

A close-up photograph of a water hyacinth plant. The plant is characterized by its dense, rounded, green, bulbous leaves that float on water. A single, vibrant purple flower is in bloom, showing its yellowish center. The plant is resting on a bright red, textured surface, possibly a piece of fabric or paper. The lighting is bright, creating sharp reflections on the water and the plant's leaves.

Dr. Veronika Lukášová
Photographer, Lecturer,
Writer

SECRET LIFE OF PLANTS

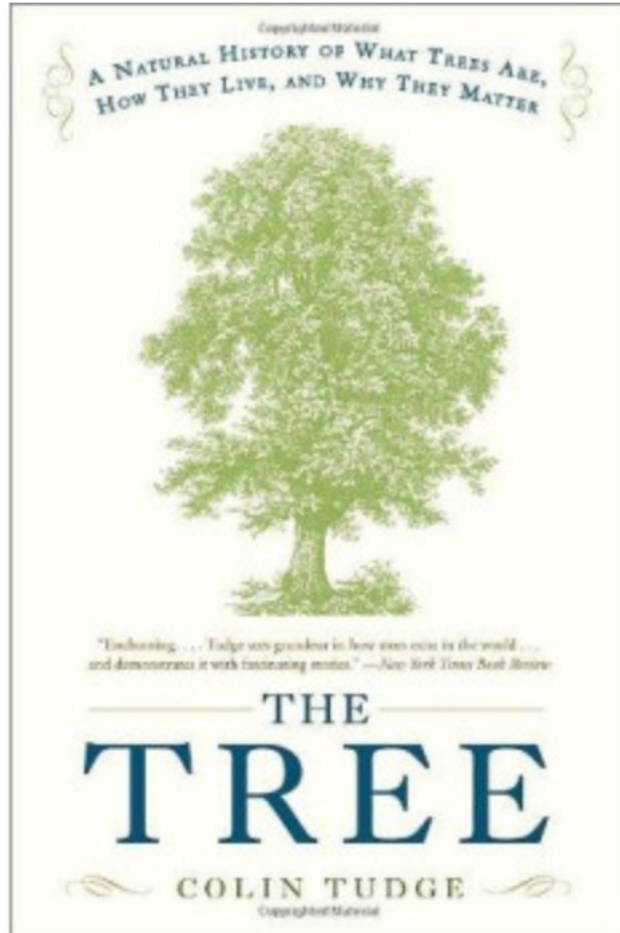
I've always loved plants.

As a teenager, I cultivated succulent collection and also grew edible plants on our city terrace.

I also had a 1x2 m on our allotment and grew a lot of peas.

My first ever photography exhibit was a series of close up of plants.

This was 1999 in Arlington, VA



The Tree: A Natural History Of What Trees Are, How They Live, And Why They Matter

I always loved trees. So I decided to learn more about them.

In perpetual dialog with all that surrounds them, trees “gauge what’s going on as much as they need to, and they conduct their affairs as adroitly as any military strategist.” How? By growing toward light; concocting chemical deterrents to pests from raw materials they take from the air, water and soil; thickening their trunks in response to stress; and attracting their animal collaborators when it’s time to reproduce.

••and looked for
new ways to
portray them••



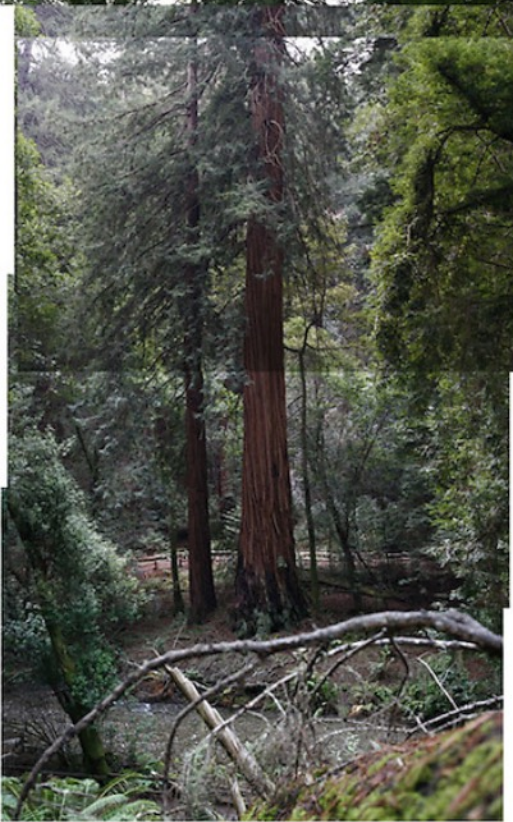






























Nature Dead

2011









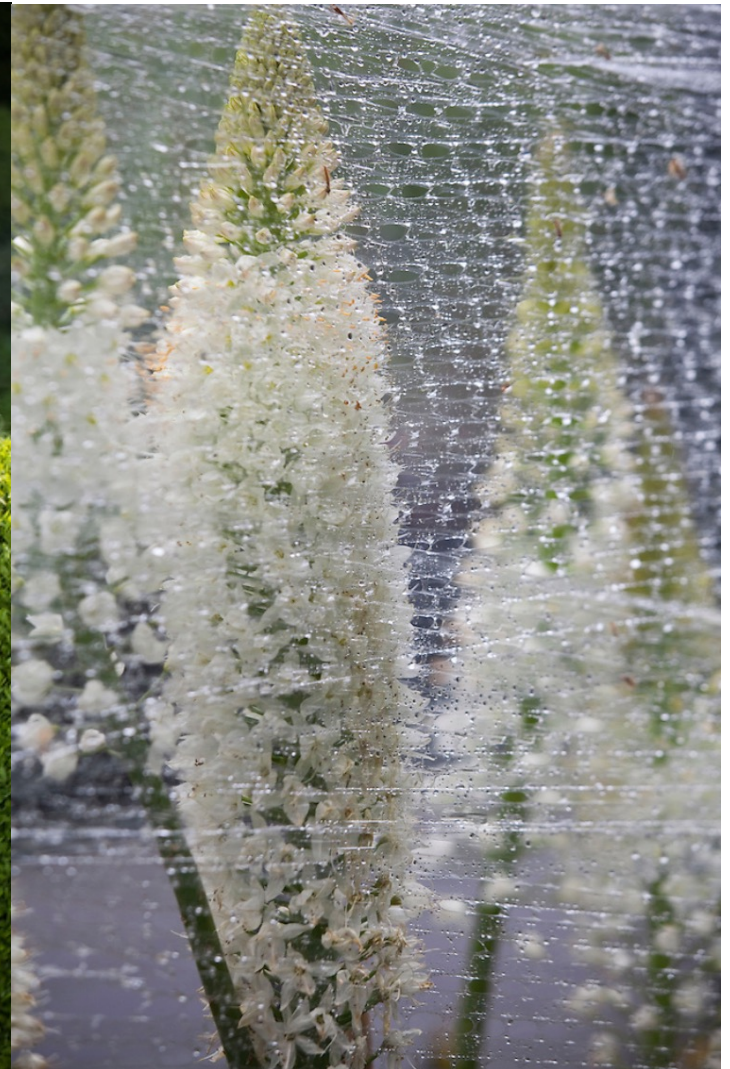






**Chelsea
Flower
Show
2015**





RHS Chelsea 2015: all the show gardens in pictures

< 01 02 03 04 05 06 07 08 09 **10** 11 12 13 14 15 >



Odds: 5-1

Designer: Chris Beardshaw Exhibitor: The Morgan Stanley Healthy Cities Garden

By the same token, the head boy of the gardens world Chris Beardshaw is very much part of the "home team" at the RHS (appointed as an "RHS Ambassador" last month). His gently modern design of meadow planting and box hedges will not frighten any horses – or judges – so could win. My main worry is that the ambassador may not be spoiling us with too much excitement.

We will be adding in photographs of the gardens as soon as we receive them. Carry on for more images later in the gallery.

Chatsworth garden wins top prize at Chelsea flower show

Dark Matter garden and Sculptor's Picnic garden pick up awards in fresh and artisan categories



Chatsworth Garden at Chelsea flower show. Photograph: Veronika Lukasova/Zuma Press/Corbis

Most popular

THE TIMES Working Life

News | Opinion | Business | Money | Sport | Life | Arts | Puzzles | Papers

Welcome to your preview of The Times

Turning a curve ball into a winner at Chelsea



Jenny Hirschhorn

Last updated at 12:01AM, May 21 2015

Matthew Wilson's long career in gardening is still presenting new challenges

A throwaway remark by Alan Titchmarsh inspired Matthew Wilson's

Matthew Wilson's Royal Bank of Canada Garden has been awarded a silver gilt medal at this year's Chelsea Flower Show
Veronika Lukasova/ZUMA Press/Corbis









