宇宙中的生命

“宇宙中的其他地方有没有生命?”

要回答这个问题，我们首先必须考虑生物，无论是植物和动物，是由什么构成的。 然后再考虑生命生存所需要的条件。生物体和其他物质一样，都是由原子构成的。 原子结合形成分子。

分子是一切物质可以被分割的最小单位。例如分解水分子后， 水就不再存在，剩下的只是构成水的原子——一个氧原子和两个氢原子。生物的分 子不是由两三个原子构成的，而是由成千上万个原子以多种复杂的形式组合而成的。

处于高温环境中时，构成生物的复杂分子就会分裂成各种原子而死亡。因此，太阳或其他任何恒星上面不可能有生命，因为那里太热了。

X 射线会破坏活的分子，紫外线对多种分子也有杀伤力。由于接近太阳或其他恒星的行星没有抵挡这些射线的大气层，因此这些在行星上面不大可能会存在生命。

生物的呼吸、成长、移动，都需要能量。地球上的动植物都是直接或间接地从 太阳那里获得能量。因此那些远离太阳、温度极低的行星上不可能有生物生存。

看起来要得到一个令人满意的答案，我们还有相当长的路要走。

Life in the Universe

“Are there living things anywhere else in the Universe?”

To answer this question, first we must consider what makes a living thing, whether plant or animal, and then what conditions living things need in order to go on living. Living things, like everything else, are made of atoms, which are grouped into molecules.

A molecule is the very smallest possible bit you can have of any substance. When you break up a molecule of water, for example, you no longer have water at all, but only the atoms of which water is made—one atom of oxygen and two of hydrogen. The molecules of living things are made, not of two or three atoms, but of hundreds or thousands in different complicated patterns.

If they become too hot, these complicated molecules of living things break up into separate atoms and cease to be living. Therefore, there cannot be life on the Sun or any of the stars because they are far too hot.

Living molecules are also damaged by X-rays, and many of them by ultra-violet rays, so they are not likely to exist on a planet close to the Sun or any other star where there is no atmosphere to keep off these radiations.

Living things also need energy to breathe, grow and move. On Earth plants and animals get their energy, directly or indirectly, from the Sun. So planets, which are far from the Sun and extremely cold, are not places where living things could exist.

It seems that we still have a long way to go before we get a satisfactory answer.