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Science in the Tropics

S.T.E.A.M. PHOTOGRAPHY COMPETITION

2020-2021

CONTESTANT #1: Aleem Mahabir

Title of Photograph: Forcing a Bold Perspective

Phenomenon:
Forced perspective is a form of optical illusion used to produce a false perception of size and/or distance, making an object appear farther away, closer, larger or smaller than it actually is (Coren, Ward and Enns, 1999). This is achieved by controlling the distance and vantage point of the camera. Manipulating these variables results in the object/s being featured appearing to be scaled in size, that is, larger or smaller than they are, from the viewer's perspective. This technique is used in photography, filmmaking, painting and architecture (Ross and Plug, 1998). Interestingly, certain birds in the infraorder Corvida (ravens, bowerbirds) are known to use forced perspective in nature. Great bowerbird males construct bower courts with forced perspective to make them appear larger, demonstrating their cognitive prowess to potential female mates (Endler et. al., 2010). In my photo however, forced perspective was (hopefully) just used to produce a visual-comedic effect.

Instagram Contact: aleemmahabir

CONTESTANT #2: Asia Wallace

Title of Photograph: Trail Blazer

Phenomenon:

A match stick contains glass powder and an oxidizing agent called potassium chlorate, while the side of the match box contains glass powder, sand and red phosphorus. When a match is struck against the side of a matchbox, the friction, enabled by the glass powder and sand, creates thermal energy which is used to convert the red phosphorus into white phosphorus. The white phosphorus then reacts with oxygen which causes more heat. In order for a flame to be ignited, potassium chlorate releases heat and oxygen to supply the fuel. The image captures the white phosphorus reacting with oxygen before the flame is ignited. The blue spark indicates that all the gas molecules burned without any being wasted (complete combustion) while the red spark showed incomplete combustion.

Instagram Contact: @asiakenyah

CONTESTANT #3: Brandon McPherson

Title of Photograph: Titile of Photograph: Jamaican adjusting to COVID-19 and the effects on our daily mask routine.

Phenomenon:

Not socially acceptable is not wearing a mask in public to prevent transmission from COVID-19 pandemic. "Pandemic" require social distancing and protection (face masks). COVID -19 spreads when respiratory droplets expel (talking, singing, coughing/ sneezing). Every day routine, social distancing, washing hands, using sanitizer, covering mouth (coughing). Adhering to curfew hours and transport restrictions (passenger limit) both stipulated by our government and adjusting to online classes.

Fabric masks are washable, sweat can make the mask wet causing difficulty breathing, easier for germs to grow.

Routinely hand washing fabric mask (soap) and in hot water (at least 60 degrees Celsius once daily). Fully dry mask before worn, avoiding reuse of unwashed mask and storing an extra mask when commuting. Medical doctors confirm even masks wearers may be infected before symptoms of illness appear. Person(s) could unknowingly have the virus (family, colleagues and friends). Scary right! Even he wear the mask.

Instagram Contact: _BJRM

CONTESTANT #4 Errol Green
Title of Photograph: Sleepless Nights
Phenomenon:
This picture depicts the daily life of a programmer. Analyzing a problem and writing code to ultimately solve it. This part of science is heavily dependent on ones' problem solving skills as well as their ability to withstand many sleepless nights.

CONTESTANT #5: Gavin Campbell
Title of photograph: Ostracoda
Phenomenon:
The picture depicts two ostracod crustaceans side by side. As rain fills their fountain, these very small crustaceans hatch from drought-resistant eggs and soon take over, totalling thousands in a body of water no bigger than a size of a car tyre. When alive, ostracods help to clean water and can survive being digested by birds. When dead, their resistant shells can be used to describe ancient climates and environmental conditions, helping us to better understand our present, past and future. I pass by them every day I head to lab and marvel at the entire world within that small fountain. Their size and brilliant colour represent the hidden beauty in the smallest moments and places of everyday life. At every scale, there is an opportunity to be marveled at the world before us, bringing us understanding and peace.

Instagram contact: @dragonin.flight.