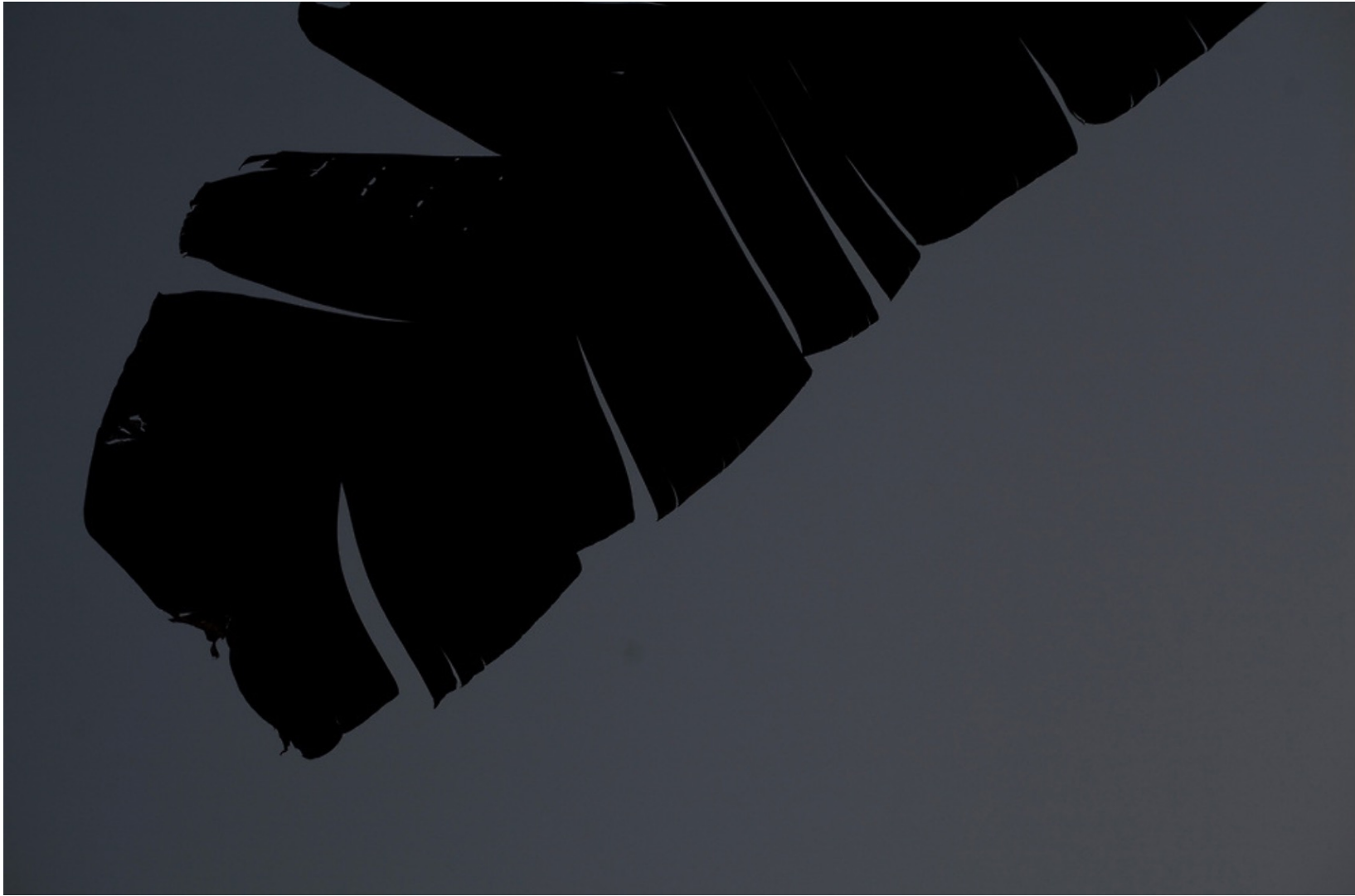


**Vietnam
Mekong
Delta
2019**





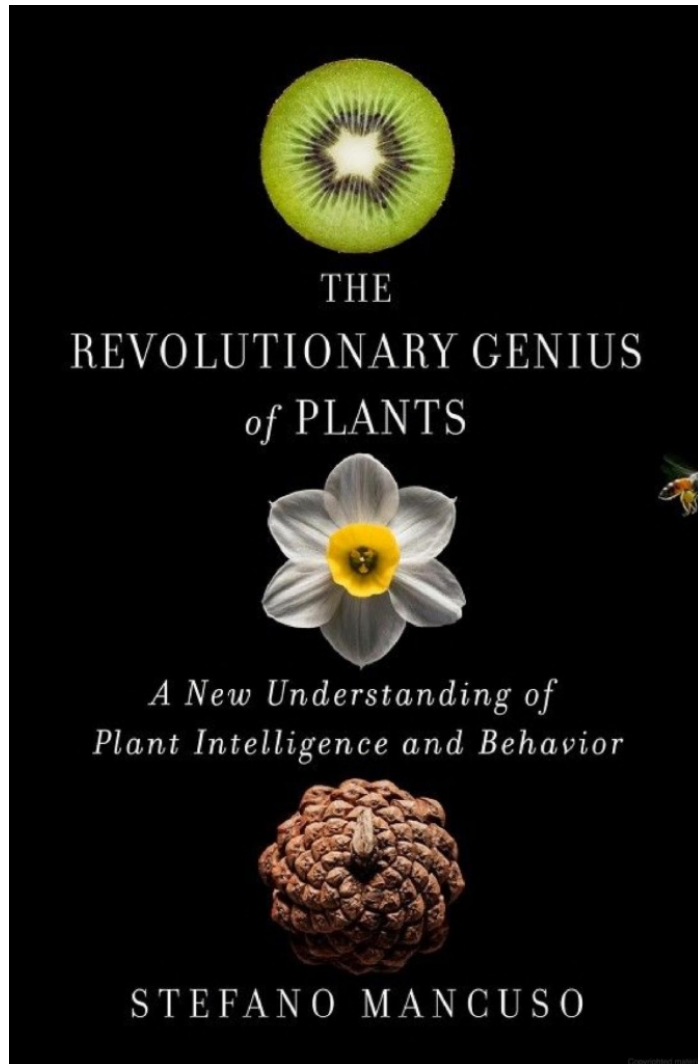












The Revolutionary Genius of Plants

A New Understanding of Plant Intelligence and Behavior
2021

Stefano Mancuso studies what was once considered laughable – the intelligence and behaviour of plants.

His work is contentious, he says, because it calls into question the superiority of humans.



© You need to imagine a plant as a huge brain' ... the plant neurobiologist Stefano Mancuso. Photograph: Alessandro Moggi

STEFANO MANCUSO is professor of the Agriculture, Food, Environment and Forestry department at University of Florence. He is a director of the International Laboratory of Plant Neurobiology

<https://www.thethirdwayofevolution.com/people/view/frantisek-baluska>

<https://www.theguardian.com/environment/2020/apr/05/smarty-plants-are-our-vegetable-cousins-more-intelligent-than-we-realise>

https://www.ted.com/talks/stefano_mancuso_the_roots_of_plant_intelligence?language=en

If you let a drop of water fall on a Mimosa Pudica its kneejerk response is to recoil its leaves, but, if you continue doing so, the plant will quickly cotton on that the water is harmless and stop reacting.

The plants can hold on to this knowledge for weeks, even when their living conditions, such as lighting, are changed.

“That was unexpected because we were thinking about very short memories, in the range of one or two days - the average memory of insects,” says Mancuso. “To find that plants were able to memorise for two months was a surprise.”



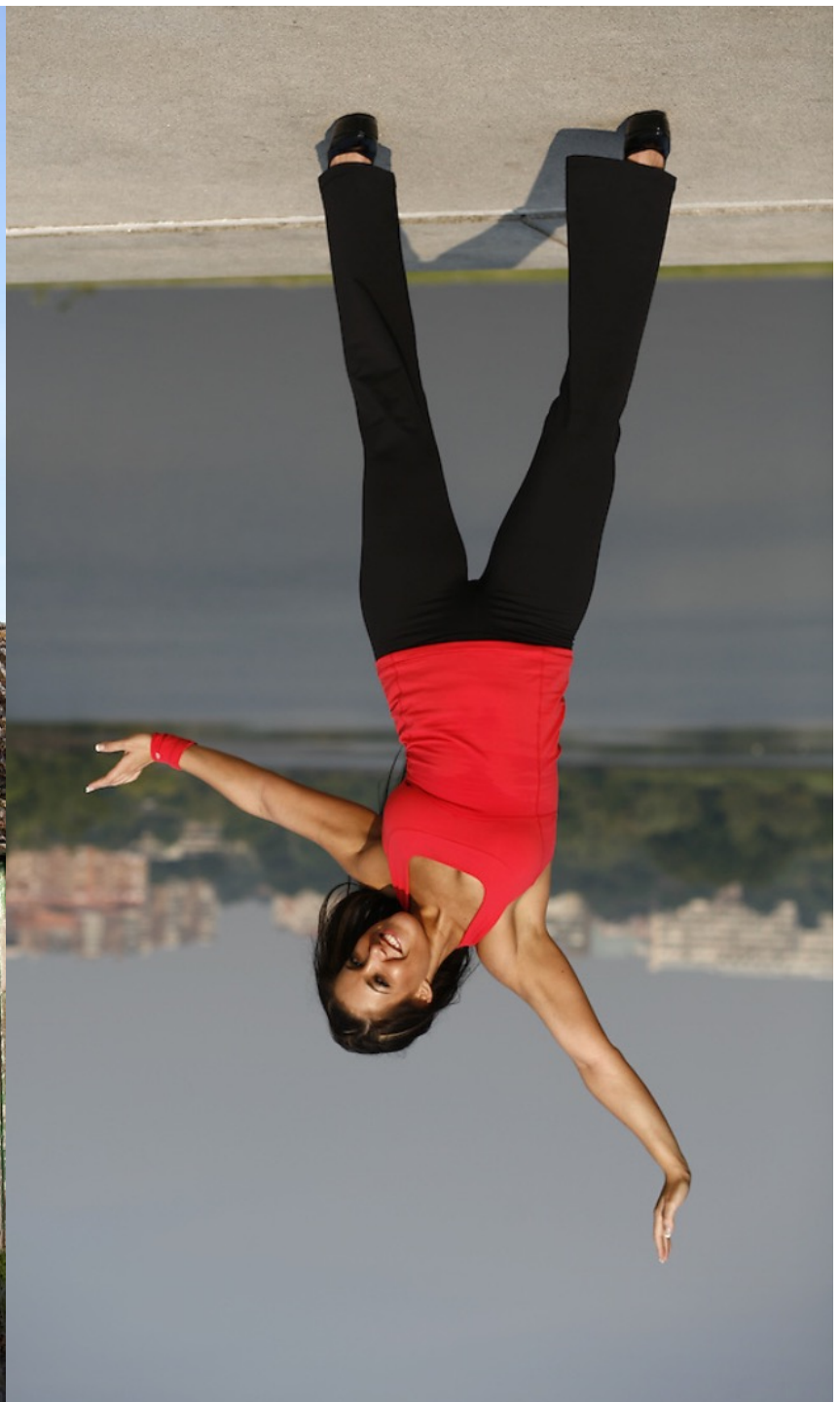
<https://www.theguardian.com/environment/2020/apr/05/smarty-plants-are-our-vegetable-cousins-more-intelligent-than-we-realise>

https://www.ted.com/talks/stefano_mancuso_the_roots_of_plant_intelligence?language=en

Mancuso imagines plant like an upside-down human.

The part above the ground is for reproduction, the underground part (root system) is the brain.

This idea is not new. It was first proposed by pre-Socratic philosopher Democritus (460-370BC).





PLANT CONSCIOUSNESS ?

Let's talk about awareness, suggests Mancuso. Plants are perfectly aware of themselves.

A simple example is when one plant overshadows another - the shaded plant will grow faster to reach the light.

But when you look into the crown of a tree, all the shoots are heavily shaded. They do not grow fast because they know that they are shaded by part of themselves. "So they have a perfect image of themselves and of the outside," says Mancuso.

ARE PLANTS ANIMATE OR INANIMATE OBJECTS?

