

通信科技英语

文选

南京大学大学外语部编



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通俗科技英语文选

第二十五辑

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Prospecting with the Aid of Bees

You may someday get your information about the day's air quality not from a computer-run air analyzer but from bees.

By assaying pollen scientists can accurately and inexpensively measure the concentration of heavy-metal contamination in the atmosphere.

Plants absorb metals from the air and the soil. The more contamination there is, the more they'll absorb. These metals permeate the plant's system, including its reproductive organs and the pollen. And since bees are hard workers, it makes sense to use them to collect the pollen needed for analysis.①

Early indications have borne out this theory. Pollen collected near a molybdenum mine in British Columbia, for example, showed 40 times as much metal as did "uncontaminated" pollen collected away from the site. Pollen in the vicinity of a copper mine held four to six times the normal amount of copper, and pollen near a zinc smelter contained six times more zinc.

In addition to serving as air-quality indicators, bees could prove valuable as mineral-deposit prospectors. Underground minerals absorbed by plants also make their way to the pollen. If you can tell where the bees find the pollen, you can locate the deposits.

Modern prospecting is a costly process. By knowing where

to dig without first having to do all that expensive searching, you'll save yourself a lot of money.

So far, pollen from clover, willow and fireweed has given the most accurate readings for both atmospheric contamination and mineral deposits. Only about 400 milligrams of pollen are needed to make an analysis.

It is hoped that the beekeepers and the mining companies will begin to cooperate with each other.

词 汇

prospect [prəs'pekt] *vt* 检测, 勘探

探

assay [ə'sei] *vt* 检定, 化验

contamination [kən'tæmi'nei-
ʃən] *n* 污染, 沾染物

pollen ['pɒlɪn] *n* 花粉(不可数名词)

absorb [əb'sɔ:b] *vt* 吸收

permeate ['pɜ:mi:et] *vt* 渗入, 弥漫

reproductive organ [ri:prɒ'daktiv
'ɔ:gən] 繁殖器官, 生殖器官

make sense 讲得通, 合理; 有意义

bear out 证明, 证实

molybdenum mine [mɒ'libdinəm
main] *n* 钼矿

in the vicinity of 在...的附近

zinc [zɪŋk] *n* 锌

smelter ['smeltə] *n* 冶炼厂

make one's way to 朝...走去;
前往

reading ['ri:diŋ] *n* 读数; 仪表上的指示数

注 释

- ① ..., it makes ... the pollen needed for analysis. 其中, needed for analysis 为过去分词短语作定语, 修饰 pollen.

参考译文

利用蜜蜂探矿

有朝一日你也许不必从计算机控制的空气分析器那里获悉天气 好

坏的信息,而可以利用蜜蜂来进行了解。

科学家通过对花粉化验的分析,就能精确地、轻而易举地测算出大气层中重金属污染物的密度。

植物从空气和土壤中吸收各种金属。越是污染厉害的地方,植物吸收的污染物也就越多。这些微量金属渗透到植物的整个机体,其中包括植物的繁殖器官和花粉。既然蜜蜂勤于采蜜,那么利用它们来收集供化验分析用的花粉倒是很有意义的。

早先的一些迹象都证实了这一理论。例如,在不列颠哥伦比亚省的钼矿附近采取的花粉,其含钼量是远离该地区“未受污染”的花粉的四十倍。一个铜矿附近花粉的含铜量是正常花粉的四至六倍。此外,炼锌厂附近花粉的含锌量则超过正常花粉含锌量的六倍。

蜜蜂除了可用以检测空气质量外,在探测金属矿床方面也可起重要作用。植物吸收地下的矿物质,就会传到花粉上去。倘若你能发现蜜蜂在何处采到含矿物质的花粉,那么,你就可确定其矿床的位置。

现代化的勘探方法耗资甚大。倘不需投资勘探便能确定开采地点,就会节约大量钱财。

迄今为止,从三叶草,柳树和曼陀罗草上采集的花粉最能精确地显示大气的污染状况和金属矿床的位置。每次用来分析的花粉大约只需四百毫克就够了。

人们期待着养蜂人会与矿业公司之间进行合作。

琴阳 译注 林棣 校

How to Catch a Fly

Take a piece of tissue paper in each hand and approach the fly from the left and right, keeping the hands equidistant from the fly and moving to and fro slightly. Then both hands simultaneously pounce. That is, perhaps, the easiest

way to catch a fly.