CONTESTANT #6: Ginnel Peart
Title of Photograph: Ecosystem Stability Facilitating Commensalism
Phenomenon:
The sun is the main source of light that is essential in photosynthesis and plants respond to this source by reproducing their own food for themselves and animals. The bee feeds on the nectar of the flower that was reproduced through photosynthesis. Plants and animals respond to sunlight differently as their needs and mobility varies. Plants lean to the direction in which the sun is whilst most animals relocate themselves to an area that is less exposed to the sun.This is exactly what is being depicted in this picture. The plants are shaped based on the direction in which the sunlight is present. However, the dog finds himself under the tree to shield from the sun as he pants to regulate his body temperature to combat the heat being produced by the sunlight. Therefore, the tree serves as a temporary shelter for the dog in this ecosystem.

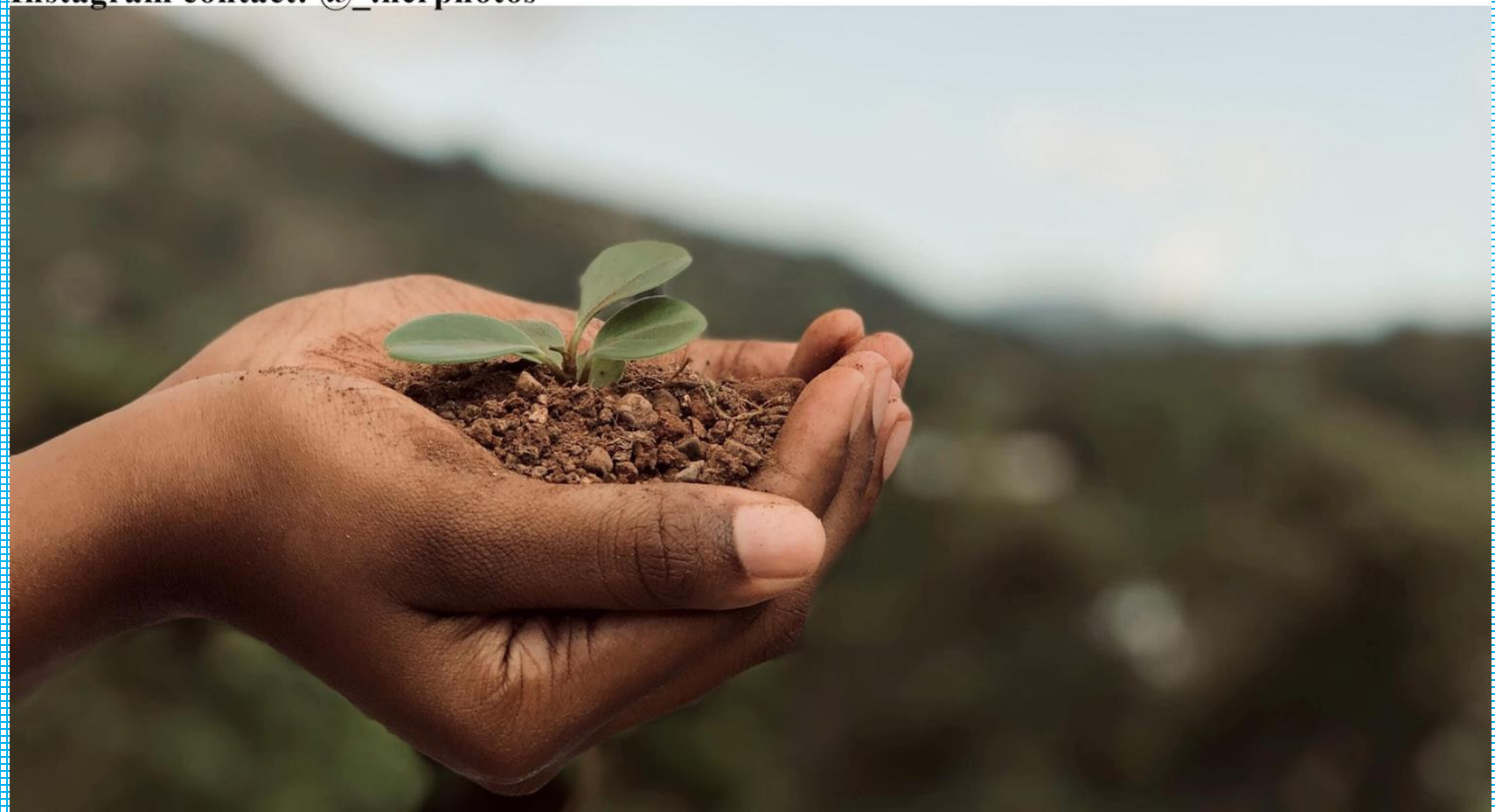
Instagram Contact: ginnel_peart_alivingtestimony

