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47. The natural time sense (天赋的时间感) 1. One of the most amazing of living

things, the honeybee, has recently been shown to possess still another remarkable skill. It has a built-in alarm clock that goes off exactly

every 24 hours. 1、生物中最令人惊奇的东西之一是蜜蜂，在最近的研究里它又显示出它持有的另一种非凡本领。蜜蜂身体里有一个天生的“闹钟”，它准确地每24小时循环一次。 2.

Scientists have long known that bees carry a sort of wrist watch inside their bodies. They will return to the same spot, day after day, right to

the minute, to feed on sugar-water left for them. To find out how the bees manage to tell time, an unusual experiment was carried out four

years ago. Two young German biologists in Paris trained bees to come out for sugar-water every day at exactly 8:15 p.m. The scientists

then set out to baffle the bees. When it is 8:15 p.m. in Paris, New York City's Eastern Day-light Saving time is only 3:15 p.m. If the hive

were flown to New York between feedings, which time would the

bees follow-Paris' or New Yorks? 2、科学家早已知道，蜜蜂在它的身体里带着某种手表。蜜蜂能够日复一日，精确到同一

分钟，返回同一地点去吃为它们准备的糖浆。为了研究蜜蜂如何辨别时间，四年前进行了一项不寻常的实验。在巴黎，

两个年轻的德国生物学家训练蜜蜂每天晚上8点15分准时出来喝糖浆。之后，科学家们设法迷惑蜜蜂。当巴黎是晚上8点15

分时，美国纽约市的东部夏令时间是下午3点15分。如果蜂箱

在两次喂食之间被空运到纽约市，蜜蜂会遵循哪个时间？巴黎的或者纽约的？

3. So, immediately after a night feeding in Paris, the hive was sealed and rushed off on an air liner. In New York, scientists from the American Museum of Natural History placed the hive in a specially prepared laboratory in the museum. At exactly 3:15 p.m. New York time - a precise 24 hours after having been fed in Paris - the bees swarmed out of their hive. The experiment proved conclusively that in spite of a 3,500-mile flight and differences in local time, the bees alarm clocks rang right on their 24-hour schedule.

3、为此，在巴黎进行了一次晚间喂食后，蜂箱立刻被密封，迅速送上飞往纽约的航班。在纽约，来自于美国国家历史博物馆的科学家们把蜂箱设置在博物馆特别准备好的实验室里。在纽约时间下午3点15分整，也就是在巴黎进食整整24小时之后，蜜蜂涌出它们的蜂箱。实验确切证明，尽管经历了3500英里的飞行，以及不同地方的时间差，蜜蜂的“闹钟”仍精确地依照它的24小时时间表运行。

4. As further proof, the experiment was repeated-only this time the same hive of bees had its alarm set in New York and was flown to Paris. There, too. They emerged from their hive exactly 24 hours later for their accustomed feeding.

4、为了进一步证明，该实验被重复进行，这次，同一只蜂箱的蜜蜂，在纽约设定了进食时间，然后飞往巴黎。这次蜜蜂同样准确地在24小时后，按它们的习惯进食时间涌出蜂箱。

5. Scientists now believe that many, if not all, living things are born with some type of hidden clock. These clocks are sometimes set by the number of hours of light or darkness in a day, by the rhythm of the tides or by the seasons.

5、科学家们现在

相信，即使不是全部，但仍然有很多生物具有天生的某种类型的潜藏时钟。这些时钟有时根据一天中白昼或黑夜的小时数目设定，有时根据潮汐的规律或者季节设定。 6. One of the most remarkable of nature's living clocks belongs to the fiddler crab, that familiar beach-dweller with the overgrown claw. Biologists have long known that the crab's shell is darkest during the day, grows pale in late afternoon, then begins to darken again at daybreak. This daytime darkening is valuable for protection against enemies and sunlight, and for many years it was thought to be a simple response by the crab to the sun—just as if we were to get a tan during the day and lose it at night. 6、大自然中最非凡的“活钟”之一就属招潮蟹，是人们熟悉的沙滩居民。它有着过分增长的螯，生物学家早就知道招潮蟹的壳在白天是黑暗的，傍晚时变成灰白，然后在破晓的时候又变黑。这种白昼黑化是针对敌人和阳光的有价值的自我保护，很多年以来，它被认为是蟹对于太阳光的一种简单反应，就像我们人类白天皮肤被太阳晒黑，晚上又会白回来。 7. But when an enterprising scientist placed a fiddler crab in darkness, he was amazed to find that the color of the crab's shell kept ticking off the time with the same accuracy. 7、但是，当一个勇于探索的科学家把招潮蟹放在黑暗中，他惊讶的发现蟹壳的颜色依然准确的按时间转变。 8. Yet another startling fact was revealed: the crab's shell reached the darkest color about 50 minutes later each day. There was a second clock inside the crab, for the tides also occur 50 minutes later from day to day. Moreover, even when the crabs were taken from the beach and put back in the dark, they continued their tidal rhythm. More research

