



雙語週報

179 期



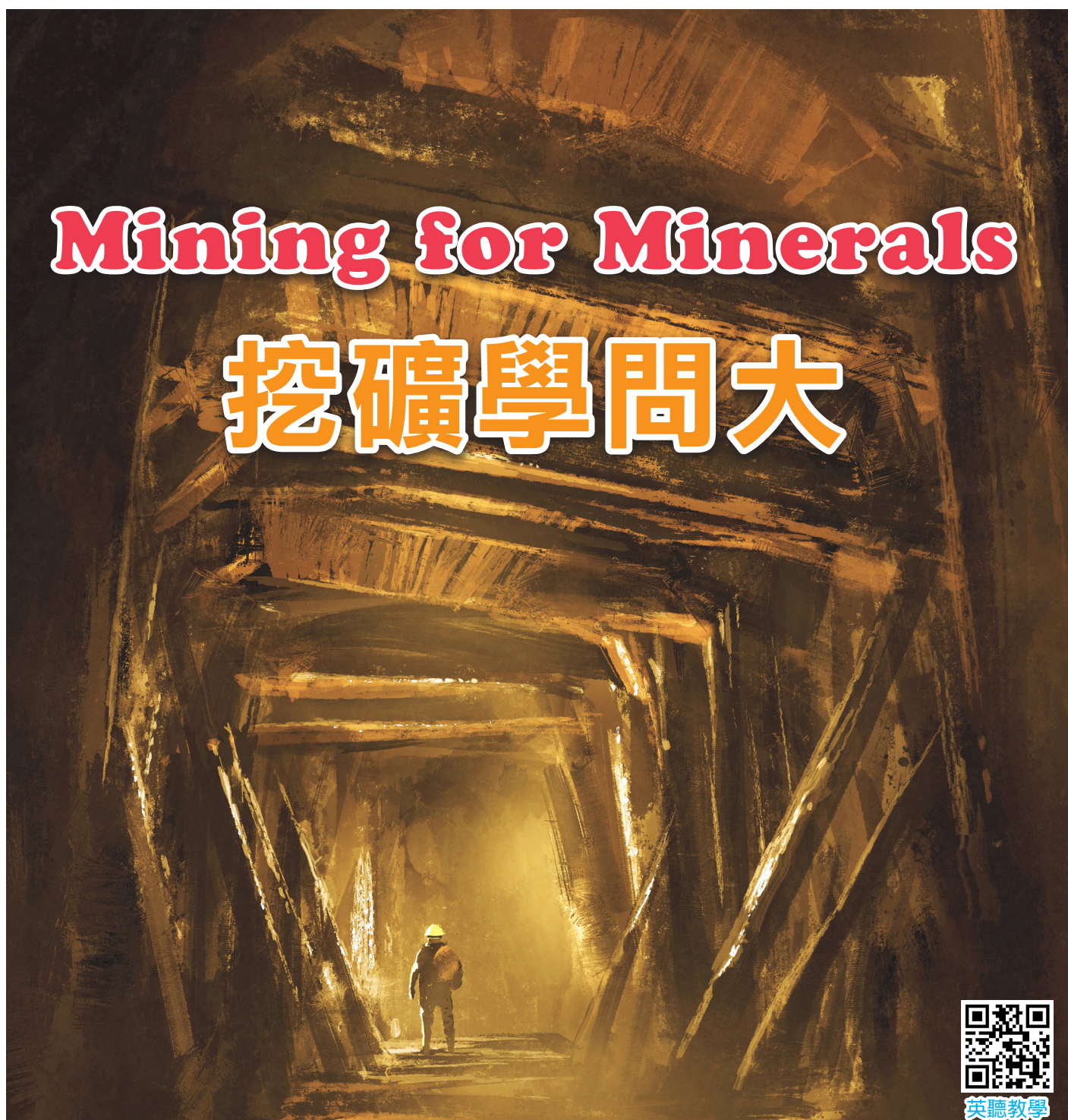
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Mining for Minerals

挖礦學問大



英聽教學

It's a lot more than just digging a deep hole.