CONTESTANT #7: Jarda Nelson
Title of Photograph: Sunrise at the Blue Mountain Peak
Phenomenon:
The sun is a powerful source of life for planet Earth. A beautiful sunrise brings light,hope and a promise of warmth for the day. Sunlight improves the mental and physical health and wellbeing of humans, providing Vitamin D in sufficient amounts while helping the body to produce other nutrients. Besides human health benefits, sunlight is a necessity for plant survival. Electromagnetic radiation from the sun is a vital component in the photosynthesis process. Therefore, solar energy along with carbon dioxide and water are used by plants to produce oxygen and carbohydrates. While sunlight regulates the Earth's temperature and weather, it is also a major source of free, clean, renewable energy. As an environmentalist, I strive to highlight the importance of sustainability, reducing our reliance on fossil fuels and relying more on renewable energy sources such as solar energy.

Instagram Contact: jardimus.x_

CONTESTANT #8: Jody-Ann Williams
Title of Photograph: A Simple Existence
Phenomenon:
The perception of a plant is confined to a thought of a living thing that grows from the soil consisting of a stem, leaves and roots. This is simply an illusion creating an everyday viewpoint on how a regular individual would see the image of the plant. On the other branch, within the palms of these hands lay the complexity of science revealing the genetic basis of the plant and their beneficial properties for humans. The extended hands signify results of such understanding and the unveiled approaches for models to understand human diseases. These are the fruits of which vaccines and drugs are created. Milestones within science can be perceived as the blurred mountain that is yet to be unrevealed. As a mountain's might is dependent on the roots of a seemingly 'simple plant', so we too are interconnected and reliant on plants for our scientific progression and subsequently our existence.

Instagram contact: @_.herphotos



CONTESTANT # 9: Jonathan Morris
Title of Photograph: Night Sounds
Phenomenon:
Perched on the frond of a Bird's-nest fern is the tiny Lesser Antillean Whistling frog (Eleutherodactylus johnstonei). This frog contributes to the many sounds heard on a nightly basis around the island. The whistle or chirp of this species is often mistaken for a cricket and is actually its mating call.
The whistling is communication with the sole aim of reproduction. Being such a small animal finding a mate is difficult and so being loud makes locating a mate much easier.

