。如果地球上发出的信号被围绕该星球运行的某行星上的智慧生物所接收,则我们将等待 22 年便能收到其回音。西弗吉尼亚州的格林斑克射电望远镜是专门为区别随机信号和可能的编码信号而设计的。即使最终成功地建立了联系,天文学家亦不能依靠人类的语言与其他生物联系。

ematics as this is the only truly universal language. Numbers have the same value anywhere. For this reason, intelligent creatures in any part of the universe would be able to understand a simple arithmetical sequence. They would be able to reply to our signals using similar methods. The next step would be to try to develop means for sending television pictures. A single picture would tell us more than thousands of words. In an age when anything seems to be possible, it would be narrow-minded in the extreme to ridicule these attempts to find out if there is life in other parts of the universe.

他们将用数学联系,因为数学是唯一的一种宇宙语言。数字值到处都一样,因此宇宙中任何地方的智慧生物均能理解简单的算术排列,他们会用类似的方法来回答我们的信号。下一步将设法发展发射电视图像的方法。一幅简单图像告诉我们的比几千字还多。在一个似乎无所不能的时代,只有思想极为狭隘的人才会去嘲笑那些试图查明宇宙其他部分是否有生命存在的尝试。

The Computer 计 算 机

One of the greatest advances in modern technology has been the invention of computers. They are already widely used in industry and in universities and the time may come when it will be possible for ordinary people to use them as well. Computers are capable of doing extremely complicated work in all branches of learning. They can solve the most complex mathematical problems or put thousands of unrelated facts in order. These machines can be put to varied uses. For instance, they can provide information on the best way to prevent traffic accidents, or

现代技术最大进展之一是电子计算机的发明,它在工业上和大学里已得到广泛的应用。普通人使用电子计算机的时代亦会到来。电子计算机能在科学界各专业中从事极其复杂的工作。它们能解决最复杂的数学难题,或将成千上万个互不相关的数据系统化。电子计算机具有多种不同的功能,例如,它们能提供避免交通事故最佳办法的信息,或统计出“and”一词在《圣经》中被使

they can count the number of times the word‘ and ’has been used in the Bible. Because they work accurately and at high speeds, they save research workers years of hard work. This whole process by which machines can be used to work for us has been called automation. In the future, automation may enable human beings to enjoy far more leisure than they do today. The coming of automation is bound to have important social consequences.

用的次数。因为计算机能准确而又迅速地工作,从而能使研究人员免除多年的艰苦劳动。运用这种机器为我们工作的整个过程被称之为“自动化”。将来,自动化可能使人类享有比目前更多的闲暇。自动化的实现必将产生重大的社会影响。

Some time ago an expert on automation, Sir Leon Bagrit, pointed out that it was a mistake to believe that these machines could‘ think ’. There is no possibility that human beings will be“ ***controlled by machines*** ”. Though computers are capable of learning from their mistakes and improving on their perfor-

不久前,一位自动化专家 Leon Bagrit 爵士曾指出,认为计算机能够‘思维’乃是一个错误,同时亦不存在人类‘受计算机控制”的可能性。尽管计算机能发现自己的错误并改进其运算,但它们需要人类的详尽指令

mance, they need detailed instructions from human beings in order to be able to operate. They can never, as it were, lead independent lives, or "*rule the world*" by making decisions of their own.

方能工作。所以说,计算机决不能独立工作,或由其自身作出决定来"统治世界"。

Sir Leon said that in the future, computers would be developed which would be small enough to carry in the pocket. Ordinary people would then be able to use them to obtain valuable information. Computers could be plugged into a national network and be used like radios. For instance, people going on holiday could be informed about weather conditions; car drivers could be given alternative routes when there are traffic jams. It will also be possible to make tiny translating machines. This will enable people who do not share a common language to

Leon 爵士又说,将来还可能发展一种小至可以放在衣袋里携带的袖珍计算机。那时,普通人就能用它们来获得有价值的信息。计算机还可并入全国计算机网,如同收音机一样使用。例如,外出度假的人们可得到有关气象的报告;当交通阻塞时,汽车驾驶员可获得其他可行路线的信息。还可制成精巧的翻译机,使讲不同语言的人们能毫无困难地进行交谈或阅读外