

MAN  
INTO SPACE

# 人类飞向太空

英语科普对照注释读物

外语教学与研究出版社



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〔美〕欧内斯特·施奈德 著

王 镁 译注

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Ernest E. Snyder  
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## 内 容 简 介

本书选自《今日自然科学》(*Physical Science for Today*)一书。作者欧内斯特·施奈德执教于美国亚利桑那大学。至1979年,《今日自然科学》已发行十版。

本书系《今日自然科学》之一节,作者以充分的理由说明探索宇宙的重要性和必要性;简明扼要地介绍了除地球以外的太阳系八大行星——水星、金星、火星、木星、土星、天王星、海王星、冥王星的情况,以及小行星、彗星和流星的形成和演化过程;阐明了人造卫星进入轨道和重返大气层的原理,近年来人类对月球和其他天体进行探索的成果以及人类进行冥王星外星际旅行的可能性等。

本书在每一节原文后都有语法注释和译文,书末附有术语注释和词汇表,可供大专院校和高级中学学生、知识青年和科技人员阅读。对理工科外语教师也有一定参考价值。

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## Man into Space

Until the very latest moment of his existence, man has been bound to the planet on which he originated and developed. Now he has the capability to leave that planet and move out into the universe to those worlds which he has known previously only indirectly.<sup>①</sup> Men have explored parts of the moon, put spaceships in orbit around another planet, and possibly will land on and explore another planet within the decade.

Can we be so bold as to suggest that we may be able to colonize other planets within the not-too-distant future?<sup>②</sup> Some have advocated such a procedure as a solution to the population problem — ship the excess people off to the moon or to Mars. The logistics of such a proposal soon become overwhelming: To maintain the earthly population at its present level, we would have to blast off into space an astounding (or astounded) 7500 people every hour of every day of the year and forever and ever if human procreation levels are maintained at the going rate.<sup>③</sup> We might also keep in mind the cost of bringing back those first moon rocks: \$ 500,000,000 per pound, give or take a million or two.

## Grammatical Notes

- ① Now he has the capability ... indirectly: 句中动词不定式短语 to leave ... to those worlds 作名词 capability 的定语。world 在此作“天体”、“星球”解。关系代词 which 引导的定语从句说明 those worlds.
- ② Can we be so bold as to ... future: 动词不定式短语 be so ... as to suggest that ... 为结果状语。上面的句子相当于 Can we be so bold that we suggest that ...! 由于表示结果的 that 从句的主语和主句的主语相同, 故可把结果状语从句改为 so ... as to suggest ... 这种更简洁的不定式结构。其中 that 引导的宾语从句, 作动词 suggest 的宾语。
- ③ The logistics of such a proposal ... overwhelming: to maintain ... an astounding...: 句中冒号后面的句子是附加的解释性句子, 说明前面一个句子。动词不定式短语 to maintain ... 在句中作目的状语。an astounding... people 是谓语动词 would have to blast off 的宾语, 它被介词短语 into space 所分隔。

## Translation

### 人 类 飞 入 太 空

人类直到其生存的最近时刻一直被束缚在他们发源和发展的  
那个行星上。现在, 他们拥有离开那个行星和飞入太空, 到  
达那些从前只能间接了解的星球的能力。人们已经探索了月球

的某些部分，把宇宙飞船送入了环绕另一行星的轨道，而且可能在十年内登上和探索另一颗行星。

我们能够大胆地设想在不太遥远的将来去开拓别的行星吗？有些人曾鼓吹把这一步骤作为解决人口问题的一项办法，即把过剩人口送到月球或火星上去。这个建议的后勤工作不久就会使人不知所措：如果人类的生殖率保持现状，那末为了把地球上的人口维持在现在的水平上，我们就得在一年内每天每小时把令人震惊的 7,500 人送到太空中去，而且永远如此。我们也许还记得把月球上的第一批岩石带回来的代价：每磅五亿美元，可能会有一二百万美元的误差。



# 1. Why Explore Space?

How often have you heard the argument, Why are we spending billions of dollars for space exploration when there are so many pressing problems right here that need solving? It is a good question. When we consider the great need for improving many aspects of the deteriorating global environment, the population problem, the economic plight of the underdeveloped areas of the world, and the general poverty and lack of educational and economic opportunity for millions of people in the United States, one is surely justified in his concern for the money and resources that are poured into the space exploration efforts.<sup>①</sup> But perhaps we should look at both sides of the coin before arriving at hasty conclusions.