Instagram contact: scoots_876

CONTESTANT #10: Justin Newell

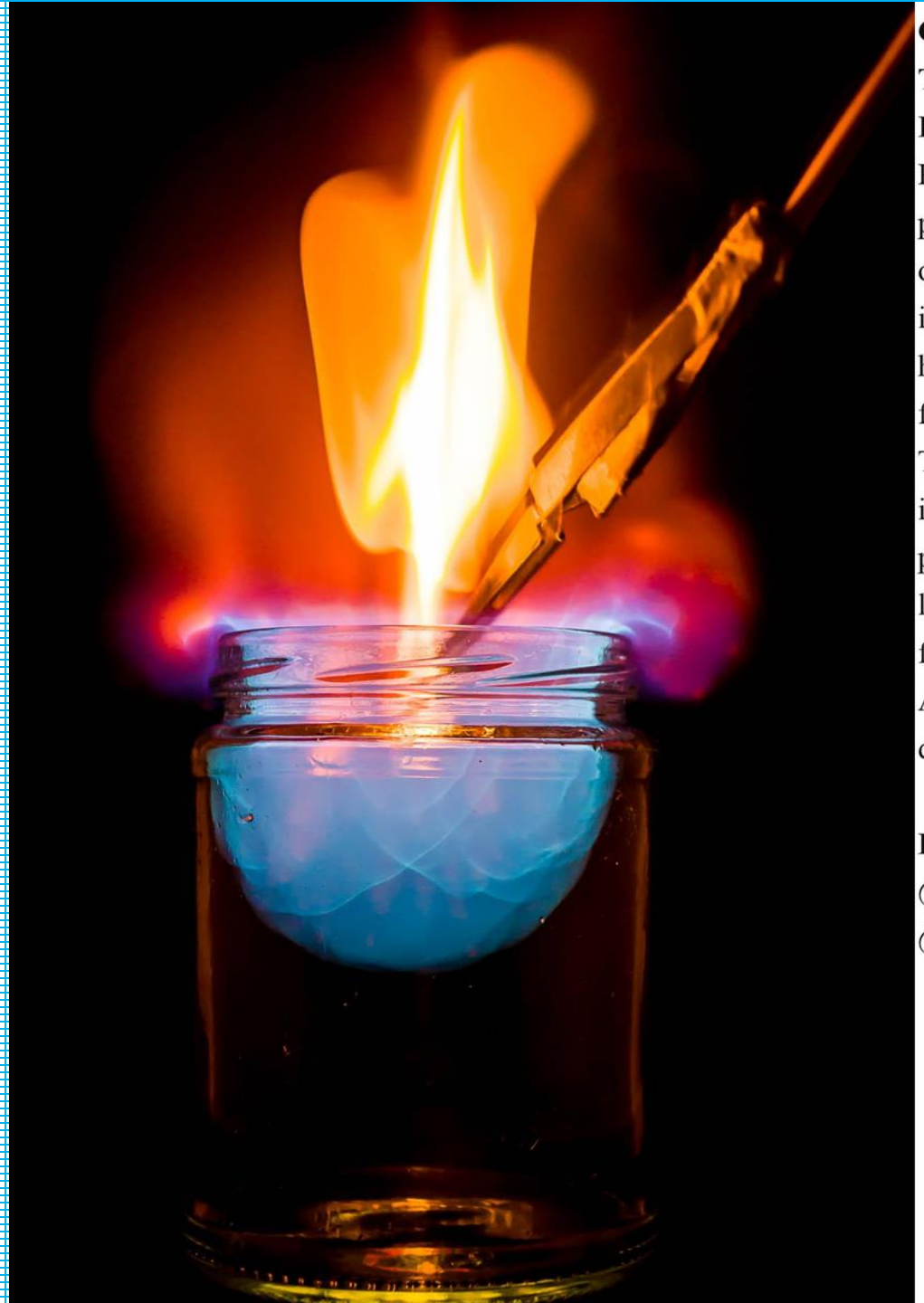
Title of Photograph: Hummingbird Feeder

Phenomenon:
This picture, taken at Old Fort Bay, St. Ann in Jamaica shows the country's National Hummingbird pollinating a flower. It is also referred to as the doctor bird, scissor-tail or scissors tail hummingbird and is endemic to Jamaica. They feed on the nectar from flowers using their long extendable tongue or catch small insects on the wings. This picture is of significance to me because it displays one of the most beautiful birds in Jamaica gracefully feeding on the flower and pollinating it while showing its extraordinary physical features. The colours of the environment and the hummingbird blend very well together and gives the photo a pop which makes it unique. This picture also reminds me of how beautiful and remarkable our country's environment and species are and why it is vital that we preserve what we have in Jamaica.

Instagram Contact : @justinnewell_

CONTESTANT #11: Karimah Swan
Title of Photograph: “The innate ability of rafts to stay afloat amidst pressure”.
Phenomenon:
If ordinary eyes were behind the lens of the camera, they would only see a beautiful scenery composed of a raft, rafter, and swamp. However, resulting from my zest for science, I see the power and beauty behind buoyancy. Buoyancy is the force exerted on an object, that is partly or wholly immersed in a fluid, that is, liquid or gas. It is a force which acts upwards, and one can experience it in any daily experience. As seen in the photograph, the raft essentially floats on top of the water. The reasoning behind this is, if the density of an object, is greater than that of the fluid it is submerged in, the object sinks. This therefore means that, the raft stays afloat because the density of the raft is less than the body of water. Essentially, the raft is buoyant and hence can sustain its rafters.

