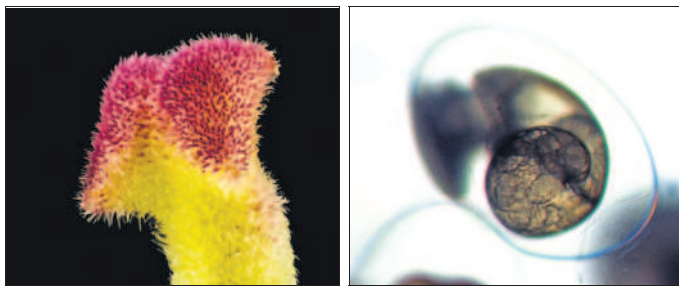
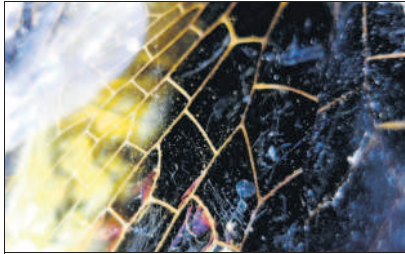
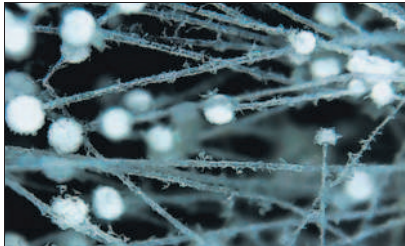
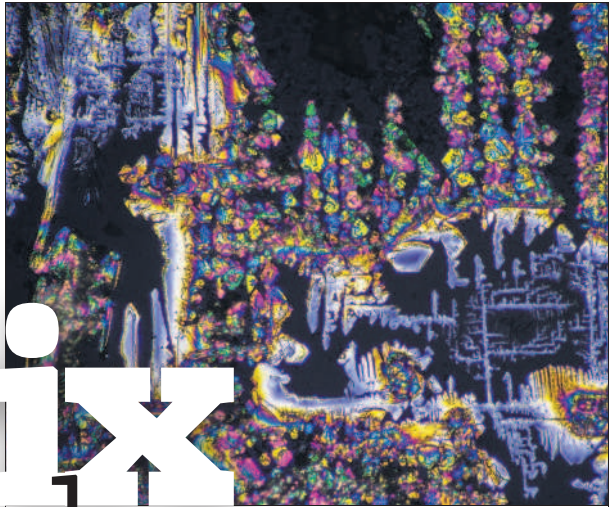


wknd | urban



Under the microscope: (Clockwise from left) A pond-snail embryo, still inside its egg; bread mold; and a dragonfly wing, shot by Purva Variyar; paracetamol crystals under polarised light; and amino acid crystals under polarised light, shot by Sarang Naik; a lantana bud shot by Raghuram Annadana.



The matrix is everywhere

Mounting microscopes on cameras, hobbyists are zooming in, winning awards, for images of the universes within bread mold, sand, worms, wings and leaves

Natasha Rego

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It is, in many ways, like falling through a looking glass. “The microscope opens up a portal to a different world,” says Purva Variyar, 34, a science writer, conservationist and micrographer. Attach a camera, even a DSLR, to a microscope and one can zoom in by up to 1,000 times, to render the invisible visible. Like the endless-picture-within-a-picture illusions so popular online, entire universes seem to emerge from a cross-section of a leaf or a drop of water.

While scientists have long been doing this in the course of research at universities and scientific institutions around the world, as the equipment has become more affordable and more sophisticated (a USB digital microscope costs under Rs 2,000), micro-

graphy is growing as a hobby.

Variyar has been zooming in and photographing dead insects, pollen, bread mold, beach sand, using four different kinds of microscopes. Wildlife photographer Sarang Naik, 32, won honourable mention in a world micrography contest for his video of an annelid worm eating spirogyra algae and emitting strands of waste, all in the space of a few minutes. Raghuram Annadana, 42, a firmware designer and hobby photographer, has developed “a minor obsession” with crystal micrography, which dries out a chemical using a solvent and then uses polarised light to capture the shards of colours that the crystals emit.

“To learn about wildlife and natural history, one need not always spend time in the forest, in the sea. Communicating nature’s genius through micrography, and getting people as excited about it as I am, is part of what drives me,” Variyar says. It’s a universe that has nothing in common with the world we see. A butterfly wing yields scales that look like neatly arranged feathers. A pond snail embryo sits curled up, still inside its egg. “I can spend weekends hunched over my slides. It’s a great way to decompress after a long week of work,” Variyar says.

For those looking to explore this world, she recommends a portable USB microscope. Most can zoom in to up to 250x. “They’re a great learning and teaching tool and a great toy for children or adults. But nothing can replace the traditional compound microscope, which is a lot bulkier, requires some knowledge to work, but is unmatched in magnification power.”

