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What is it?

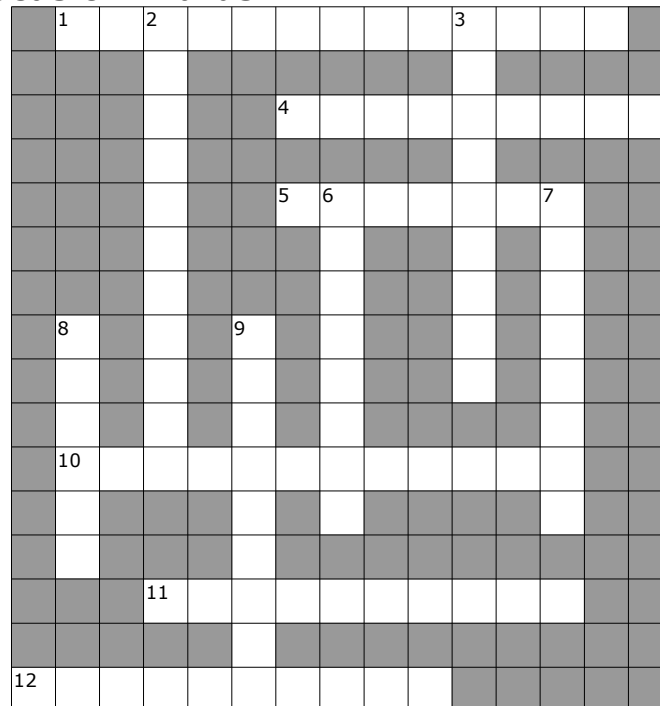


What is the bright patch of iridescent looking feathers on a duck’s wing called?



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Crossword – focus on lizards



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Across

1. The phenomenon in which scattered light appears blue and which when reflected through yellow oil droplets gives chamaeleons and green snakes their green colouration (13)
4. Also known as Old World lizards (9)
5. The mineral element stored in the endolymphatic neck glands of geckos (7)
10. Afrikaans name for an agama (12)
11. Word used to describe a tail that is specially adapted for wrapping around an object (10)
12. Their name comes from the Greek for "ground / earth lion" (10)

Down

2. Thin "membrane" that sweeps across the eye of most lizards when they blink (11)
3. Correct description of a chamaeleon's foot structure (9)
6. The spontaneous casting off of the tail when a lizard is injured or under attack (8)
7. The only lizards in Southern Africa with forked tongues (8)
8. The only truly vocal lizards (6)
9. A sensory structure capable of light reception located on the upper side of the fore brain in various reptiles (9)

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Snippets

- ❑ New measurements show that Earth is smaller than previously thought – by 2.5 millimeters! Although the change is tiny, experts say it could have implications for predicting sea-level rise and the effects of global warming (get the facts on global warming).
 - http://news.nationalgeographic.com/news/2007/07/070709-earth-size_2.html
- ❑ Brazil has given the initial go-ahead for the construction of two hydro-electric dams to be built on the longest tributary of the Amazon River.
 - <http://news.bbc.co.uk/2/hi/americas/6286804.stm>

- ❑ China, the world's fastest growing economy, has earned another startling superlative: the highest annual incidence of premature deaths triggered by air pollution in the world, according to a new study.
 - <http://news.nationalgeographic.com/news/pf/80743027.html>
- ❑ US scientists believe they may have found a way to stop the growing problem of bacteria becoming resistant to current drug treatments.
 - <http://news.bbc.co.uk/2/hi/health/6283530.stm>
- ❑ The number of environmentally-aware people who think before scoffing whatever fish is on the menu is growing. More than 3 000 of them have telephoned the "seafood line", 079 499 8795, over 11 000 times since it was launched in December, to find out whether the fish in a restaurant - or in a supermarket - was allowed to be sold, was threatened, or the way in which it was caught was environmentally destructive.
 - http://www.iol.co.za/index.php?from=rss_Environment&set_id=1&click_id=14&art_id=vn20070710005523847C957689
- ❑ Highly efficient fluorescent light bulbs are widely touted as environmentally friendly, but they have created a recycling headache for the EPA and local governments. More often than not, their toxic ingredients simply end up in landfills, where the chemicals can leach into soil and water and poison fish and other wildlife.
 - http://www.livescience.com/environment/070709_cfl_mercury.html
- ❑ The skipper of a chartered Kalk Bay fishing boat was fined R7 500 by Table Mountain National Park's marine unit for letting tourists catch a boatload of undersized fish in a marine protected area. Some of the fish were not only undersized but on the endangered list.
 - http://www.iol.co.za/index.php?from=rss_Environment&set_id=1&click_id=14&art_id=vn20070716011027640C594605

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A small body of determined spirits fired by an unquenchable faith in their mission can alter the course of history.