Instagram contact: @karimahswann



CONTESTANT #12: Kerk Henderson

Title of Photograph: Portal to time

Phenomenon:

Pictured here are combustion waves formed in the process of ignition. Combustion is used in many of our daily activities from cooking to transportation and its use allowed for man to advance in multiple ways, however it can be appreciated even more when time is frozen.

The waves here are formed as the fuel air mixture ignites and the fire travels through the container pushing against the walls. The oxygen that breathes life into this reaction is used up and the fire races forward to find more.

A moment in time allows you to see the beautiful dance that takes place as this reaction happens.

Instagram contacts:

@nick_h_son

@segunsongs

CONTESTANT #13: Marc A. Collins
Title of Photograph: "Cold and Deadly"
Phenomenon:
A Nuclear Magnetic Resonance (NMR) spectrometer is being filled with Liquid Nitrogen (LN2). Here the LN2 is being transferred using a rubber tubing. The tubing been frozen rigid and is coated with snow due to the extremely cold LN2 flowing through which condenses the water vapour from the air on its surface. The temperature of the room is 18 oC which exceeds the boiling temperature for Liquid Nitrogen (-195.8 oC or 77 Kelvin) and is seen boiling off as white fumes atop the instrument. The NMR spectrometer consists of a superconducting electromagnet which generates extremely strong magnetic fields. To remain a superconductor the magnet windings must be kept colder than its normal resistive state. This is done using cryogenic liquid helium which boils at -269 oC (4 Kelvin). The liquid helium is in turn kept cold by the "cheaper" liquid nitrogen which is refilled weekly (as shown in the picture above).

Instagram contact: mac_355

CONTESTANT #14: Matthew Burton
Title of Photograph: Shadow of the Past

Phenomenon:
The picture depicts the empty larval case of a cicada. The cicada have a unique loud call, commonly called the mango cricket call in Jamaica. But also unique to the cicada is its lifestyle where it can spend up to 17 years underground as a nymph feeding on tree sap from the roots of trees before coming up and molting into a sexually mature adult. The adult male will then make loud mating calls in an attempt to secure a mate. But this shows just the evidence of its past and not its future and therefore why I titled the picture shadow of the past. This larval case however is a show of the longest part of its life as it generally lives up to only six week after molting. Their long life cycles underground is going on daily but we only get a glimpse of them after they come above ground for those few weeks.