"Man does not live by bread alone." This ancient adage was never more applicable than it is today when man may stand at the gateway to knowledge that may solve some of the universal mysteries that have plagued him ever since he came down out of the trees.<sup>②</sup> Humans are endowed with inquiring minds and it seems natural that we should take any reasonable means to satisfy that innate curiosity regarding the mysteries of the world in which we find ourselves.<sup>③</sup>

Man's recent evolutionary development has, unfortunately, been in such imbalance that his abilities in science and technology have far exceeded those requisite to coping with human and related socioeconomic problems.<sup>④</sup> Mariner 9 on its way to orbiting Mars, for example, was at all times more predictable than any individual or group of humans in almost any situation you care to contrive. The task of the social scientist is always infinitely greater than that of the physical scientist; only because of the capricious nature of the human animal with which he must deal.

Money alone, regrettably, will not solve problems. Money without knowledge never would have gotten a man to the moon. Money without the know-how as to its intelligent application will not solve any one of the problems mentioned earlier. At this point we do not have the knowledge necessary to solve all of man's social and economic ills. We do, however, have the knowledge to explore the nearby cosmic neighborhood in which we live.<sup>⑤</sup> There is no reason why, in this affluent and enlightened age of the western world, we cannot attack these humanistic problems with the same energy and resources with which we are exploring space.<sup>⑥</sup> Our failure to do so, however, is no excuse for not carrying out other deserving endeavors.

## Grammatical Notes

- ① When we consider ... exploration efforts: 句中 one 为不

定代词，这里用来泛指人。... is surely justified in ... 意为“对……确实是有道理的。”

- ② This ancient adage ... the trees: 第一个 that 引导的定语从句修饰 knowledge; 第二个 that 引导的定语从句修饰 the universal mysteries。the trees 这里指基督教《圣经》伊甸园中的生命树，据说食这种树的果实能长生不老。
- ③ Humans are endowed ... find ourselves: 句中动词不定式短语 to satisfy that innate curiosity ... 作目的状语，说明谓语 should take。find oneself 作“发觉自己的处境”解。
- ④ Man's recent ... problems: such ... that 引出的是结果状语从句。requisite to coping with human ... 为形容词短语，作 those 的后置定语。
- ⑤ We do, however, have ... in which we live: 句中 do 用来加强语气，意为“的确”、“确实”。动词不定式短语 to explore ... 作 the knowledge 的定语。在由 in + which 引出的定语从句中，which 代表 cosmic neighborhood，作介词 in 的宾语，介词短语 in which 在从句中作状语，修饰谓语动词 live。
- ⑥ There is no reason ... space: 句中关系副词 why 引导的定语从句，修饰名词 reason。with which 引导的定语从句，修饰名词性短语 the same energy and resources。

## Translation

### 1、为什么要探索太空？

你可曾经常听到过这样一种争论：眼下有这么多迫切要解决的问题的时候，我们为什么花费数以十亿计的美元去进行宇宙探索呢？这个问题提得好。我们在考虑改善正在恶化的全球环境、人口问题、世界不发达地区的经济困境，以及美国数以百万计的人民普遍贫困和缺乏受教育和就业机会等许多方面的时候，人们对于倾注到宇宙探索努力上的金钱和资源表示关心，这确实是有道理的。可是，在作出草率的结论之前，我们也许应该考虑到事物的两个方面。

“人类不能单靠面包过活。”当人类可能站在通向可能解决一些宇宙奥秘的知识大门（这些奥秘自从人类从生命树降临以来一直在折磨着他们）的时候，这句古代格言从来没有比今天更适用了。人类有好钻研的精神，我们采用任何合理的手段，来满足固有的好奇心，以了解有关我们所处的世界的奥秘，这一点似乎是很自然的。

可惜人类的最近演化发展一直处于不平衡的状态，他们在科学技术方面的能力已远远超过处理人类和有关的社会经济问题所必要的能力。例如，正在进入火星轨道的“水手9号”任何时候都能比你愿意设法达到的几乎任何位置上的个人或一群人更有效地进行预报工作。社会科学家的任务一向比自然科学家的任务大得多，这只不过是因为他们必须同本性变幻莫测的人类动物打交道。

令人遗憾的是，单靠金钱不能解决问题。只有金钱而没有

知识决不能把人送上月球。只有金钱而没有对它进行合理应用的知识不能解决上面提到的任何问题。目前，我们没有解决人类社会和经济灾难的全部问题所必要的知识。然而，我们的确拥有探索我们所居住地域的宇宙近邻的知识。在这西方世界富饶和文明的时代，我们的确没有理由不用我们正在用来探索宇宙的同样精力和资源，来解决人道主义方面的各种问题。但是，我们不能借口没有做到这一点，就不去开展其他值得努力进行的事业。

## 2. The Solar System

Our solar system consists of the sun (our star), the nine major planets and their moons, the minor planets meteoroids comets, and interplanetary gases.