Naik uses a compound microscope mounted onto his Canon DSLR, paired with an adapter he fashioned himself. “Even the most basic adapter is quite expensive (about Rs 7,000), because there is not much demand for it,” Naik says. A break involving ice-cream solved his problem. “I realised that my camera lens fits perfectly on top of the small ice-cream cup,” he says laughing, “So I just poked a hole in it, and added two

more cups for greater stability.”

The contraption isn’t portable, so Naik collects water samples and brings them home to observe. While out scouting near Mumbai’s Sanjay Gandhi National Park, Naik saw what looked like tiny twigs in a puddle. Then one of the twigs moved. He scooped up some of the water, took it home and began studying it.

One of the videos he recorded that day received honourable mention in the Small World in Motion video category of the Nikon Small World Photomicrography Competition, in 2022. It shows an annelid worm (one of the “twigs”) eating the spirogyra algae. He knew he had a winner on his hands as soon as he shot it, even though “it took me some time to figure out what was happening,” he says.

Interestingly, this Nikon contest has been held annually since 1975, with most entries coming from research scientists in North America and Europe. It is only over the past decade that amateur micrographers have begun making their presence felt on longlists.

Incidentally, in 2021, an image by Annadana won special attention at the Nikon Small World Photomicrography Competition; an image of a lantana flower bud photographed through a microscope lens received an Image of Distinction tag.

But flowerbuds aren’t Annadana’s focus. He’s picked the even tinier niche of crystal micrography, which yields perhaps the most unexpected visions to emerge from this genre. Vitamin C, for instance, when dried out with solvent and lit up, emits circular radiant wheels. Amino acids throw out floral shapes.

Annadana uses a Nikon microscope objective lens, which costs a fraction of a compound microscope and can be attached to a DSLR camera. “It’s important to place the light source below the slide,” he says, “and it’s even more important to figure out what solvent will render the most fascinating results. The key is finding the precise ratio between the chemical, solvent, heat and light.”

This can take hours of trial and error. Annadana says it took over 100 tries, and hours spent looking for clues in research papers and in interviews with winners of Small World-like contests, before he got his final image of the Vitamin C crystals. “Every one of us has our own recipe, our own secret sauce perfected over time.”



READ: See stars, planets, galaxies close-up via young hobby astro-photographers



To learn about wildlife and natural history, one need not always spend time in the forest, in the sea. Communicating nature’s genius through micrography, and getting people as excited about it as I am, is part of what drives me.

PURVA VARIYAR, 34, a conservationist, science writer and micrographer

{ THE WAY WE WERE }

Poonam Saxena

A filmmaker and his working girls

Yash Chopra is best known for his sweeping love stories, but even in these, the women had meaty roles. Many had jobs, built their own lives. Perhaps the best example is Chandni

The most notable part of Netflix’s four-part documentary series The Romantics is the discovery that Aditya Chopra is real. In recent years, only a few people could claim to have met him, and now here he is in the flesh, articulate and forthright.

The series is a nostalgic homage to the films and legacy of Yash Chopra, Aditya’s late father. Though Yashji, as he is fondly called, directed the epic trilogy of Deewar (1975), Trishul (1978) and Kaala Patthar (1979), featuring Amitabh Bachchan in his angry-young-man avatar, and Shah Rukh Khan’s second bad-guy outing Darr (1993), he is primarily identified with lush romances set in elegant upper-class homes and foreign locales (usually Switzerland).

Equally, as Rani Mukerji points out in the series, he is known for making “woman-centric” films that afforded his heroines dignity and self-respect.

I was always struck by the fact that so many of Yash Chopra’s female protagonists were working women. This was unusual in a time when women in Bollywood films often just were. No one knew what they did. One assumed they were just waiting to marry—perhaps a true enough mirror of real life back then. But not in Chopra’s films.

In Trishul, Sheetal (Hema Malini) is a general manager who plays golf and tennis in her spare time. In the same film, Geeta (Rakhee Gulzar), in her no-nonsense printed silk saris and matching blouses, plays an efficient secretary to a businessman. In Kaala Patthar,



Aditya Chopra in the Netflix documentary series The Romantics. (Above right) Sridevi, in one of her elegantly simple outfits, in a still from an office scene in Chandni.

Sudha (Gulzar) plays a doctor and Anita (Parveen Babi), a journalist.

But I think it’s Chandni (1989), starring Sridevi, Rishi Kapoor and Vinod Khanna, that offers the best, most complete example of the quintessential “Yash Chopra woman”. The film came at a time when Chopra was reeling from a string of failures. It was the era of action movies with titles such as Aag Ka Gola, Nafrat ki Aandhi and Vardi. The tide was turning towards softer, gentler cinema (Maine Pyar Kiya was released in 1989 too), but no one knew that at the time.

Still, Chopra wanted to make the film he wanted to make, a film after his own heart. The gamble paid off. Chandni was one of the year’s biggest hits.