開採礦藏，不是隨便挖個深深的洞窟就搞得定。

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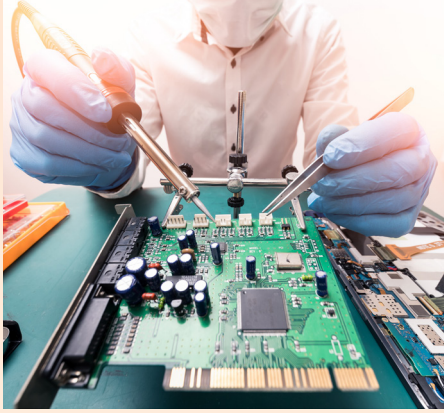
Hami 書城

翻礦 熱帶跑第一

植取有道 污染 0



英文 / Leila Luo 圖 / 123RF



Modern technology, like smartphones, TVs and even refrigerators require raw materials, such as iron and nickel, to manufacture. The process of getting these materials from underground is called mining. It's dangerous dirty work. Scientists in the mining industry are testing new sustainable solutions, including phytomining. That means using plants instead of traditional machinery to mine.

生產製造智慧型手機、電視和冰箱等現代科技產品，皆需要鐵、鎳等原料。從地底獲取此類原材料的過程稱為「採礦」，這是一項既危險，汙染性又高的工作。因此礦業科學家正實測各種嶄新、永續解決方案，其中包括以植物取代傳統機械的「植生採礦」。

There are around 700 plants that are good for phytomining because they can absorb large quantities of minerals through their roots before depositing them in their branches and leaves. Unlike old mining methods, the plants don't need harsh chemicals that pollute the environment. Tests have been done in the USA, Italy, Albania, Canada, France, Spain, and New Zealand, but tropical places are the best for this kind of mining.

自然界中適合投入植生採礦的植物約有 700 種，它們都能透過根部吸大量礦物質，再儲存於枝葉之中。與舊式採礦截然不同，植生採礦無須使用汙染環境的刺激性化學物質。該技術曾於美國、義大利、阿爾巴尼亞、加拿大、法國、西班牙和紐西蘭等國試行，但只有熱帶地區才是植生採礦最適合的地方。



manufacture (v.) (大量) 製造

mining (n.) 採礦

industry (n.) 產業

absorb (v.) 吸收

deposit (v.) 存放

知己知彼 守護動物

愛牠 從了解開始



英文 / Andrew Edmunds 圖 / 123RF

Are humans the only animal with personalities? A new study from the University of California, Davis says 'no'. In the study, golden-mantled ground squirrels showed four main personality traits: boldness, aggressiveness, activity level and sociability. Studying animal personality is new but important for predicting how wildlife behaves, which helps us protect them better.

人類是唯一擁有個性的動物？加州大學戴維斯分校的新研究否定了此一說法。於此研究實驗中，加利福尼亞金背黃鼠表現出膽量、攻擊性、活力和社交能力四類主要的性格特徵。研究動物個性是門新興學科，預測野生動物的行為有不可忽視的重要性，有助於我們能以更妥善地方式保護牠們。



靜謐尙伴修道院

時刻沉思英古蹟

英文 / Andrew Edmunds 圖 / 123RF

Visitors to the ruins of English monasteries often chat loudly. To encourage more peace and quiet at these sites, English Heritage ran a trial project at 16 monastic sites for one month called an “hour of contemplation”. This hour of quiet was observed during the last open hour each day at each site.

有些遊客於參訪英國修道院遺跡時常縱聲交談。為鼓勵人們平和、寧靜地欣賞古蹟，英格蘭遺產委員會決議於16處修道院，進行為期一個月「沉思一小時」的實驗計畫：於每日閉院前的一個小時，所有人都必須共同遵守，實現一小時的寧靜。



personality (n.) 性格

squirrel (n.) 松鼠

ruin (n.) 廢墟

chat (v.) 聊天

heritage (n.) 遺產

問星要礦 可行？再等等！

英文 / Leila Luo 圖 / 123RF



Rocky objects that float around in space are called asteroids. Most asteroids are between Mars and Jupiter. Scientists estimate there are more than 1,500 asteroids that would be good for us to explore because they have a lot of things we need, for example magnesium and gold. Several space agencies and startups are working on the new challenge of mining asteroids.

飄浮在太空中的岩石星體稱為小行星，太陽系中大部分的小行星聚集在火星與木星軌道之間。據科學家估計，逾 1500 顆小行星蘊藏我們所需的鎂、金等金屬資源，值得我們探勘。現在，數個航宇機構與新創公司正戮力解決重重挑戰，讓小行星開採計畫成為可能。

One way is to push an asteroid toward a safe orbit around Earth, the Moon or the ISS, so we can mine closer to home. Another idea is to go to the asteroid, mine for minerals there, then bring the raw materials back to Earth. It wasn't until 2018 that Japan became the first country to bring back samples from an asteroid. Successfully mining an asteroid will still require lots more work.