Is there a possibility that there is life on other planets?① Are any of the other planets suited for human habitation? Do they possess minerals or other resources that could be economically transported back to Earth? An examination of some of the known characteristics will provide a basis for answers to some of these questions. Many of our questions about the nature of other parts of the solar system, however, will remain unanswered until we have taken a much closer look.

**Mercury.** This small planet revolves so close to the sun that the possibility for the existence of any kind of life there is quite remote.② Due to its small size and mass and its proximity to the sun, the planet probably has no atmosphere. Note that Mercury rotates very slowly; only about six times during an Earth year. This means that the side facing the nearby sun is very hot — probably hot enough to melt lead— while the side away from the sun is extremely cold. Life as we know it cannot exist under these extreme conditions.③

**Venus.** Other than the moon, Venus is the brightest object we can see in the night sky. It is so bright, in fact, that it frequently can be seen during the day. Space probes to Venus have revealed that the atmosphere is very dense and consists primarily of carbon dioxide. The upper layers of the atmosphere may be frozen, while near the surface of the planet the temperatures probably range from  $800^{\circ}$  to  $1000^{\circ}\text{F}$ . These very high temperatures preclude the possibility of life as we know it. Because of the opaque cloud cover, the surface of the planet has never been observed. It has been suggested that, due to the high temperatures and absence of liquid water, the surface must be a lifeless, barren desert.

**Mars.** Ever since the Italian astronomer Schiaparelli observed surface features on Mars almost 100 years ago, there has been abundant speculation about what kind of life, if any, might inhabit the planet.<sup>4</sup> Schiaparelli's use of the word canali (Italian for channels or grooves) to describe some of the markings led many to conclude that these were ditches or canals constructed by intelligent beings. Recent Mariner photographs of the Martian surface reveal land forms similar to those of the earth and moon: mountains, craters, canyons, and rilles. None of these has been detected by Earth-based telescopes employing photographic equipment.

In certain respects, Mars is quite similar to the earth. Its period of rotation (length of day) is only about one half hour longer, which makes day and night almost the same as on Earth. The inclination of its axis of rotation is also about

the same as that of the earth and, therefore, seasons on the two planets are comparable except that the Martian seasons are about twice as long because of the longer year. Mars has north and south polar caps that form and dissipate with the seasonal changes. The Martian polar caps, however, consist principally of frozen carbon dioxide and with very minor amounts of water.

The atmosphere of Mars consists of mostly carbon dioxide with small amounts of carbon monoxide, water vapor, and oxygen. The atmosphere as a whole amounts to only about 1% of that which envelopes the earth. Although this atmosphere probably could support plant life, the absence of ozone and a magnetic field to shield living organisms from ultraviolet and cosmic radiation may prevent them from flourishing.<sup>5</sup> Middle latitude temperature extremes are not so great that hardy forms of life we know on Earth could not exist there. The lack of water, however, might be a limiting factor.

**The Minor Planets.** These relatively small bodies that revolve generally between the orbits of Mars and Jupiter are sometimes referred to as planetoids or asteroids. The latter designation came about because, in most telescopes and on photographs taken through telescopes, they appear as mere points of light — not unlike the images of most stars. The reason for this is that the largest of the minor planets is something less than 500 miles in diameter. They then range downward to objects no more than a few miles across. Like



the moons of Mars, most of them are of irregular shape. Although there are several thousands of these bodies making up the asteroid belt, they offer no particular threat to space exploration since they are scattered along a distance of roughly 1,500,000,000 miles.

**Jupiter.** The largest of the solar system planets, Jupiter, might be considered to be a companion star of the sun by observers elsewhere than in the solar system. Its huge size and gravitational field influence the orbits of the other planets and it emits about three times as much energy as it receives from the sun. If Earth people should ever actually land on the surface of this planet, they would find that they weigh more than 2.5 times as much as they did on Earth.\*

\* Weight is a measure of the force of gravity between two bodies. If you weigh 150 pounds, it means that the earth is tugging at you with that much force. Your weight would vary slightly if you moved closer to or further away from the earth's center—such as to sea level or to an inland location several thousand feet above sea level. Because of the moon's smaller mass, you would weigh only 25 pounds there and on Jupiter your weight would balloon to almost 400 pounds !

Although Jupiter is the largest planet, its density is only a little more than that of water and, by way of further contrast, the density of the earth is 5.5 times as much as water. Jupiter's atmosphere (which is all that we have ever seen of the planet) would be most hostile to Earth-type life: hydrogen, methane, and ammonia. If that were not enough to discourage immigrants, the atmosphere surface temperature is