Democritus was convinced that plants are animate - they moved! However, majority of philosophers considered plants inanimate. This view has become embedded in a cultural psyche and still influences how majority of people view plants.

It was none other than Charles Darwin who assigned plants an agency in his treatise about carnivorous plants published in 1850s. He valued the genius of plants above human one.



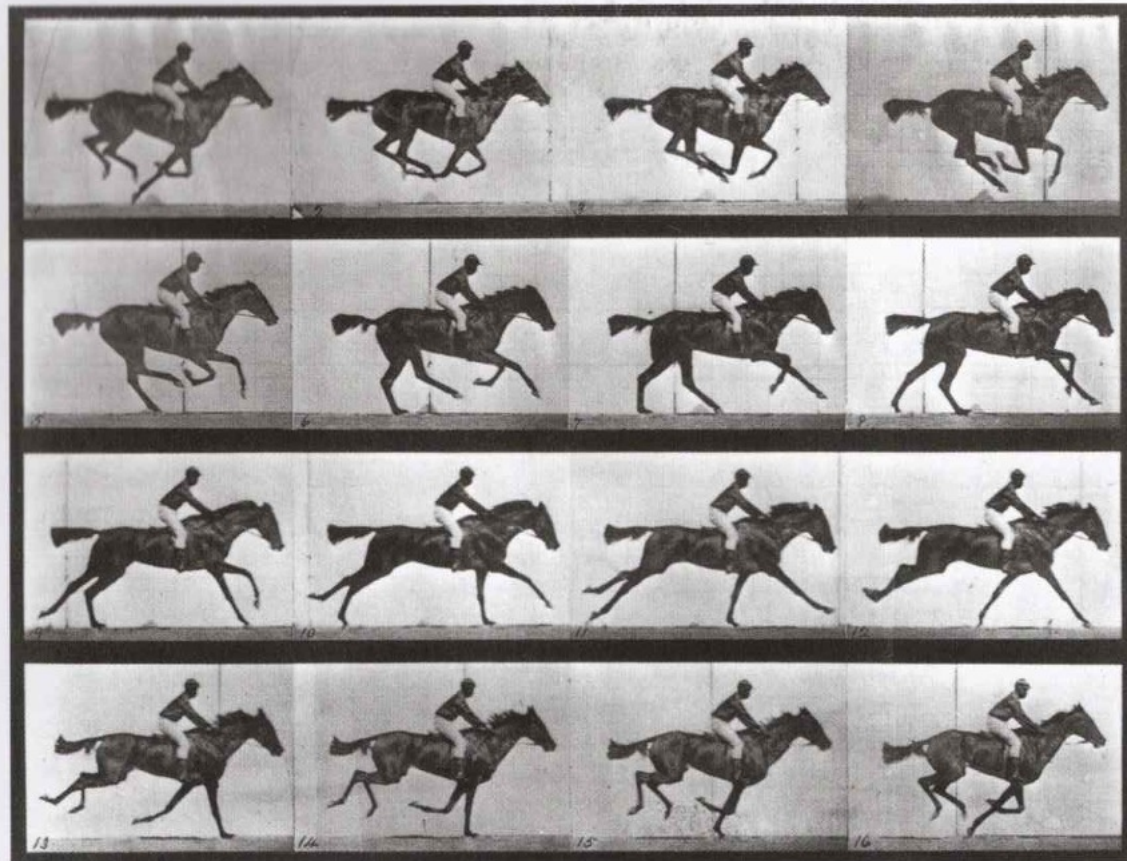
ARE PLANTS ANIMATE OR INANIMATE OBJECTS?

It was none other than Charles Darwin who assigned plants an agency in his many texts about plants. In 1880 he published a book *The Power of Movement in Plants*.

He saw plants as beings endowed with intelligence. He valued the genius of plants above human one.



The *Codariocalyx motorius* (telegraph plant) is a leguminous plant that is widespread in the tropical areas of Asia. Its special feature is its ability to move its lateral leaves fast enough to be seen with the naked eye. The function of this movement is still unknown.



The racehorse Sallie Gardner photographed by Muybridge in 1878. Each image in the sequence corresponds to about one twenty-fifth of a second.

<http://scihi.org/wilhelm-pfeffer-plant-physiology/>

<https://hal.science/hal-03226472/document>

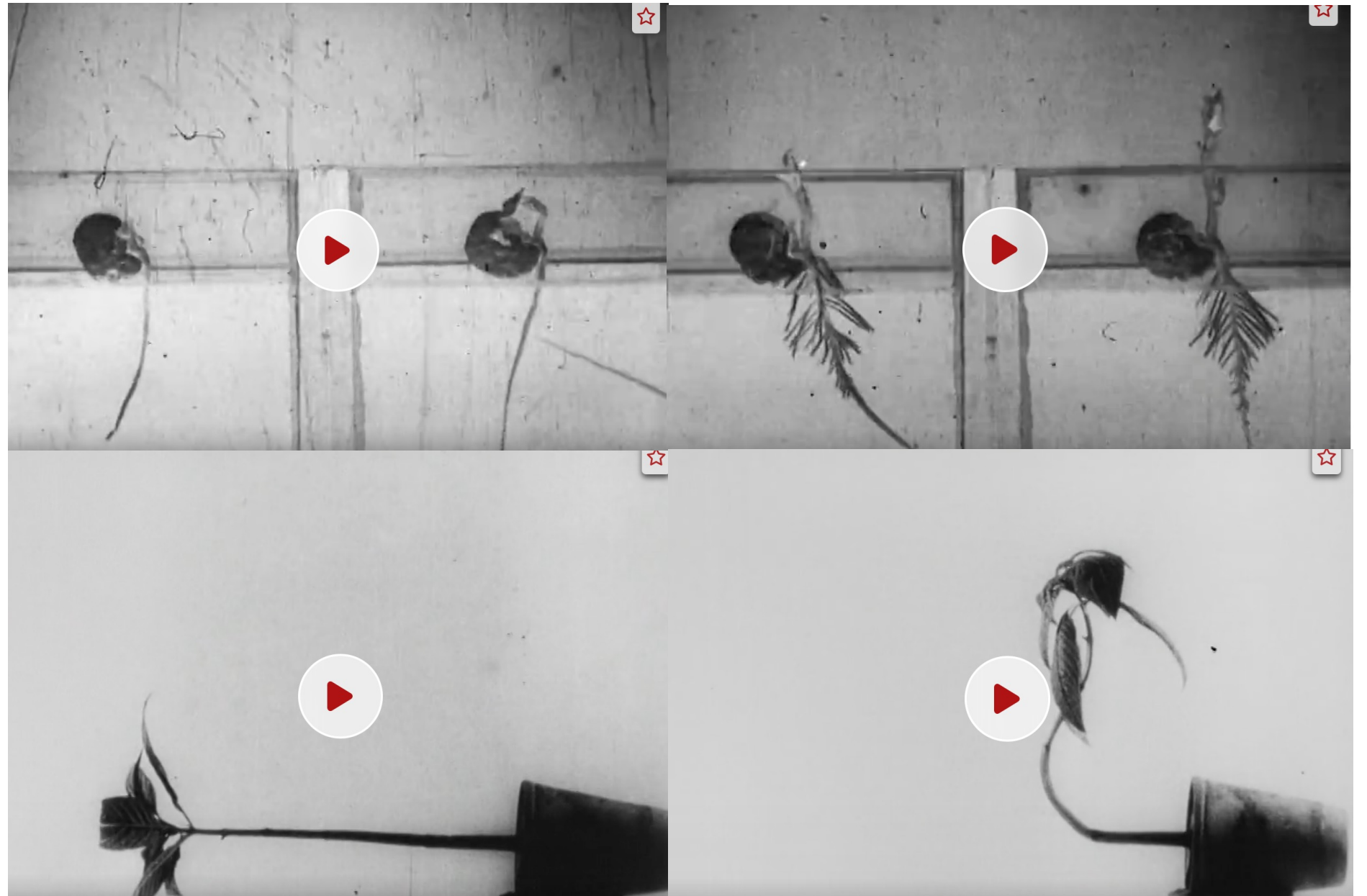
AND YET THEY MOVE!

In 1896, just months after Lumiere brothers introduced world to a concept of film, German botanists Friedrich Phillip Pfeffer (1845-1920) created the first time-lapse movie capturing growth of a plant.



He was inspired by now famous stop-frame sequence of a galloping horse created by Edward Muybridge in 1878. This gave him an idea how to demonstrate that plants are animate. In few seconds he can show events that would take days or even months.

Pfeffer, Wilhelm: Kinematographische Studien an Impatiens, Vicia, Tulipa, Mimosa und Desmodium von W. Pfeffer (1898-1900). Reichsanstalt für Film und Bild in Wissenschaft und Unterricht (RWU), 1940.
<https://doi.org/10.3203/IWF/B-450>





more commonly
wort, perfectly



The common nettle (*Urtica dioica*) has leaves and stems covered with a severely stinging substance that it uses for defensive purposes.

dy with such speed but rather how it knows what to
ly that describes for the first time the extraordinary
stics of this species, Ernesto Gianoli and Fernando
r two hypotheses. The first is that because of its per-
s of volatile substances, the *Boquila* plant is able to
to imitate. But this is a highly unlikely supposition
imitates the leaves that are closest to it even when
end of volatile compounds produced by dozens of
ne second hypothesis, which assumes a possible hor-
genes from the host plant to the *Boquila*, carried by
m, seems even more improbable.

016. I— together with my dear friend and coworker

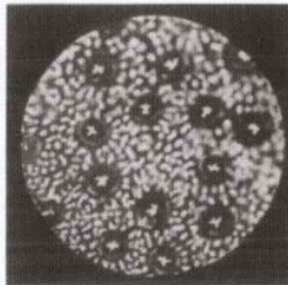
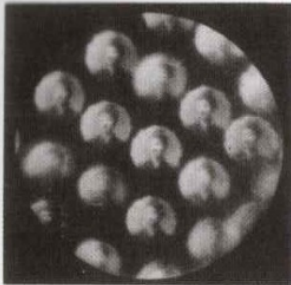
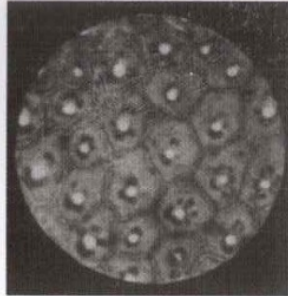
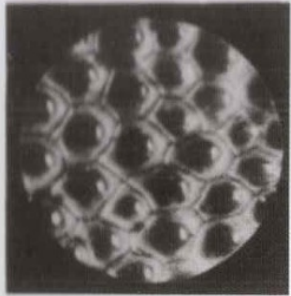
Professor Frantisek Baluska from the University of Bonn (we have writ-
ten about fifty scientific papers together)—offered a new solution to the
puzzle: that the plant has some sort of visual capacity. It may sound like
an incredible hypothesis or even science fiction, but it seems to me the
one that is most likely to be true.

