

News in Brief

Iran Produces

Clean Fuel From Water

Iranian researchers at Zanjan Fundamental Sciences University, along with researchers from Russia and the US, have synthesized a catalyst capable of water oxidation as a clean fuel.

According to ISNA, there are efforts underway to analyze water further.

The hydrogen obtained from water can be used as a clean energy.

The scientists have managed to produce the compound with high efficiency and the lowest energy consumption to oxidize water.

They also synthesized manganese oxide for oxidizing water in acidic conditions, which acts like expensive platinum. The cheap material is as qualified as platinum in the process of water oxidation.

Any type of energy, including wind, tide, etc. can be changed to electricity for hydrogen production. Therefore, hydrogen can work efficiently as energy saver.

Results of the study have been published in Dalton Transactions Journal.



Artificial Trees Remove Carbon Dioxide From Air

A new breed of artificial trees able to scrub carbon dioxide from the air could help reduce greenhouse gas pollution.

Developed by Klaus Lackner of Columbia University, the air filtering device features strands of a resin-based material that attracts the carbon dioxide and binds to it—capturing the carbon dioxide directly from the air and creating bicarbonate salt, IdeaConnection wrote.

In Lackner's demonstration of the material's capabilities, a tube embedded with 25 micrometer particles of the resin was attached to one side of a small greenhouse filled with thriving plants.

When a fan was used to move the air over the resin, carbon dioxide levels in the greenhouse began to drop at a level faster than the plants alone could manage.

Lackner estimates it could take as many as 10 million "artificial trees" to lower the atmospheric carbon dioxide concentrations by 0.5 ppm per year. While this application may be a bit in the future, the device has a more near-future use.

The carbon dioxide can also be released at will by adding water to the material, which could make it useful as a way to supply carbon dioxide to greenhouse plants in order to help ensure healthy plant growth.



Flightless Penguin Puzzle Solved

The puzzle of why the penguin is unable to fly may have finally been solved.

Researchers believe that the bird's underwater prowess may have cost it its ability to fly, BBC said.

By looking at seabirds closely related to the penguin, scientists confirmed that a wing that is good for flying cannot also be good for diving and swimming.

The study is published in the Proceedings of the National Academy of Sciences.

Professor John Speakman, from the University of Aberdeen and the Chinese Academy of Sciences, said, "Like many people, I've always been interested in penguins, and seeing them do these phenomenal marches across the ice, I've often thought: 'Why don't they just fly?'"

"And it's really great to be involved in the group of people that have solved it."

Longstanding Theories

There are several longstanding theories about why birds cannot fly. One idea is that some species became flightless because of a lack of predators on the ground.

"The other idea is a 'biomechanical hypothesis,'" he explained.

"When the bird is flying and diving it has to use its wings to do two different things. The biomechanical hypothesis is that you cannot build a wing that is good at doing both."

To investigate, the researchers looked at a close relative of the penguin: the guillemot.

This black-and-white seabird not only looks a lot like a penguin, it can swim nearly as well. But unlike the penguin it can fly.

The researchers analyzed the amount of energy that the bird was using. They found that it could dive with relative ease, but while flying was much more tiring for the guillemot.

Prof. Speakman said, "The energy costs are very, very high. These birds have these very short wings and they have to beat them at an incredible speed to stay in the air. It is exhausting for them."

The researchers believe that the guillemot is using so much energy, it is only just able to keep itself afloat.

They said that the bird represented a tipping point between seabirds that are able to both fly and swim, and those that are flightless.

In the past, they suggest, the penguin would have faced an evolutionary trade off between staying airborne or having agility beneath the waves.



Waterproof Shorts With Built-In Dry Bag

Holidaymakers no longer have to worry about leaving expensive items on the beach when swimming, thanks to the latest creation by an American designer.

Tom Turner, from Salt Lake City, has created an innovative pair of swimming shorts that offer a solution to the issue of leaving expensive items unattended, Daily Mail wrote.

Styled to look like regular shorts, the trunks include a waterproof pocket that allows swimmers to safely store a phone, wallet and other valuables.

By simply putting the items in the 8-cm pocket and turning a secure lock, the valuables can be kept waterproof while the wearer is swimming.

The Stash Pocket is attached into the interior of the shorts by a lock-down fitment, and securely sewn into the material.

Turner, 47, said, "My wife and I were getting ready for a trip to the beach. She mentioned that she wished someone made something to keep her phone dry and safe."

"Every time we went to the beach we had to hide our valuables under a towel while we went into the water, and they could've easily been stolen."



Butterflies That Fly Underwater

We've all been taken aback by the beauty of a butterfly. But who knew sea butterflies were almost as impressive.

Karen Osborn, a research zoologist at the Smithsonian Institute, has captured a series of never-before-recorded photographs of the fascinating creatures, which she collected while scuba diving off the coast of Mexico and California, Huffington Post said.

Sea butterflies, also known as pteropods, are related to snails but they use their muscular foot to swim through the ocean rather than creep along the ground.

Osborn snapped them in a shallow tank of clear water, after bringing them back from the open ocean to the Smithsonian's research ship.

With a Canon 5D camera with a 65 mm lens, Osborn uses three to four flashes to capture the colors of the mostly-transparent sea creatures.

And the photographs are being put to scientific use, helping her and fellow zoologists decipher the impact pollution is having on the world's oceans and the creatures in them.

It is already known that climate change is making our ocean's more acidic, and this acid is harmful to certain types of pteropods as it dissolves their shells.