他們提出了開採小行星的方法；其一是將小行星推到地球、月球或國際太空站周圍的安全軌道，如此我們便能就近開採；或是前往小行星，就地開採礦物，再將原料運回地球。想法很優，但直到 2018 年，日本才成為第一個成功帶回小行星樣本的國家。所以要想實現小行星採礦，仍有相當長遠的路要走。

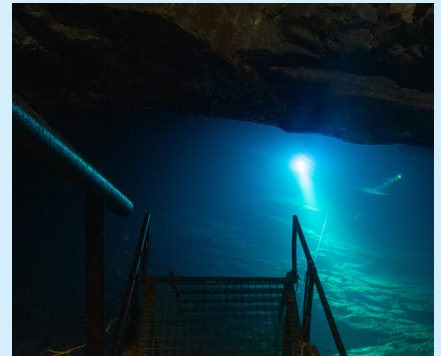


explore (v.) 探勘 agency (n.) 政府專門機構 mine (v.) 開採 mineral (n.) 礦物 raw material (n.) 原材料

探勘危險！機器人出發 挖出水下礦潛力

英文 / Leila Luo 圖 / 123RF, shutterstock

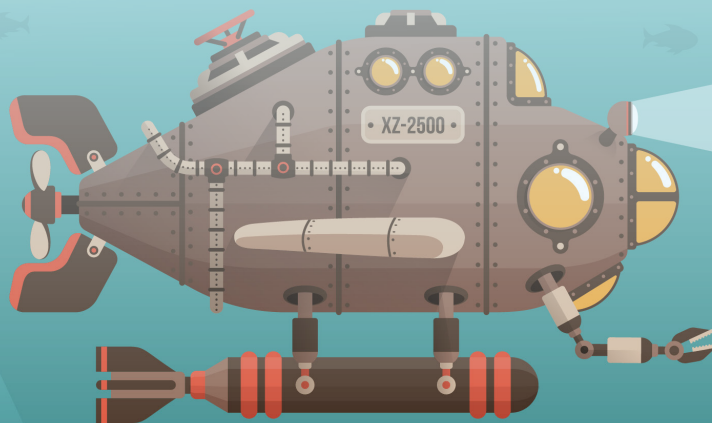
Sending a person into a mine is dangerous enough on land, but it's even worse underwater. In the EU, many flooded mines may still contain valuable raw materials. That's why researchers like Norbert Zajzon are creating robots for deep-sea mining. Zajzon, a geologist at the University of Miskolc in Hungary, is working on the Underwater Explorer for Flooded Mines.



將人送入陸地礦坑裡已很危險，然而水下採礦則是更加兇險。在歐洲，許多被水淹沒的礦井中，可能蘊含著珍貴的礦產。為此，匈牙利米什科爾茨大學的地質學家諾伯特·扎伊松與其他研究員，研發深海採礦專用機器人，並致力推動「淹沒礦井——水下探勘者」計畫。

Zajzon and other researchers hope that their UX-1 robot will replace humans in this very dangerous job. After all, when humans dive into a deep-sea mine, “if something goes wrong, you can't just abort the mission,” says Zajzon. However, if a robot has trouble, it can return to the ocean's surface much faster than is safe for humans.

扎伊松與其他研究員將希望寄託於他們的 UX-1 機器人，期盼它能頂替人類，執行凶險的採礦工作。扎伊松解釋，在深海礦井工作，任務途中若有閃失，人無法輕易中止任務、撤離礦井。然而，如遇開採作業難以續行時，採礦機器人可以比採礦人員更迅速、安全地撤回海平面。