As early as 1905, the famous Austrian botanist Gottlieb Haberlandt
(1854–1945), in one of his writings that at the time caused a sensation
in the scientific community and beyond, proposed that plants were
able to perceive images—and thus had a kind of visual capacity—due
to the cells of their epidermis. Very often, in fact, the epidermis of a
plant is convex like a lens and could conceivably convey the images
of surrounding plants to the underlying cellular layer. According to
Haberlandt, the epidermic cells of plants work like ocelli (a type of min-
ute, simple, primitive eye) found in many invertebrates. Francis Darwin
liked Haberlandt's theory and talked extensively about it in his writings
on the perceptive capacities of plants, adding to its scientific legitimacy.

At the congress in Dublin where Francis Darwin argued that plants
were able to remember and act according to those memories, the Brit-
ish botanist Harold Wager (1862–1929), a fellow of the Royal Society,
showed an astonished audience numerous photographs produced
using the epidermic cells of leaves of different species as lenses: detailed
enough images of people and views of the English countryside that
demonstrated, at least from the point of view of simple optics, how the
phenomenon of vision in plants was perfectly plausible. Then silence.
As happens to numerous theories in biology, especially those concern-
ing plants, Haberlandt's was forgotten. Nobody went to the trouble of
seeking further evidence to confirm it or to deny it altogether. Visual
capacity in plants was apparently too eccentric an idea to be taken
seriously.

Haberlandt's theory fell into oblivion, and no scientific article has
mentioned it in the past century. However, a number of surprising dis-
coveries in the last five years have demonstrated, with strong evidence,

SOMEONE IS WATCHING YOU!



PLANTS HAVE EYES, BOTANIST SHOWS

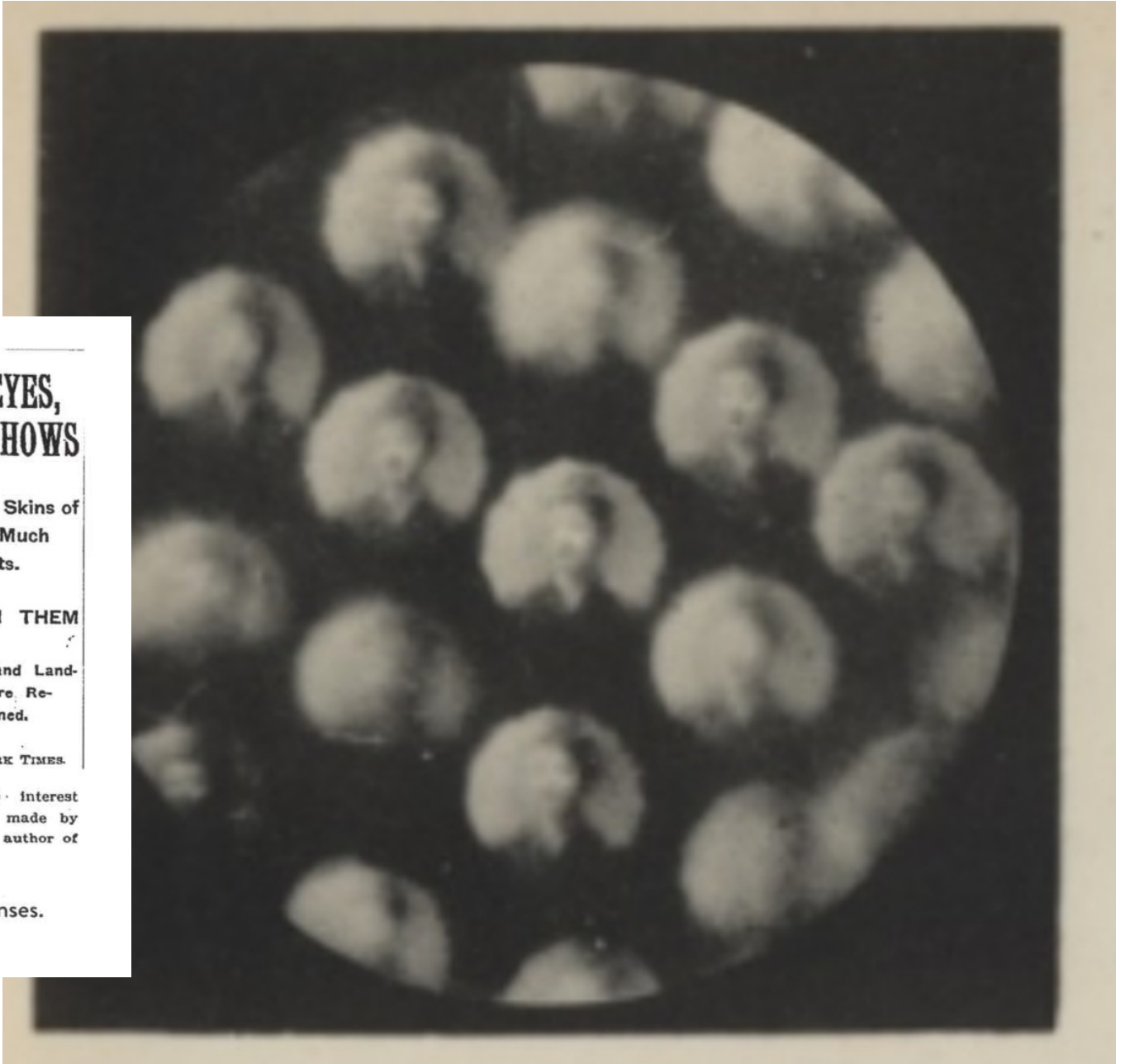
Prof. Wager Finds Outer Skins of
Leaves Are Lenses Much
Like Eyes of Insects.

PHOTOGRAPHS WITH THEM

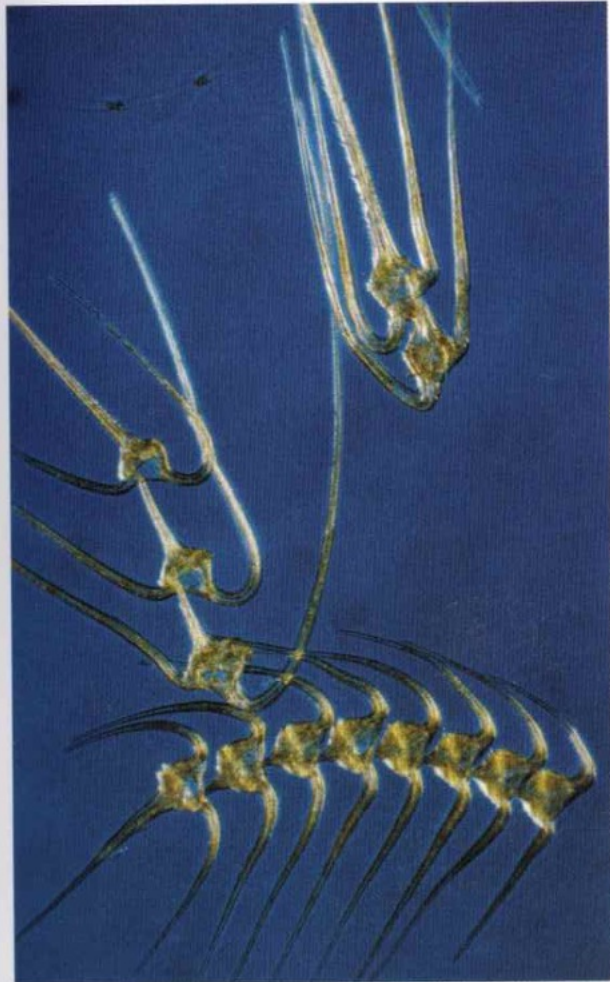
And Pictures of Persons and Land-
scapes Thus Secured Are Re-
markably Clearly Defined.

Special Cable to THE NEW YORK TIMES.

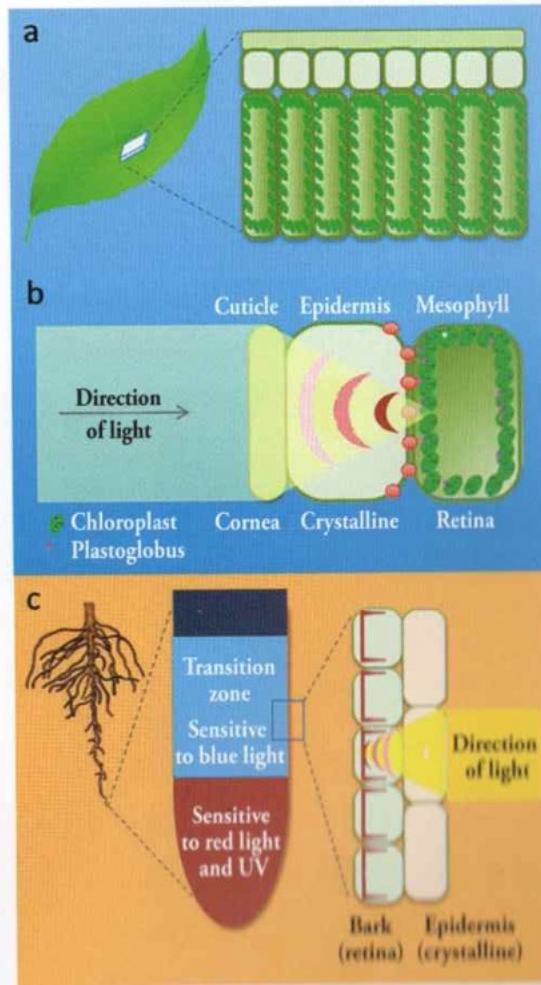
LONDON, Sept. 7.—The interest
aroused by the contention made by
Francis Darwin, son of the author of



Photographs by Harold Wager using the epidermis of the leaves of plants as lenses.
Next to it, the article that appeared in the *New York Times*.



Dinoflagellates are microscopic algae that represent one of the most important groups of phytoplankton. Some species have very complex ocelli.



Features typical of ocelli, with structures similar to those of the cornea and retina, can also be found in the epidermis of leaves and roots.