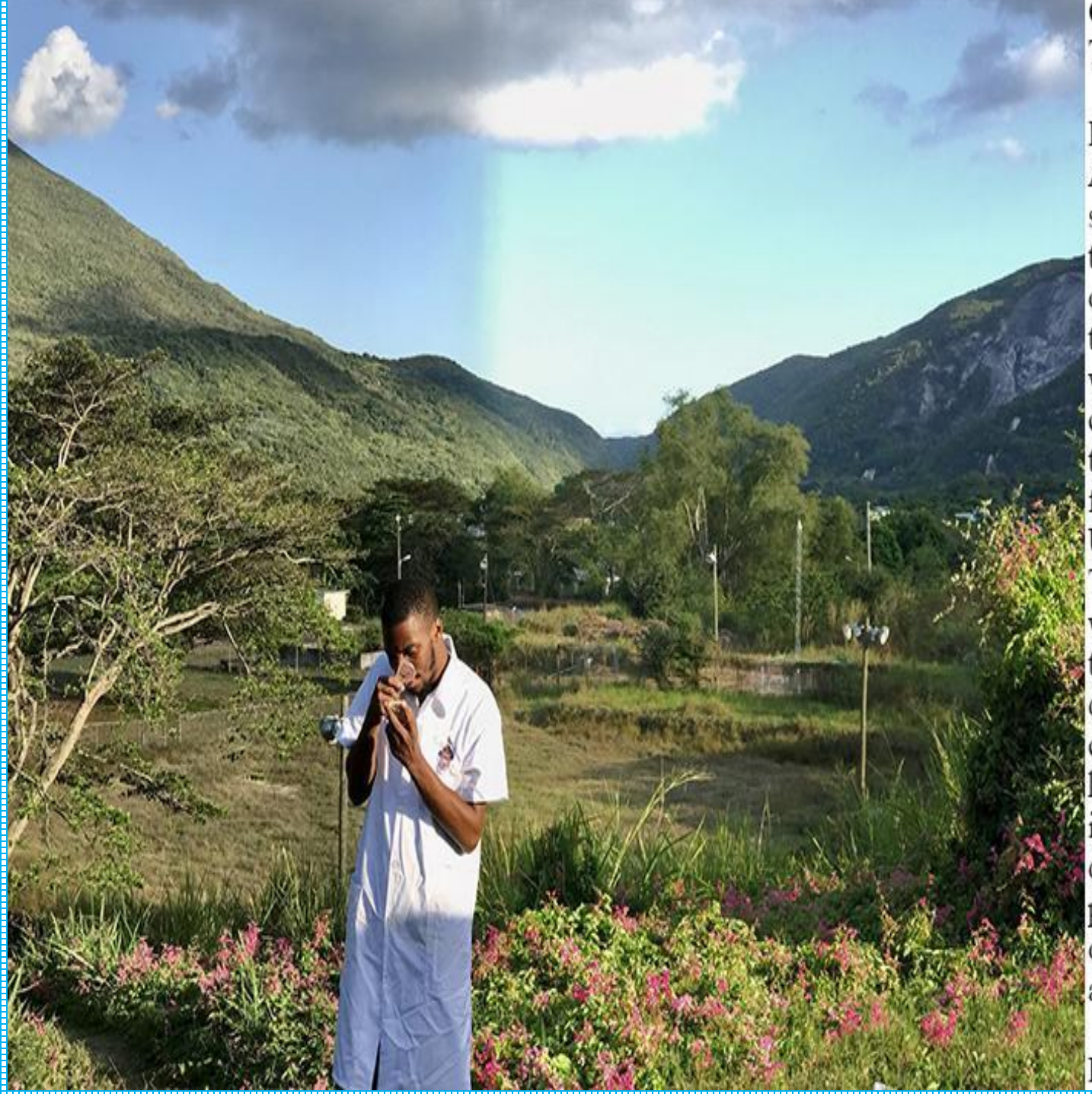
Instagram contact:
matthew.p.burton.876

CONTESTANT #15: Nasya Jones

Title of photograph: The power of scientific research: A way forward

Phenomenon:
The sun is the primary source of energy for the Earth's ecosystem; it is what fuels all biological processes on the planet. Likewise, data collection is the first step in understanding how these processes work, as it is the backbone of good scientific research. Without the ability to properly comprehend and critically analyze the world around us, we risk endangering the balance of our delicate ecosystems. Therefore, a future on this earth depends on efficiently gathering quality information in the field, and using it to formulate cohesive scientific hypotheses, that would promote environment sustainability. Presently, the ability to explore the outdoors has become more challenging. It is then vital that we continue to feed our natural curiosity and find different ways to connect with nature. Everyday the sun rises, may it remind us that it is our duty to uphold the Earth that the sun gives life to.

Instagram contact: nasya.lj



CONTESTANT #16: Olanzo Lamey
Title of photograph : Intrinsic Interactions

Phenomenon:
As the sun closes the curtains on another day, we see that the horizon is dominated by the lithosphere, capped by plants which are a part of the biosphere. The atmosphere seemingly touches the lithosphere and the clouds embodied within the hydrosphere with the aid of chemical and physical processes will soon shower the terrain with H_2O, an essential compound for the biosphere. Plagued by geological forces, the UWI Mona Bowl is a scientific playground. Tectonic forces have vertically displaced the land while fluvial processes continue to carve through the mountains creating the beautiful valley displayed. The interactions of these spheres continue to sustain life and shape the earth as they have for millennia. The job of the scientist is to study every detail about these phenomena down to the most infinitesimal level. The photographic masterpiece sets forth the interaction of several of the earth's spheres that we see and feel everyday but sometimes take for granted.

Instagram contact: jay_2wenty1

CONTESTANT #17: Roschelle Matthews-Rhoden
Title of Photograph: Student Accessing School Through The Internet

Phenomenon:
In the photo displayed, a student is setting up a computer to complete his exam. With the pandemic causing the cancellation of the majority of the UWI's classes, the internet has enabled students and teachers alike to venture to multiple different platforms to lecture, tutor, study, read, etc. Without this phenomenon being present in such a dire time as the Covid-19 pandemic, students might not have had access to education at all.