The method is soundly grounded in fly-neuroscience. Since its central-nervous-system circuitry is geared to avoid approaching movement in only one part of its visual field at a time, the fly cannot cope with this situation. Two simultaneously approaching threats render the fly immobile,^① for its central nervous system now cannot compute at which angle to take off.^②

词 汇

equidistant [i:kwi'distənt] *a* 同

等距离的

simultaneously [siməl'teinjəsli]

ad 同时

pounce [pauns] *vi* 猛扑; 突然袭击

击

neuroscience [njuəro'sains] *n*

神经科学

gear [giə] *vt* 使适合

render ['rendə] *vt* 使变为, 使得

immobile [i'məubail] *a* 不动的; 静止的

注 释

- ① render the fly immobile: 相当于 make the fly immobile. 是“动词+宾语+宾语补足语”结构。
- ② for ... at which angle to take off. 其中, at which angle to take off 为 compute 的宾语, 相当于 at which angle it should take off.

参考译文

捕 蝇 妙 法

双手各拿一张卫生纸, 从左右两侧同时接近苍蝇。双手与苍蝇的距离保持相等, 并轻微地来回移动, 然后, 双手合击。这也许是最简便的捕蝇方法。

这一捕蝇方法是以蝇类神经学为其可靠依据的。由于苍蝇的中枢

神经系统结构每次只能躲避来自视觉范围内一个方向的运动物体，所以它无法应付上述的局面。两个同时逼近的威胁使它无法行动。这是因为苍蝇的中枢神经系统无法决定它从哪个角度飞走。

朱申生 译注 艾宁 校

Behind a Mother's Love

Harvard Medical School neuroendocrinologist Robert Bridges, testing rats, has found that the desire to feed and protect one's young stems from hormones. Male rats and childless females turned into model mothers following doses of estradiol and progesterone, female hormones that increase during pregnancy. A human mother's response to her newborn may depend on such hormones, Bridges speculates.

The brain's natural opiates seem to drop right after birth, and Bridges thinks the reduction may trigger maternal feelings. When the researchers treated pregnant rats with morphine to artificially maintain their high opiate levels, the rats' maternal behavior diminished. When the morphine treatment ended, the signs of proper mothering returned.

词 汇

neuroendocrinologist ['njuərə-
endəukrai'nɒlədʒist] *n* 神经

内分泌专家

stem from 来自

hormone ['hɔ:məʊn] *n* 激素,

荷尔蒙

estradiol [,estɹə'daɪəʊl] *n* 雌二

醇

progesterone [prəʊ'dʒestərən] *n*

孕酮; 孕激素

trigger ['trɪgə] *vt* 激发, 触发

maternal [mə'tɜ:nəl] *a* 母性的,

母亲似的

morphine ['mɔ:fin] *n* 吗啡

opiate ['əupiit] *n* 麻醉剂; 鸦片
剂

diminish [di'miniʃ] *vi* 减弱; 变
小

参考译文

母爱的奥秘

哈佛大学医学院神经内分泌专家罗伯特·布里奇斯用老鼠做试验,发现大鼠喂养和保护幼鼠的欲望是由于激素在起作用的。公鼠和没生育幼鼠的母鼠服用数剂雌二醇和孕酮这两种在怀孕期间有所增多的雌性激素以后,都成了模范母亲。布里奇斯猜测:人类母亲对于其新生儿的反应可能也取决于这类激素。

母亲分娩后,大脑产生的自然麻醉剂似乎立即减少。布里奇斯认为,麻醉剂的减少有可能激发母爱。研究人员对有些母鼠使用了吗啡,人为地在这些母鼠体内保持较高的麻醉剂含量,这时母鼠的母性行为就减弱。一旦停止使用吗啡,正常的母爱迹象又出现了。

朱申生 译注 云海 校

COMMON KNOWLEDGE 常识

Does a Larger Brain Mean Greater Intelligence?

Not necessarily. For instance, humans are the most intelligent members of the animal kingdom. Yet our brains are smaller and they weigh less than the brains of some other animals. A human brain weighs less than 1.5 kilograms, while an elephant's brain is more than three times that weight. The clue to intelligence is in the cortex, the surface covering of the brain. Intelligence seems to be related to the amount of folding in the cortex.

头脑越大就越聪明吗?