HOW PLANTS SEE

Plants have rudimentary form of vision.

Similar to microscopic organisms like phytoplankton, plants have ocelli, structures for detecting light, in leaves and roots.

FIBBONACI NUMBER AND THE PINECONE



Fibonacci numbers form a sequence where each number is the sum of the two preceding ones. The sequence goes like this: 1, 1, 2, 3, 5, 8, 13, 21, 34. This form of a spiral structure is everywhere in nature – from the growth of branches to petals. This is a logarithmic sequence, form of a fractal.

<https://phys.org/news/2013-02-nature-pattern-fibonacci.html>

<https://www.iflscience.com/why-is-the-golden-ratio-seem-to-be-everywhere-in-nature-45713>

<https://awkwardbotany.com/2019/12/25/pine-cones-and-the-fibonacci-sequence/>

<https://blogs.uoregon.edu/mjanesaad199/scientific-research-fractals-the-fibonacci-spiral-and-nature/>

ARTE FRANCE, HAUTEVILLE PRODUCTIONS, CNRS IMAGES

présentent



— UN FILM DE JACQUES MITSCH —

co-écrit par LAURENT MIZRAHI et JACQUES MITSCH montage GILLES PEDOUSSAUT image MATHIAS TOUZERIS son GÉRARD MAILLEAU et JEAN-MARC PEDOUSSAUT musique VALENTINE MITSCH
produit par HAUTEVILLE PRODUCTIONS - KARINA SI AHMED, GUILLAUME ALLARY et VIVIEN MELTZ en coproduction avec ARTE FRANCE et CNRS IMAGES avec le soutien de LA RÉGION OCCITANIE
PYRÉNÉES-MÉDITERRANÉE et de LA PROCIREP - ANCOA avec la participation du CNC, de NOVA/WGBH BOSTON, PLANÈTE +, PLANÈTE +, PLANÈTE +, PLOIGNE, SVT, EXPLORA ET TOUTV distribution internationale
ARTE DISTRIBUTION librement inspiré de l'ouvrage « TOUT CE QUE VOUS AVEZ TOUJOURS VOULU SAVOIR SUR LE BLOB SANS JAMAIS OSER LE DEMANDER » de AUDREY DUSSUTOUR © Editions Equateurs

THE BLOB: A GENIUS WITHOUT A BRAIN 2021

Documentary about leading scientists' investigations into the properties of a one-billion-year-old, single-cell organism that might challenge our concept of intelligent life.

Not an animal, nor a plant, nor fungus, the blob is one giant single cell whose amazing capacities are leading pioneer scientists to a very new world – that of brainless intelligence. More commonly known as **slime mould**, this extraordinary one-billion-year-old organism challenges our understanding of what constitutes intelligent life.

<https://www.bbc.co.uk/programmes/m00103fr>

Sir David Attenborough



Nature

The Green Planet

Series 1: 1. Tropical Worlds

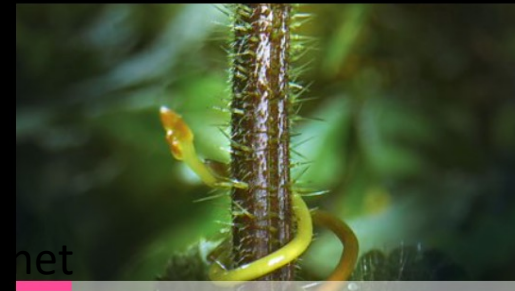
THE GREEN PLANET, 2022, BBC

Features some of the latests
findings in plant awarness



Series 1: 2. Water Worlds

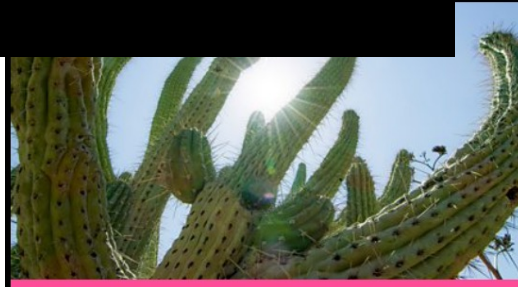
Water plants create some of...



[Resume](#) | 53 mins left

Series 1: 3. Seasonal Worlds

Plants use strategy, deception...



[Watched](#)

Series 1: 4. Desert Worlds

Desert plants thrive using...



[Resume](#) | 57 mins left

Series 1: 5. Human Worlds

Two out of five plants are...

PART 1.

EQUIPMENT FOR PHOTOGRAPHING PLANTS CLOSE-UP

LENSES

What is a Macro lens?

A macro lens is a lens that specifically allows you to focus extremely close to a subject so that it appears large in the viewfinder.

"True" macro lenses are able to project subjects onto the camera's sensor life-sized at a 1:1 reproduction ratio resulting in a 1.0x MM (Maximum Magnification) at the lens' MFD (Minimum Focus Distance, measured from the subject to the sensor), meaning that a 0.6" (15mm) long subject would be projected 0.6" (15mm) long onto the sensor.



Macro photography tends to describe anything from a ratio of 1:10 and beyond:

LENS MACRO - ACCESSORIES



- Kenko - Macro Extension Tube Set - 3 tubes: 12, 20, and 36 mm - for Canon EF and EF-S Lens - Black

Polaroid Optics 4-Piece
Filter kit Set for Close-Up
Macro Photography



Extension Bellows, Macro Bellows Lens
Tripod Mount Extension Bellows for Canon
EOS EF Mount



LIGHT

Shooting macro photography means using a small aperture to try and maximise the depth of field, This dramatically cuts down on the amount of light entering the lens



A ring-flash design allows uniform lighting of small subjects



E-TTL Off Camera Flash Cord



Speedlights can be very harsh. The light needs to be softened with a softbox, white cotton fabric etc.

PART 2.

TECHNIQUE FOR PHOTOGRAPHING PLANTS CLOSE-UP + MACRO

EXPOSURE: Shutter Speed and Aperture

SHUTTER SPEED

If you are hand-holding the camera for your close-up shot, do not go beyond 1/125s. This is a general rule for making sure your hand-held shot won't end up with a motion blur.



Photo by Veronika Lukasova

APERTURE

Because your lens is very close to the subject you are photographing, you are working with a very shallow depth of field.

For best results shoot with a high aperture number (5.6-11) to maximize the depth of field.

This may require to up the ISO especially if you are not shooting in a full daylight.

Another solution to a high aperture is to light your subject with an artificial light.

TOP TECH TIPS FOR CLOSE UP AND MACRO PHOTOGRAPHY

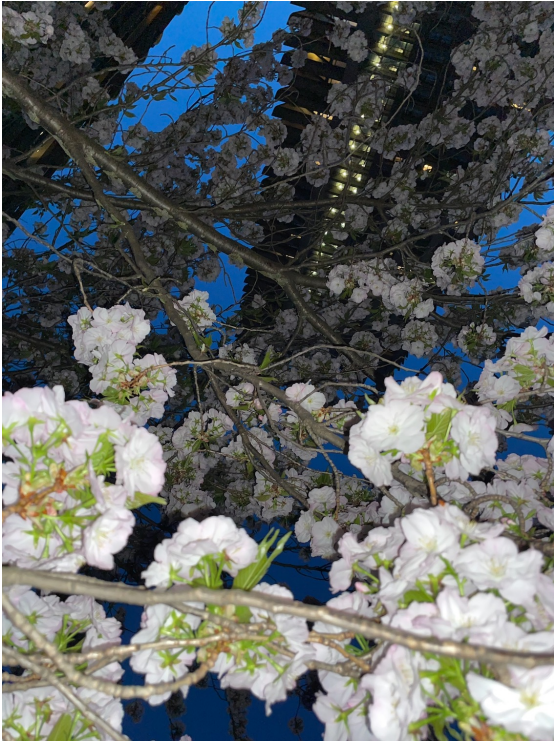


Photo by Veronika Lukasova

- Try manual focusing as the camera might have a hard time with the autofocus.
- If manual focusing is not for you, set the camera to single point autofocus
- Move Your Camera, Not Your Focusing
- You can experiment with a larger aperture - f/4 or beyond for a very artistic look!
- Bracketing will ensure that you have variants of your exposure
- Use artificial light source (ring flash, speedlight etc) if the conditions are not optimal - such as for dappled light and low light.
- If your subject doesn't move, use a tripod to use slower shutter speeds (to compensate against the smaller apertures) and shoot with self-timer. Focusing might be also easier.
- Set the camera for maximum burst speed to ensure you capture the best shot
- Take a LOT of Photos!

PART 3.

CREATIVE SOLUTIONS FOR PHOTOGRAPHING PLANTS CLOSE-UP

CREATIVE STRATEGIES FOR SHOOTING ON LOCATION

VANTAGE POINT

BRING OUT DELICATE DETAIL / SHOOT FROM ODD ANGLES

BACKGROUND

MAKE THE BACKGROUND WORK FOR YOU

- LIGHT AND DARK BACKGROUND

CREATING YOUR OWN BACKGROUND - EXPERIMENTING
WITH COLOUR BACKGROUNDS

LIGHT

LIGHTING FROM DIFFERENT DIRECTIONS – DIFFERENT
EFFECTS

- RING FLASH, SIDE LIGHT, DIRECTIONAL LIGHT

**Go for a
shallow depth
of field to
isolate a
detail**



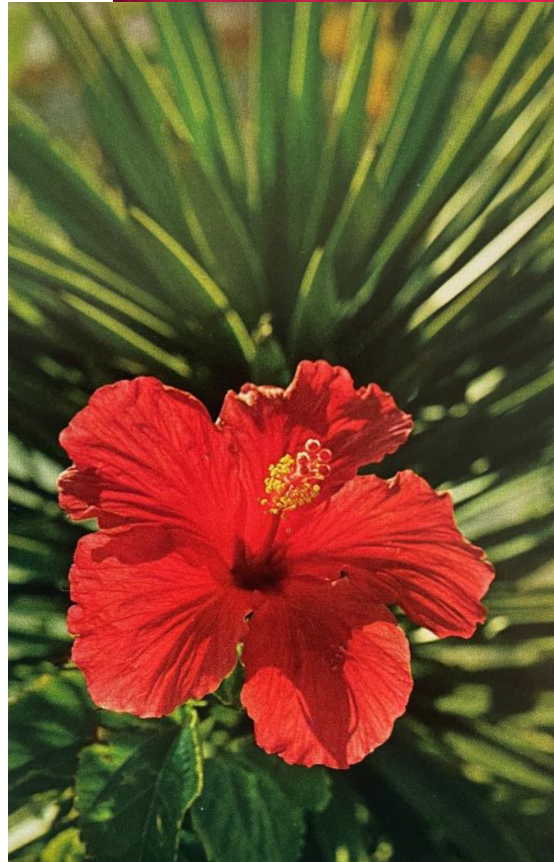
**Samples from Photographing nature /
LIFE library of photography, 1973**

**Pay attention
to the
direction of
the existing
light / play
with direction
of your
speedlight**



**Samples from Photographing nature /
LIFE library of photography, 1973**

**Experiment
with odd
vantage
points. Take
a companion
photo of the
whole scene.**



Samples from Photographing nature / LIFE library of photography, 1973

Walter Loos Jr
Hibiscus, 1971

Look for an exciting background.