disclosed that a crab from Cape Cod, Massachusetts, reached its darkest color four hours earlier than the one taken from a beach on a neighboring island. The tides on the nearby island were found to be exactly four hours later than the Cape Cod tides. 8、人们还发现了另一个令人惊愕的事实：蟹壳的颜色变得最深的时间每天推迟50分钟。显然在蟹的身体里存在着第二只钟，因为潮汐进退的时间恰恰也是一天比一天推迟50分钟。而且，即使把蟹从海滩上带回来放在黑暗中，它们仍然保持它们的潮汐节奏。更进一步的研究发现，来自马赛诸塞州CAPECOD的蟹达到它最深颜色的时间，比来自于邻岛的蟹早4个小时。同时观察到，邻岛的潮汐极其准确地比CAPECOD的潮汐晚了4个小时。 9. Ants dont carry calendars around with them any more than fiddler crabs possess real wrist watches. But ants show amazing accuracy as to the day of the year. Each year, an ant nest sends out winged, young queens on mating flights. Hundreds of them may fly out of a single nest in the soil. Last summer, at the crest of my mountain, I watched an ant city prepare to send forth its young queens. At the precise moment that they took wing, a colony of the same species that my wife was watching near the bottom of the mountain, also sent its queen on a wedding flight. There was, of course, no way could the two colonies have checked take-off time with each other. 9、蚂蚁不可能随身携带日历就像招潮蟹不可能带着真正的手表一样。但是蚂蚁对一年中的特定一天有着惊人的精确判断。每年，每一个蚁巢都会送出带翅膀的、年轻的蚁后进行交配飞行。上百个这样的蚁后有可能从土中的同一个蚁巢飞出。去年夏天，在我家的山顶，我看到一个蚁

巢准备放出它们的年轻蚁后。在它们起飞的同一个精确时刻，由我的妻子负责观察的山脚附近的另一窝同种的蚁族，亦放出它们的蚁后举行飞行婚礼。显然，这两个蚁群根本没有办法校对彼此的起飞时间。

10. Entomologist Albro T. Gaul once jotted down in his notebook that a particular species of ant in northern Massachusetts began its wedding flight at a certain day and time. He later learned that another entomologist in New Jersey, 260 miles away, observed a wedding flight by the same species of ant, on the same day, and at exactly the same time! This split-second timing is not always the rule. However, most flights take place within a definite period of time.

10、有一次，昆虫学家Albro T. Gaul先生在他的笔记本里匆匆记下，在马赛诸塞州北部某种蚂蚁开始举行飞行婚礼的准确“日”和“时”。他后来知道，在260英里以外纽泽西州另一个昆虫学家也观察到同一种类蚂蚁举行飞行婚礼的时间，竟和他记录的在同一天、同一个时刻！这种分割到秒的记时并不总是有规律的。总之，绝大多数的飞行婚礼开始时间在一个确定的时间段里。

11. Birds also have built-in timepieces which send them off on fall and spring migrations. What the birds really have is a clock-like mechanism which allows them to time hours of darkness or light in each day.

11、鸟类也有天生的时间感应器指导它们秋春迁移。鸟类真正具有的是一种“似钟的装置”，使它们能从时间上区分每天黑夜或白昼的小时数。

12. But what sends birds northward again in the spring? New research by Dr. Albert Wolfson of Northwestern University seems to indicate that the timing of return flight is extraordinarily complex. In the fall of the year the short days and

long nights cause the "clocks" in migratory birds to undergo a kind of "winding" in preparation for their spring return and breeding. Then during the late fall and winter as the clock "ticks", certain physiological changes occur in the bird. The length of each day during the winter determines how fast the clock will run, and hence when the "alarm" will ring for the spring migration. The clock continues to run through breeding time, then stops-to be re-wound again the next fall.

12、但是，是什么让鸟在春天北飞呢？西北大学Albert Wolfson博士的最新研究似乎指出决定回飞的时间是极其复杂的问题。每年秋季，短暂的白昼和长时间的黑夜令候鸟身体里的“时钟”经历某种转变，为它们春天的返回和繁殖做准备。在之后的深秋和冬天，如同钟的转动一样，特定的生理变化在鸟类的身体上表现出来。在冬天里，每一天白昼的长短决定该时钟的运转快慢，因此“闹铃”将为春天的迁徙响起提示信号。时钟在繁殖期间持续运转，然后停止，再在下一个秋天复苏。

13. Scientists are now learning that many of the clocks of nature can be reset, speeded up or slowed down-all for our benefit. Pioneering experiments at the U.S. Department of Agriculture's research center in Beltsville, Maryland, have shown that plants can be helped to develop faster in less time. By increasing or lessening the hours of darkness in each day, the scientists have been able to turn plant growth off and on like an electric switch.

13、科学家现在知道，从人类的利益出发，很多大自然的钟都可以重置、加速、或者减慢。美国农业部在马里兰州BELTSVILLE的研究中心进行了开拓性的实验，实验表明人们能帮助植物在较短时间内生长得更快。用增加和减

少每天黑暗小时数的方法，科学家已经能够控制植物生长，如同控制一个电器开关。 14. New knowledge about nature's living clocks has practical applications. For man, too, seems to follow daily rhythms. The amount of sugar in our blood stream varies with the time of day, as does our temperature. More of the cells in our skin and muscles divide during the night hours than during the day. By tinkering with the clocks of plants and animals, scientists may learn more about the fascinating way our bodies work. 14、关于大自然的“活钟”的新知识具有实际用途。人类似乎也遵循每天的时间节奏。我们血液中的血糖水平以及体温随一天的时间不同而不同。我们的皮肤和肌肉里的细胞分裂在夜间比在白天要多。通过调整植物和动物的生物钟，科学家们可以更多了解我们身体运作的神秘方式。 100Test 下载频道开通，各类考试题目直接下载。详细请访问 www.100test.com