不一定。例如,人为万物之灵,但人的头脑却比一些动物的头脑要

小些,要轻些。人脑的重量不到 1.5 公斤,而象脑的重量则是人脑重量的三倍多。智慧的关键在于包裹着头脑的大脑皮层中。智慧仿佛与大脑皮层的褶皱有关。

Dig a Forecast

Elmar Reiter, an atmospheric scientist at Colorado State University, has evidence that the temperature of soil 40 inches deep can be used to predict rainfall months ahead.

He found out about the technique during a trip to the Tibetan highlands of China. Warm winter soil tended to precede a rainy spring. Cooler than average soil temperatures usually meant less rainfall.

Reiter explains that warm soil gives off heat, which rises and strengthens the air currents that cause rain. The higher the soil temperature, the stronger these currents become and the more rainfall that results.① Cold soil has the opposite effect, says Reiter, "by slightly suppressing the vertical movement of air in the atmosphere."

There are now fewer than three dozen deep-soil monitoring stations in the United States, used mostly for agricultural studies.② One or two per county would be needed to predict rainfall effectively.

词 汇

precede [pri'si:d] vt 先于

式的

suppress [sə'pres] vt 压制;镇压

monitoring station 监察站

vertical ['vɜ:tɪkl] a 垂直的;竖

注 释

- ① The higher ..., the stronger ... that results. 本句结构为 “The + (形、副词)比较级 (+主语+谓语); the + (形、副词)比较级 (+主语+谓语)。”意为“越……越……”。其中,在 The higher the soil temperature 之后省略了“is”。
- ② There are fewer ... agricultural studies. 其中, used 引导的是过去分词短语;作定语,相当于一个非限定性定语从句 which are mostly used for agricultural studies, 修饰 monitoring stations.

参考译文

掘地测气候

科罗拉多州立大学大气科学家爱尔默·莱特证明:四十英寸深处的土壤温度能用来预测未来几个月的降雨量。

这种方法是莱特去中国的西藏高原旅行期间发现的。冬天土壤温暖往往预示来年春天多雨。如果土壤温度低于平均水平,一般来说,那就意味着来年少雨。

莱特解释说,这是由于温暖的土壤散发出热量,热气上升并增强了成雨气流。土壤温度越高,这样的气流就越强,因此降雨量也就越大。莱特说,寒冷土壤的作用恰恰相反,“因为低温会略微抑制大气层中气流的垂直运动。”

在美国,现有的深层土壤监测站还不满三十六个。其中大多是用干农业研究。若要有效地预测雨量,每个县至少要建立一至两个这样的监察站。

朱申生 译注 长春 校

Giving It a Whirl^①

Aerospace engineers are taking a closer look at one of

nature's oldest flying designs, the dragonfly. The insect can hover, fly sideways and backward, and zip forward at incredible speed for its size.② Researchers at the University of Colorado discovered that the insects generate three times the lift of even the most efficient aircraft. The creature's secret: its delicate wings change shape as they flutter, creating tiny whirlwinds.

The governing principle of dragonfly flight — called “unsteady” aerodynamics — is the new frontier for flight. A fluttering metal strip on an airplane wing produces similar whirlwinds and could be used to build planes that turn quickly and touch down on fields one-fourth the normal size.

词 汇

whirl [hwɔ:l] *n* 回旋, 旋转

dragonfly ['drægənflai] *n* 蜻蜓

sideways ['said-weiz] *ad* 向旁边, 朝侧面

zip [zip] *vi* 嗖嗖地飞

incredible [in'kredibl] *a* 难以置信的

flutter ['flʌtə] *vi* (鸟等) 振翼, 拍翅

aerodynamics ['æərədaɪ'næmiks] *n* 空气动力学

注 释

- ① Giving It a Whirl 原是一句美国口语,意思是“尝试”。这里兼取其直义(“来点旋风”“加快速度”),用此作为题目,妙语双关。汉语译文《旋风的作用》是根据本篇内容意译的。
- ② for its size: 为介词短语。for 在这里的意思是“就…而言”。如: The day is warm for April. (四月的天气够暖和的。)