Dark background will make the flower pop but light background will isolate it in an atmospheric way.



Samples from Photographing nature /
LIFE library of photography, 1973

Stephe Green-Armytage
Fuchsia at sunset, 1969

**Don't be
afraid to
shoot
against the
light for
dramatic
effect!**



Samples from Photographing nature /
LIFE library of photography, 1973

**Bring
your own
dewdrops
;-)**



Photo by Veronika Lukasova

**Moody lighting
for
contemplative
results.**



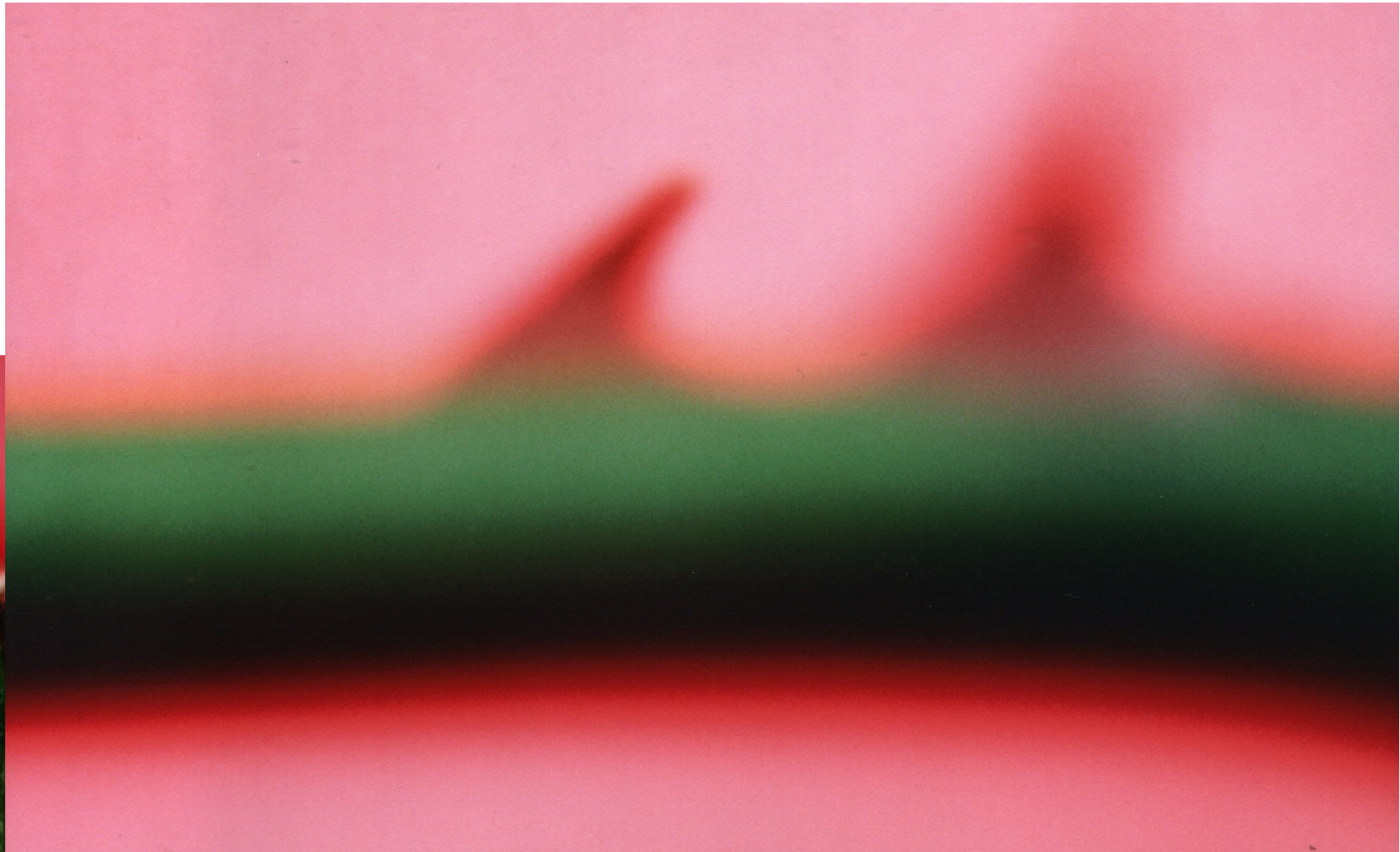
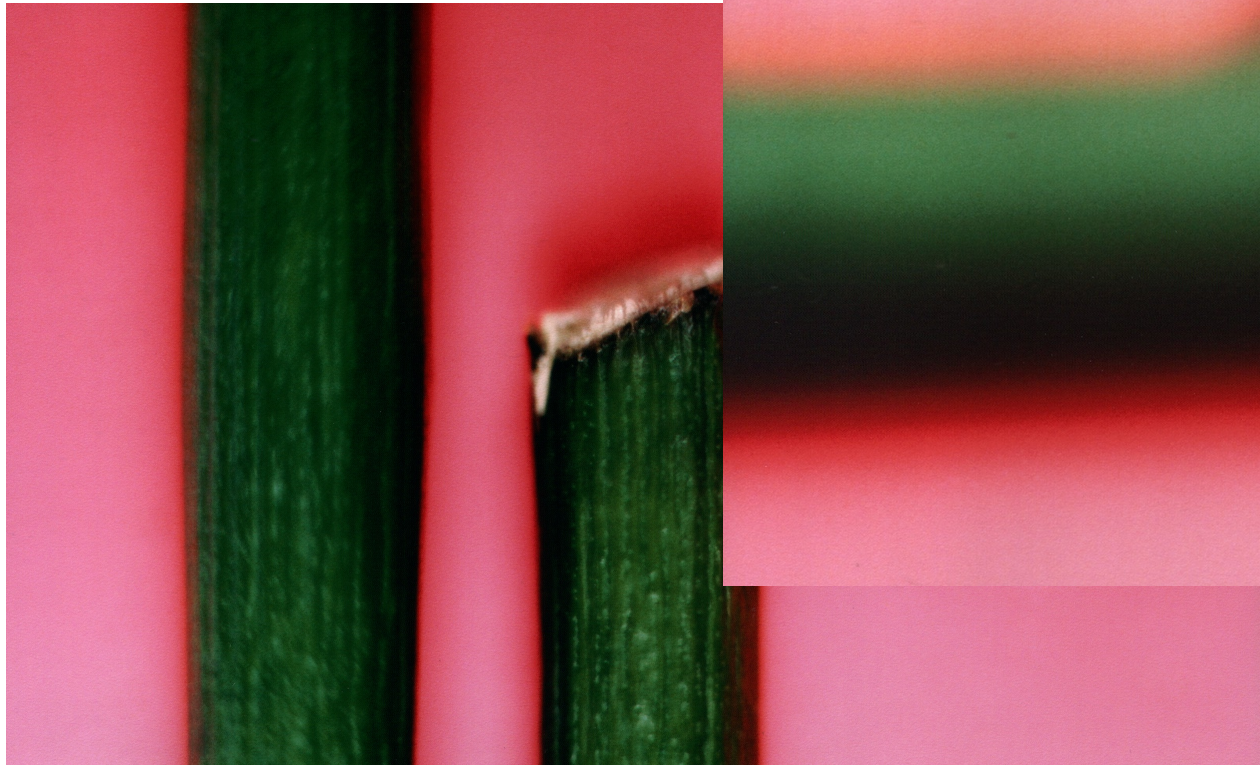
Photo by Veronika Lukasova

**Ring flash for
even lighting**



Photo by Veronika Lukasova

Experiment with the depth of field and optical blur



Photos by Veronika Lukasova

**Add your own
background.**



Photos by Veronika Lukasova

ASSIGNMENTS / shoot at the botanical gardens

1.
Photograph the same plant from
three 3 different angles

Available light

Artificial light

High aperture

Low aperture

Different vantage points

Different shutter speed

2.
Photograph the same plant in
different light scenarios

- Even light, backlight, side light
using

Available light and / or

Artificial light

3.
Photograph the same plant with 2
different backgrounds

MAKING a digital collage

1.

Select image/images you want to play with

2.

Fire up the Photoshop and and isolate the object/ objects for your collage.

3.

Let your imagination go!

**I have made a short tutorial on the following slides but you can also look at the process here:
<https://www.youtube.com/watch?v=dW2M880JF6k>**

FAILED IT!

How to turn
mistakes into
ideas and
other advice
for successfully
screwing up

Erik Kessels

PHAIDON

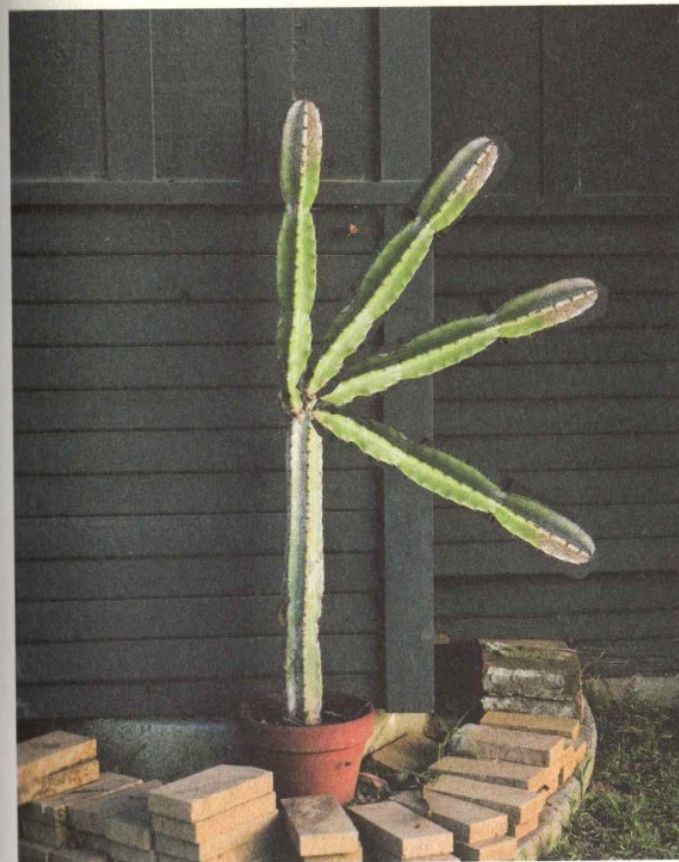


Artist Lucas Blalock shows us the opposite: what can happen if you take mistakes as inspiration and allow them to evolve by amplifying something others would strive to hide.