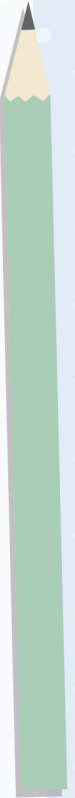
send (v.) 派遣

flooded (a.) 被水淹沒的

replace (v.) 替代

dive (v.) 下潛

abort (v.) 中止



1. What is an advantage of phytomining ?
 - a. It uses traditional machinery.
 - b. It deposits minerals underground.
 - c. It doesn't cause pollution.
 - d. It requires raw materials.
2. Which is NOT a personality trait of squirrels?
 - a. how well they get along with others
 - b. how quick they are to fight
 - c. how brave they are
 - d. how well they predict humans
3. What is the meaning of 'ruin' as it was used in on page 3?
 - a. the remains of a destroyed thing
 - b. to damage something
 - c. to lose money and social status
 - d. to construct something
4. Which word means about the same as 'estimate'?
 - a. predict
 - b. know
 - c. confirm
 - d. decide
5. Which word means 'to cover an area with water'?
 - a. deep-sea
 - b. dive
 - c. flood
 - d. mine
6. Who is interested in mining asteroids?
 - a. geologists and robots
 - b. government departments and new companies
 - c. monks and monastery visitors
 - d. phytomining scientists and plants

Cloze Test A

My older brother is very brave. ___ likes to travel by himself. My younger sister is very sociable. She is always spending time ___ her friends. What kind ___ personality do you have?

Cloze Test B

The deepest mine ___ the world is the Mponeng Gold Mine in South Africa. It goes four kilometers down ___ is still in use today. It ___ over an hour to go from the surface to the bottom.



1.c 2.d 3.a 4.a 5.c 6.b

1. 以植物取代傳統機具的植生採礦，不使用刺激性化學物質，所以 (c) 不會造成環境汙染。

2. 選項中唯有 (d) 對人類行為的預測能力，不是一種個性。

3. 第 3 版第 2 則報導寫到 “the ruins of English monasteries”，意指過去的英國修道院，如今建築已損毀，僅剩斷垣殘壁。所以答案選擇 (a)。

4. (a)predict(v. 預計) 與 estimate(v. 估計) 為近義詞，皆為根據可靠資訊猜測，而非百分之百準確無誤。其他選項，(b)v. 知悉、(c)v. 確認、(d) v. 選擇。

5. (c)flood(v. 使淹沒)。瞬間的強降雨可能會使土地排水不及，造成淹水，甚至釀成洪災；礦井也可能因河水、地下水等大量水源急速湧入，將礦坑及礦道淹沒。

6. 題目問，誰有意發展小行星採礦。查閱第 4 版報導，得知：數個航宇機構 (space agencies) 和新創公司 (startup) 企圖實現小行星開採。航宇機構為政府部門，因此答案為 (b) 政府部門和新公司。

Cloze Test A

1.He 2.with 3.of

我哥哥非常勇敢，他喜歡獨自旅行；我妹妹擅長交際，她總愛和朋友聚在一起。而你又有什麼樣的性格呢？

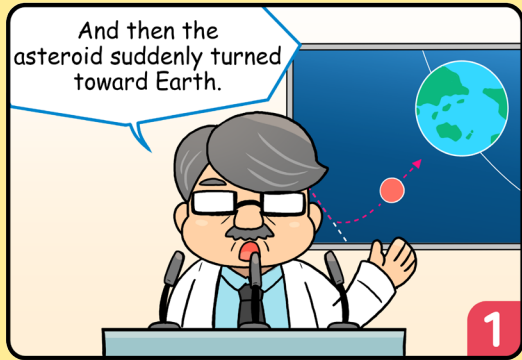
Cloze Test B

1.in 2.and 3.takes

至今仍在開採的南非姆波尼格金礦，是全世界最深的礦井。它深入地下 4 公里，從地表進到礦底，需耗費一個多小時。

熱情過火

腳本 / Leila Luo 漫畫 / 瀚昇



這顆小行星忽然轉向，
朝向地球直衝過來。



是什麼原因所致？



我們毫無頭緒。



艾琳星？真的是妳！
地球，好久不見！來個大擁抱吧！

The Rest is History

伽利略首拍小行星特寫

★ 加斯普拉高清細細看

英文 / Andrew Edmunds 圖 / 123RF

On the 29th of October 1991, the American spacecraft Galileo made its closest approach to the asteroid 951 Gaspra. Galileo was the first manmade probe to take a close-up photo of an asteroid. The data it sent back has helped scientists better understand the asteroids in our solar system.

1991 年 10 月 29 日，美國無人太空船伽利略號飛掠 951 號小行星加斯普拉，太空史上第一張由人造探測器拍攝的小行星特寫照片就此誕生。伽利略號傳回地球的數據，幫助科學家更了解太陽系中的小行星。