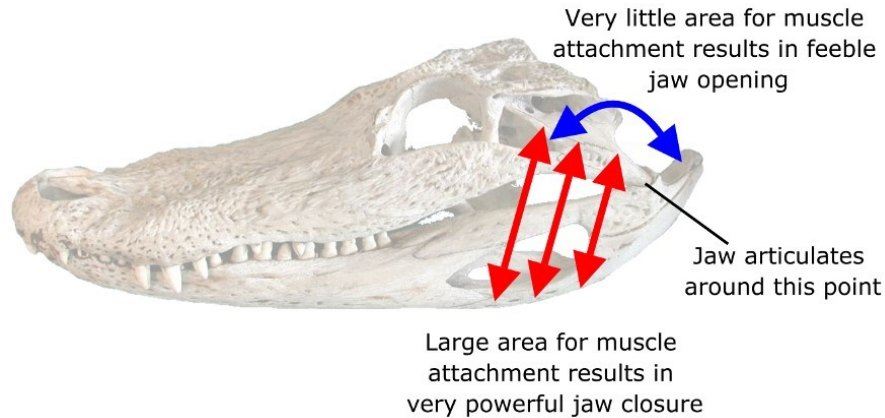
Mohandas Gandhi

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“How to give a crocodile lockjaw”

Those of you who are old enough will still remember the radio advert that started with those words. It has long been known that it is relatively easy to keep a crocodile's mouth closed, but to prevent it from **closing** is another matter entirely – especially when it is chewing down on a part of your anatomy! The explanation is very simple and has to do with the physics of levers.

In the illustration below you will notice that the area for muscle attachment behind the articulation point (hinge) of the jaw is quite small. The muscle is also required to pull on the very short side of the lever's fulcrum. This results in a very weak opening movement for the lower jaw. The muscle attachment area in front of the fulcrum is large and massive muscles are able to attach there. These work very easily on the long side of the lever and can do more work than those on the short side. This is what gives the croc its crushing jaw-closing power. This makes perfect sense when you consider that the only really important jaw movement needed by any animal is the one that closes it.



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The three R's

Try saying this with a Malmesbury bray - reduce, reuse, and recycle. This is, in order what we should all be trying to do in our lives. Those of us who are hogging resources (all of us who are reading this newsletter) are contributing directly to the ecological debt of the planet.

Reducing the amount of resources you use in the first place is the least environmentally taxing way to decrease your environmental footprint. If you cannot reduce the amount that you use then at least try to ...

Reuse or repair whatever you can. Margarine tubs, plastic bags, tin foil etc can all be reused with little effort on your part. It takes far less energy to reuse something than it does to recycle it.

Recycle whatever you cannot reuse. Materials like aluminium typically take 5% of the energy to recycle than they do when produced from virgin material.

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Where have all the giant insects gone?

We have all read that there used to be insects on earth that make those of today look like, well insects. Dragonflies the size of hadedas, six foot long millipedes and spiders the size of wash basins used to lurk in the primeval forests of 300 million years ago. Where have they all gone you may ask, and why did they get to that size in the first place.

Over the years hundreds of different theories have been put forward regarding this mystery, but now, new research seems to have hit on the most likely solution. It is well known that the atmospheric oxygen content at the time was far higher than it is now and this has always been one of the main theories regarding insect gigantism. However, it does not adequately explain how they did it.

The secret lies in the insect's tracheal breathing system. Unlike animals with lungs, insects need to "pipe" oxygen to every cell in the body through an elaborate network of tubes and tubules - the tracheal system. The larger the insect becomes the more of its body is taken up by the breathing apparatus, until at around a length of 15cm there is no longer sufficient space for its other vital organs. This is what now limits the maximum size of insects on earth. When the atmospheric oxygen content was higher, a higher percentage of oxygen was able to reach the cells **through very much narrower tubes**, which took up less space in the body, hence allowing them to reach a bigger size.

The research appeared recently in the Proceedings of the National Academy of Sciences.

Amazing elephant story (thanks Craig!)

In 1986, Mikele Mebembe was on holiday in Kenya after graduating from Northwestern University. On a hike through the bush, he came across a young bull elephant standing with one leg raised in the air. The elephant seemed distressed, so Mikele approached it very carefully. He got down on one knee and inspected the elephant's foot and found a large piece of wood deeply embedded in it. As carefully and as gently as he could, Mikele worked the wood out with his hunting knife, after which the elephant gingerly put down its foot.

The elephant turned to face the man, and with a rather curious look on its face, stared at him for several tense moments. Mikele stood frozen, thinking of nothing else but being trampled. Eventually the elephant trumpeted loudly, turned, and walked away. Mikele never forgot that elephant or the events of that day.

Twenty years later, Mikele was walking through the Chicago Zoo with his teenaged son. As they approached the elephant enclosure, one of the creatures turned and walked over to near where Mikele and his son Tapu were standing. The large bull elephant stared at Mikele, lifted its front foot off the ground, then put it down. The elephant did that several times then trumpeted loudly, all the while staring at the man.

Remembering the encounter in 1986, Mikele couldn't help wondering if this was the same elephant. Mikele summoned up his courage, climbed over the railing and made his way into the enclosure. He walked right up to the elephant and stared back in wonder. The elephant trumpeted again, wrapped its trunk around one of Mikele's legs and slammed him against the railing, killing him instantly.

Probably wasn't the same elephant...

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What is it – Solution

The patch of feathers on ducks wings (and on those of some parrots) are called specula (singular speculum). The term comes from the Latin word "specere" which means mirror, or to look at or to view. Their metallic lustre comes from structurally derived colours in which light is refracted off the surface of the feather and not through pigmentation.

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Crossword – last month's solution

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