He uses Photoshop to transform technically perfect images into things that are much more interesting, from a mutant cactus to a rocking chair that thinks it's a table.

While commercial photographers use Photoshop to erase and mask imperfection, Blalock introduces imperfection – exposing rather than concealing his interference – to create images that are both striking and unique.

Take time to consider mistakes – both yours and others' – and what you at first see as an error might well be the spark of something else. Something fascinating, strange or original.

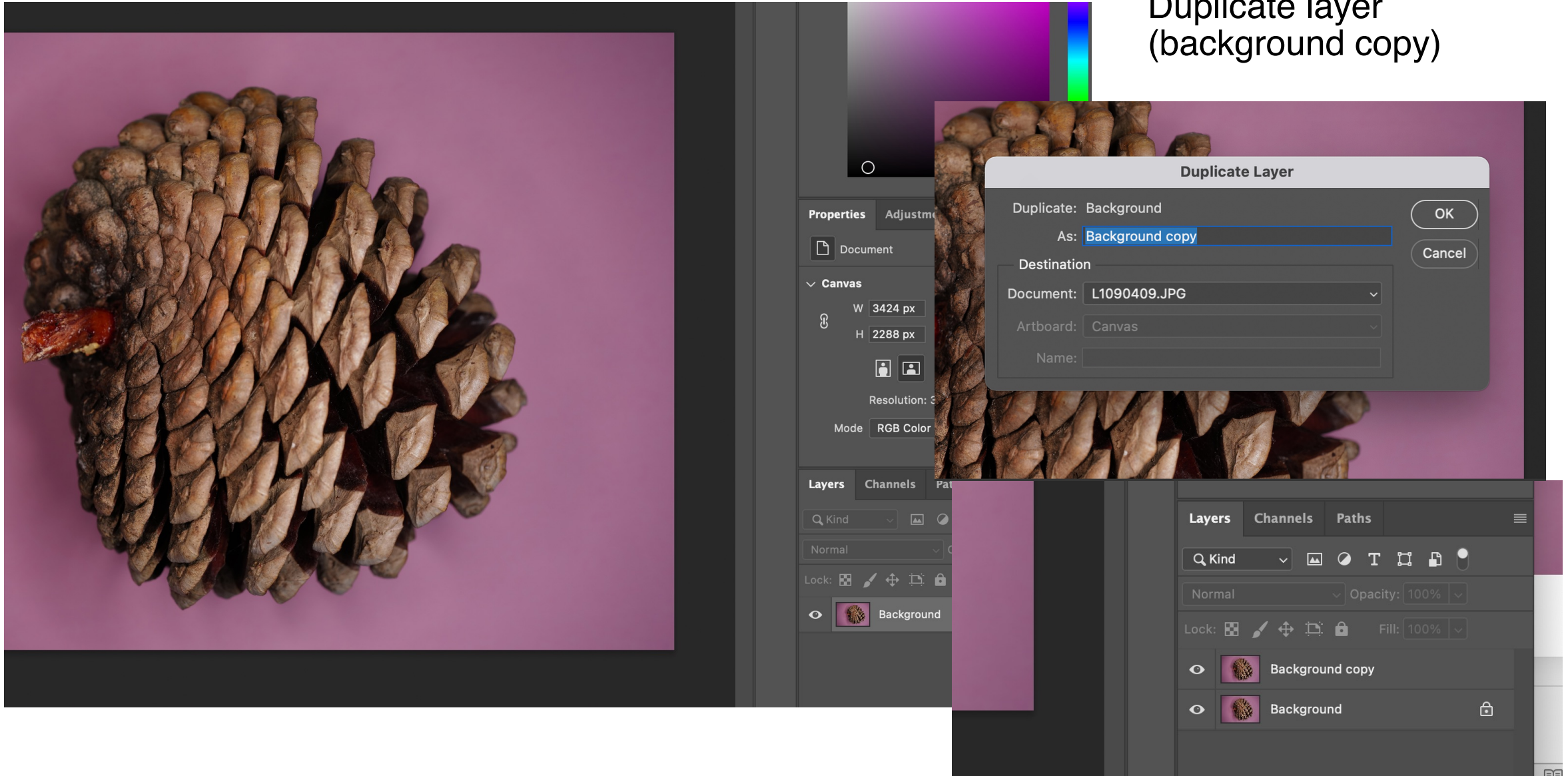


Lucas Blalock, Cactus Action, 2014

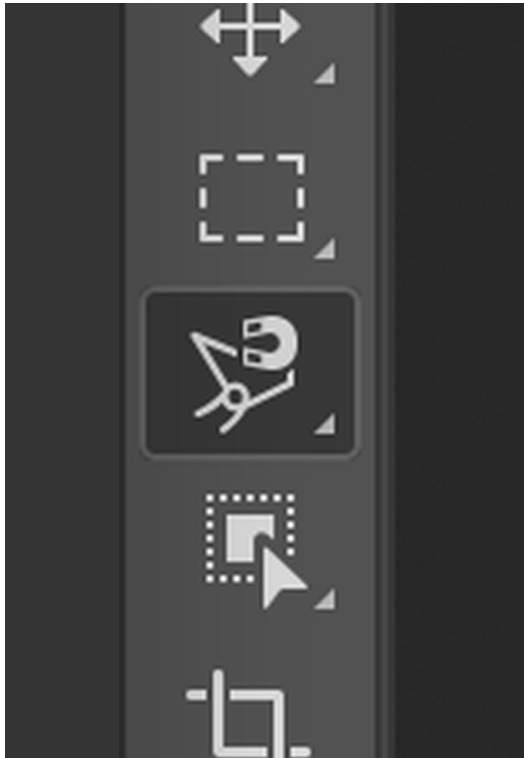


MAKING a digital collage / Step 1.

Open the image and Duplicate layer (background copy)



MAKING a digital collage / Step 2.

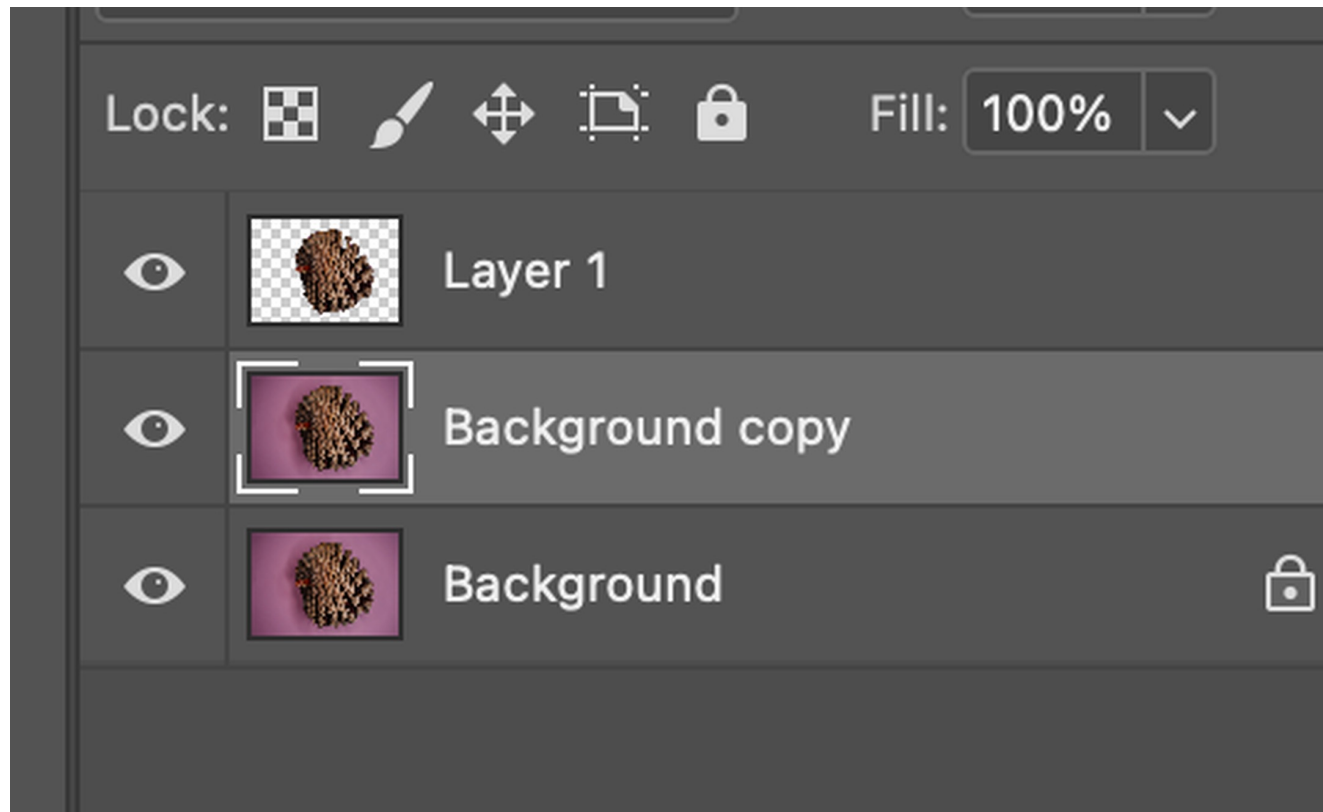


Select Duplicate layer
(background copy)

Go to Magnetic lasso tool

Make a selection of what
you want to play with with
the Magnetic lasso tool

MAKING a digital collage / Step 3.