参考译文

旋风的作用

航天工程师们正在对自然界最古老的飞行物——蜻蜓——作进一

步的研究。这种飞虫能盘旋，能向侧面和后面飞行，尽管身材不大，却能以令人难以置信的速度向前疾飞。科罗拉多大学的研究人员发现，蜻蜓产生的升力为升效最高的飞行器的三倍。其奥秘在于：蜻蜓那对灵巧的翅膀在飞行时一面煽动，一面改变其形态，从而激起微小的旋风。

蜻蜓飞行的原理称为“不稳定”空气动力学，这正是飞行研究领域中的新领域。系在飞机机翼上的金属带不断地煽动，便能产生类似的旋风。这一技术有可能用于飞机制造。照此造出的飞机不仅转弯迅速，而且所需的降落场地也仅为普通机场的四分之一。

朱申生 译注 刘纯豹 校

Ultrasound Motor

The common electromagnetic motor, a staple in home appliances and power tools, operates poorly at low speeds because it can't be geared down effectively. Now a motor powered by sound, not magnetism, may solve the problem.

Developed by Japan's Matsushita Electric Industrial Company, the world's largest maker of consumer electronics, the new motor rotates its spindle when a ring of piezoelectric transducers produce high-frequency sound. The sound vibrates a separate ring of friction pads,^① making the ring of pads rotate. Matsushita envisions using the ultrasound motor to power video-camera zoom lenses, industrial robots, and automotive components.

词 汇

staple [steɪpl] *n* 主要成分; 主要原料

appliance [ə'plaiəns] *n* 用具, 器具

gear [giə] *n* 齿轮; (汽车的) 排档 *vt* 使(机器等)开动

gear down 开慢车, 换慢档

spindle ['spindl] *n* 心轴; 锭子

piezoelectric [pai,i:zəui'lektrik]

a 压电的

transducer [trænz'dju:sə] *a* 变换器; 换能器; 传感器

vibrate [vai'breit] *vt* 振动

friction ['frikʃən] *n* 摩擦

pad [pæd] *n* 衬垫, 垫

envision [in'viʒən] *vi* 拟想; 展望; 预想

zoom lens ['zu:m 'lenz] *n* 可变焦镜头

robot ['rəubət] *n* 机器人

automotive [ɔ:tə'məutiv] *a* 自动的; 汽车的

注 释

- ① a separate ring of friction pads: 这里, “separate” 一词是强调两圈东西是互不接触的。一圈是由一些压电变换器组成, 另一圈是由一些摩擦垫片组成。在不致引起误解的情况下, 翻译时 “separate” 可以略去不译。

参考译文

超声波马达

普通的电磁马达是家用电器和电动用具中的主要部件。这种马达由于不能有效地减速, 所以在低速运转时性能不好。现在一种由声动代替磁动的马达也许能解决这一难题。

这种由日本松下电器工业公司(世界上最大的民用电子产品生产厂家)研制出来的新式马达, 当一圈压电变换器发出高频声波时, 马达的内轴就转动起来。这是高频声波激振了一圈摩擦垫片, 而使这圈垫片转动的。松下公司拟用这种超声波马达来驱动电视摄像机的可变焦镜头, 工业机器人和一些自动元件。

刘纯豹 译注

COMMON KNOWLEDGE 常识

The First Violin and Tortoiseshell

One mid-summer morning about 1,000 years ago, an Egyptian musician was taking a stroll along the River Nile when he accidentally kicked something, producing a very nice sound. He picked it up. It was an empty tortoiseshell. He took it home with delight. After making a careful study of it, he discovered that it was the vibration of the air within the shell that had produced such a fine sound. After repeated trials, he succeeded in making the first violin of the world.

乌龟壳和第一把小提琴

大约一千年前的一个仲夏的清晨，一位埃及音乐家在尼罗河畔散步，突然，他踢到一个什么东西，发出一种悦耳的声响。他拾起来一看，原来是个乌龟壳。他拿着乌龟壳兴致勃勃地回到家里，再三端详琢磨，发现是乌龟壳内的空气震动发出来的悦耳声音。经过反复试验，他终于成功地制作出世界上第一把小提琴。

Flocking for Safety

Why do some birds flock when they feed? Many researchers say birds forage in groups^① to protect themselves from predators. Since there are a greater number^② of eyes on the lookout, individual birds can spend more time eating and less time worrying about being eaten.

Thomas Caraco, a biologist at the University of Rochester, recently studied yellow-eyed juncos over a three-day period to see how they altered their feeding habits in the presence of a trained Harris hawk. When Caraco released the sharp-