Iranians Devise New Esophagus Surgery

Iranian scientists have designed a new method to treat surgical thoracoscopy in esophagus atresia and have introduced the method to other countries.

"Recently, a new method for esophagus atresia by thoracoscopy was introduced to surgeons across the world after its article was published in the US Pediatric Surgery Journal in March 2012," said a professor at Mashhad Medical University's Pediatric Surgery Department, Mehran Hirdarf, was quoted as saying by ISNA.

He said esophageal atresia (or oesophageal atresia) is a congenital medical condition (birth defect) that affects the alimentary tract.

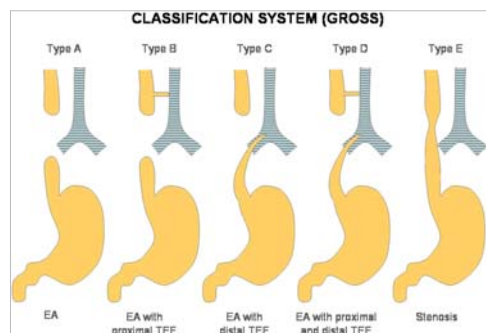
The medical condition causes the esophagus to end in a blind-ended

pouch rather than connecting normally to the stomach. It comprises a variety of congenital anatomic defects that are caused by an abnormal embryological development of the esophagus.

The method does not call for opening the respiratory tract and the two esophagus separated from each other can be linked through four holes in the respiratory tract.

Some of the positive aspects of the operation include reduction in operation time, prevention of adhesion and fewer side-effects.

According to Hirdarf, 30 babies have so far undergone successful surgery by this method, noting that 30-45 babies are born with this congenital defect in the northeastern city of Mashhad annually.



Farewell to Iran's Mother Teresa

Friends, relatives, colleagues and patients paid tribute to Professor Parvaneh Vosough, chairman of the Board of Trustees of Mahak Cancer Hospital, during the funeral ceremony held in Tehran on May 21.

Prof. Vosough died on May 19 at the age of 78, Mehr News Agency reported.

Everyone in Mozaffar Street loved her green Volkswagen that was a fixture at Ali Asghar Hospital, making evident the presence of one who had dedicated her life to children suffering from cancer.

Iran's cancer children are bereaved, since they will no longer see her love-

filled eyes that cared for one and all.

Vosough was born in 1935 in Tafresh, central Iran. She received her MD in general medicine in 1963 from Tehran Medical University. She completed her specialty and subspecialty in Cambridge, Massachusetts, and Illinois universities. In 1971, she returned to Iran and began to work at Ali Asghar Hospital in Tehran.

Mofid and Tehran Children hospitals were also among places where Prof. Vosough practiced medicine. As a founding member of the subspecialty course in blood and children's cancer in Iran, she founded the first hematology and oncol-

ogy ward in Ali Asghar Hospital.

Ten years ago, she helped found the Mahak Subspecialty Hospital.

Her colleagues say that she received many proposals for taking up residence in the US and European countries for research and a lucrative salary, but she was dedicated to provide free services to her country's cancer-suffering children. She rejected the Western comforts to live beside cancer-suffering children in Iran and help them.

Prof. Vosough did not marry and even treated many children with cancer from around the world. Perhaps for this reason, she was called "Iran's Mother Teresa".



Professor Parvaneh Vosough receives a flower.

B Vitamins May Slow Advance of Alzheimer's

Those at risk of developing Alzheimer's may be able to slow its onset through daily B vitamins.

According to NewScientist, we already know that a high level of the amino acid homocysteine in the blood is a risk factor for Alzheimer's, and that B vitamin supplements help reduce homocysteine levels. But it was unclear whether or not these supplements would slow the progression of mild cognitive impairment (MCI) to Alzheimer's.

David Smith and Gwenaelle Douaud at the University of Oxford led a research effort to find out. They used MRI to track changes in the brains of 200 elderly volunteers with MCI over two years. During this time, half were given high doses of vitamin B12, B6 and folic acid—300, 20 and 4 times the UK guideline daily amounts, respectively. The rest took a placebo.

Role of B Vitamins

In 2010, Smith and his colleagues showed that high doses of B vitamins slowed whole-brain shrinkage by up to 53 percent in patients with above average homocysteine levels. Now Smith and Douaud's team have looked deeper to work out which brain regions are best protected.

They found that it was the areas of the brain most seriously affected by Alzheimer's, including the hippocampus and cerebellum, that were protected in volunteers given the vitamins. For instance, in those with high homocysteine, the atrophy rate in these brain regions was 5.2 percent in the placebo group but just 0.6 percent in the vitamin group.

The reduction of atrophy seemed to translate into better brain function too: those given B vitamins performed bet-

ter on cognitive tests.

"It demonstrates for the very first time that it is possible to modify the disease process in Alzheimer's," says Smith.

Simon Ridley at Alzheimer's Research UK cautions that more work is needed to explore the link. "It's important to note the effects in this trial were only seen in a subgroup of people with MCI," he says. "We must also remember that only a proportion of people with MCI will go on to develop Alzheimer's, and it's not yet clear why this is the case."

But Smith points out that performing that additional work will take time. He says that since vitamin supplements are safe for most people they could perhaps be offered to high-risk people as a precaution.

"I think we need to bite the bullet and say, is there any reason that elderly people with memory problems shouldn't



be offered them in the meantime?" he says.

In fact, he adds, some doctors are already providing B vitamins. "I raised the same question at a conference last year and a psychiatrist in the audience put his hand up and said, 'We already do since your first paper came out.' So there's nothing to stop clinicians from doing this."