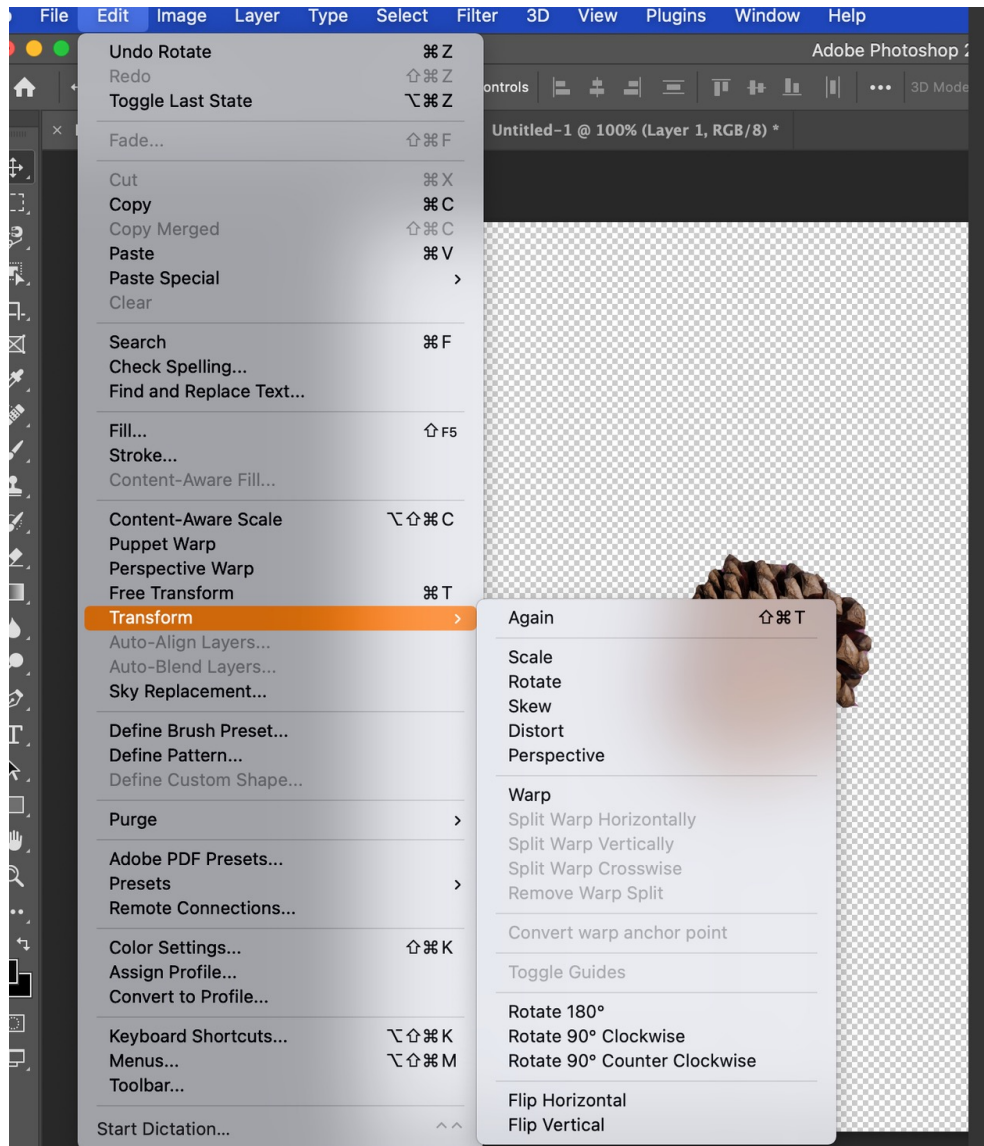
After your Magnetic lasso tool selection is complete

Press CMD / Ctrl+J

This will take your selection to a new layer

From this point, you can either work with your selection in the Background copy or you can copy it to another Background

MAKING a digital collage / Step 4.



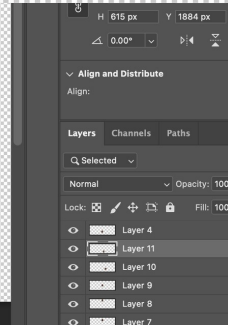
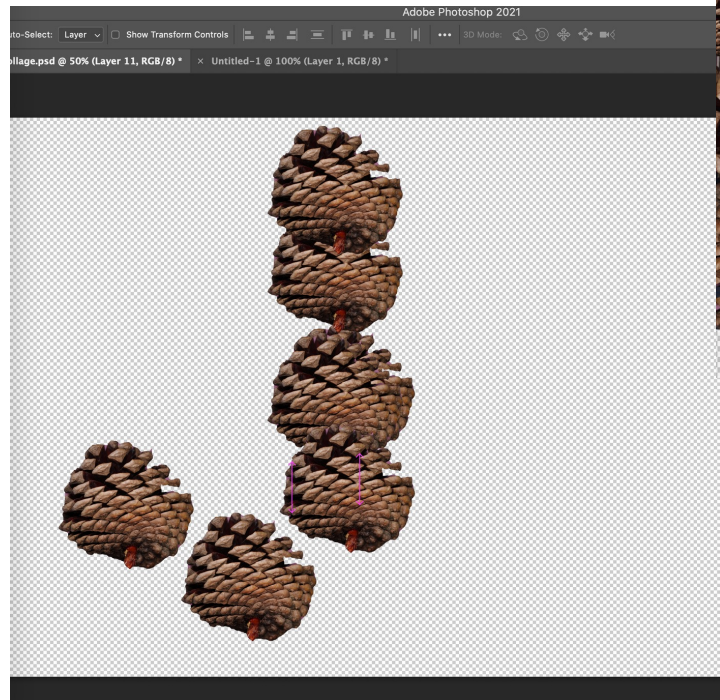
I have copied my selection to a new background via Layer- copy option.

To edit your selection – change size, rotate, go to the layer where your selection is and go to EDIT – Free Transform

To multiply the selection, simply copy and paste (Ctrl+C / Ctrl+V)

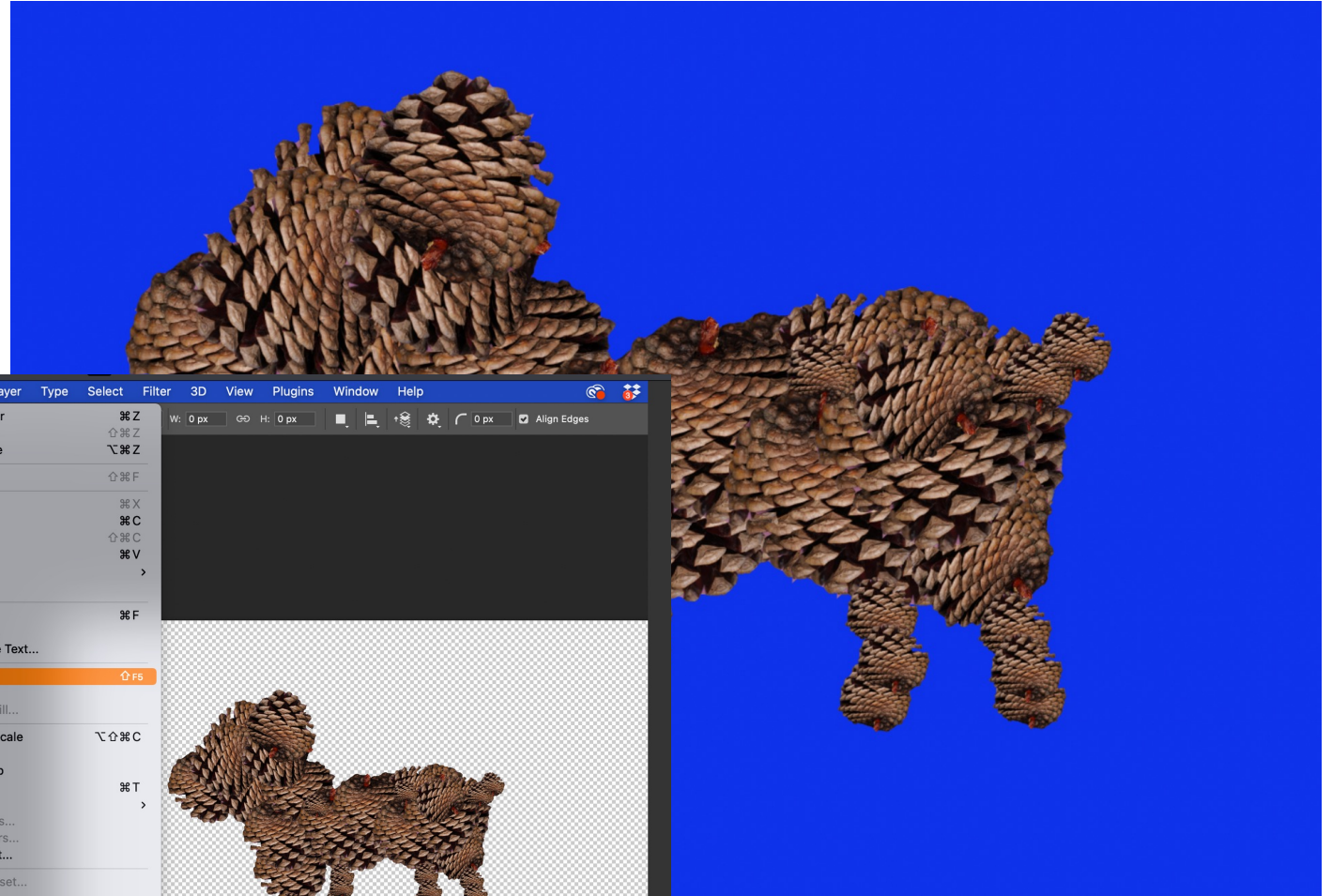
MAKING a digital collage / Step 5.

You can import a background or work on empty background you can fill with colour later





To choose your background colour, select your background colour and fill the background via EDIT-FILL-BACKGROUND COLOUR



A screenshot of the Adobe Photoshop interface. The top menu bar is visible, with 'Edit' and 'Image' highlighted. The 'Edit' menu is open, showing options like 'Undo Layer Order', 'Redo', 'Toggle Last State', 'Cut', 'Copy', 'Paste', 'Stroke...', and 'Fill...'. The 'Fill...' option is highlighted in orange. In the foreground, the 'Color Picker (Background Color)' dialog is open, showing a color selection tool with a blue gradient. The 'new' color is selected, and the 'current' color is also shown. The color values are: H: 230°, S: 94%, B: 39%, R: 6, G: 21, B: 99, and the hex code is #061563. The Photoshop workspace shows a small version of the pinecone dog on a white background with a grey checkerboard pattern, indicating it is selected.

...and here
we have a
pinecone
doggie!