Instagram handle: christmuslights

CONTESTANT #18: Sarah Buckland
Title of Photograph: Trash to Treasure: The Science of Organic Composting and Humification

Phenomenon:
The photograph depicts a mixture of natural compost from what most would deem as
everyday 'trash': Orange peels, banana skins, dried leaves, grass and fallen flowers. When placed in a warm, moist environment with soil (and aphids or other insects), these 'ordinary' trash materials decompose into natural soil fertilizing agents (humus) which enrich the nutrient content of food that plants produce. The photograph depicts the first process in humification, before much of the materials have decomposed. The tropics serve as an ideal environment to catalyse the process of making humus. Natural heat and moisture in the tropics speed up the process of humification (breaking down organic material). Chemically, humification is the end result of continuous oxidation processes acting on the complex organic materials to form organic acids. These acids eventually become simpler, inorganic minerals for plants uptake. Let us protect the ecosystem and improve food security by recycling organic materials. Let us turn trash into treasure!

Instagram contact: sarahbuckland13

CONTESTANT #19: Secelia McCain
Title of Photograph: "I got sunshine...."
Phenomenon:
The interesting phenomenon of flowers following the sun across the sky is called Helipotropism.This property is commonly seen in the sun flower. This is the concept of flowers facing, and following the sun throughout the day, and is mostly observed by young flower heads. Mature flowers stay facing east. Mature sunflowers start the day facing east and follow the sun, and during the night they reorient themselves to the east in preparation for a new day.

Instagram contact: @queenlaiajm01

CONTESTANT #20: Shanique Williams
Title of Photograph: "Growing through tough times"

Phenomenon:
A plant growing through concrete may symbolize the hardship we face each day but even in hard times, hope is not lost even when something is in the way. As you may be aware, small plants don't actually have the ability to cause concrete to crack. Instead, the plant's roots take advantage of the microscopic cracks found in concrete. Such cracks are invisible to the naked eye. But these pervasive plant root tips can detect microscopic fissures in the surface of concrete and push through those cracks. Once a plant root discovers a microscopic crack, they force their way through into the slab. So, imagine lifting a piece of paper from its centre, the unsupported ends will eventually fold down. This same phenomenon happens when the root lifts the concrete, but because concrete is brittle, the pressure of the root will cause the concrete to shatter, as the plant grows.

Instagram contact: SHANIQUE__W

CONTESTANT #21: Shannon Brown
Title of photograph: Sarcophaga on a flower, the most unlikely of habitats, the most common bug.

Phenomenon:
Sarcophaga haemorrhoidalis, also known as the red-tailed flesh fly, is a fly that feeds on dead flesh and feaces, where it also lays its eggs. It is, however, one fascination of the entomological community due to its beauty and economical uses. This fly is used in forensic science as an indicator of time of death, among other factors. Its larvae, when laid in the wounds of living animals may cause myiasis, which is the parasitic infection of a living animal with fly larvae. This fly is a stunning display of insect morphology with its white stripes along its back and large compound eyes. Its thin membranous wings and spiny backside makes it almost cartoonlike in appearance. In the photograph the fly is perched on a common daisy in my garden, an unlikely habitat for this fly. The sarcophaga haemorroidalis is considered a hero to forensic science and a nuisance to veterinary science in equal measure.

Instagram contact: shan_bookie16

CONTESTANT #22: Tifani McIntosh
Title of Photograph: "Captured"

Phenomenon:
It's the circle of life; scientifically known as the Food Chain/Web. This cycle is recurring in our everyday lives, but we don't always see it in action. I was lucky enough to witness this spider (predator) capturing a fly (prey). Energy and nutrients are transferred along the Food Chain from one organism to the other when they get eaten. Energy first enters the system from the sun. Plants use this solar energy to produce their own food in the form of starch and glucose. Animals, called herbivores/primary consumers, eat plants and the nutrients and energy are transferred to them. These herbivores get eaten by carnivores and omnivores (secondary consumers) who only receive a fraction of the energy from consumption. The fraction of energy transferred from prey to predator decreases as you go down the food chain.

Instagram contact: _tiffae