In it, Sridevi plays a young woman from a small town who meets Rohit (Rishi Kapoor) at a Delhi wedding. The two fall in love and decide to marry, despite opposition from his wealthy family. Then tragedy strikes. Rohit is in an accident and becomes wheelchair-bound. He thinks he’s being cruel to be kind, and tells her he no longer loves her. Chandni takes a train to Bombay to make a new life for herself. When she finally lands a job, the film offers what, to me, is its most memora-

ble line. The young woman whispers to herself, relief and joy on her face, “Ab main saans le sakti hoo, jee sakti hoon, zinda reh sakti hoon (Now I can breathe, I can live, I can stay alive).”

A while later, her boss Lalit (Vinod Khanna), also single and lonely, proposes to her and she accepts. But Rohit now resurfaces, healed and well. How the triangle resolves itself makes up the rest of the film.

Through the movie, Chandni never loses her sense of self. She responds to all the turbulence in her life with dignity. Chandni is universally regarded as one of Sridevi’s best performances. Through the film she graduates from an exuberantly happy girl to a more worldly-wise woman. For the most part Sridevi wore simple white churidars and pastel saris, in costumes by Bhanu Athaiya and Leena Daru.

What this movie proved was that a committed director could make a film with a proper flesh-and-blood heroine who was a far cry from the filmi tropes of the time—the spoilt rich girl, the self-sacrificing martyr, the vapid airhead, the one-dimensional cardboard cutout and so on. I’m glad I revisited the film; you might be too.

{ SOUND BITES } SWEET NOTHINGS

Candy crush: Spells cast with sugar and water

Swetha Sivakumar



Put down the wand, pack away the potions. Sugar and water are all it takes to create some magic.

That, and the chef’s undivided attention. People call baking a precise science, but working with sugar requires far more accuracy. The good news is that, unlike with the rather unpredictable mix of milk, flour and eggs, one can always tell exactly what pure white sugar will do.

Calculate the percentage of water to sugar accurately, and you can tell exactly where a batch of boiling syrup is, just from the temperature reading. Plain water boils at 100 degrees Celsius. Adding pure white sugar (which is 99.9% sucrose) raises that boiling point. At 113 degrees Celsius, the boiling liquid is 85% sugar. At 149 degrees Celsius, almost all the water has gone, and the concentrate is close to 100% sugar.

In an aside, this is also why working with sugar solutions requires the utmost care; it can cause severe burns if it touches the skin.

Now here’s a bit of that magic: Controlling the temperature as it rises causes syrup. Controlling it as it cools, causes crystals to form. At this point, depending on how much the chef stirs or pulls, they can control the size of the crystals to make treats that range from the cloud-like cotton candy to the chewy, stringy *soan papdi*, or prevent the formation of crystals altogether, to make sugar glass.

Sugar glass, also called edible glass, is what you’re really seeing on the screen when a window shatters or one man punches another through a see-through door.

It is made by cooling the syrup so quickly that the sugar does not crystallise. Instead, it sets in place as an amorphous structure similar to real glass. Since this kind of edible treat is extra-brittle, and completely transparent, it’s a great substitute



SHUTTERSTOCK

{ CITYSCAPES } A PARKING PERIODICAL

Adventures in a vacant lot

Riddhi Doshi

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Parking in poetry. Parking in the ocean. Short stories of adventure stemming from an underground garage... A new periodical has its sights focused on how cities organise parking, and how this shapes its residents’ lives.

Two editions are out so far: Namma Parking, set in Bengaluru and released in December 2021; and Amche Parking, themed on Goa and released in December 2022. (“Namma” and “Amche” are Kannada and Konkani, respectively, for “Our”).

“The presence of parking lots and spaces inherently change the way we experience a city,” says founder and editor Radha RH, 23, a public space designer currently living in Goa. “It’s a fact that more parking spaces mean more vehicles, and more vehicles mean we need more parking spaces. Ultimately, there is never enough parking. Which means we could end up star-

ing at barren land and parked vehicles all around us.”

Radha first began researching the subject for her final-year thesis at the Srishti Institute of Art, Design and Technology in Bengaluru. She spent time in lots across Mumbai, Bengaluru, Goa, Pune and Ladakh, documenting how people of different occupations and genders use these spaces, and how they become multi-use spaces in cities starved of open ground.

Overall, the parking lots in India’s malls tend to be among the better ones. They are cleaner, safer, well lit and designed for easier navigation, she says.

Her annual periodical offers insight into fresh research on parking, new developments in the aesthetics of such spaces, perspective from architects and researchers, and reviews of a city’s facilities.

From Goa, a story written by freelance journalist Chryselle D’Silva Dias, resident of a 350-year-old home by the Mandovi River, explores the parking conflicts between residents and visitors to the many casinos in the area. In a photo series from the same state, photographer Himon Rai Chowdhury documents how fishermen in Benaulim village dock their boats, in an unchanging tradition that goes back centuries.

An interesting element in the magazines is the fiction. Namma Parking features a short story about a girl who is drawn to a parking lot by the Bollywood music played by the attendants. She visits every day, to listen to the music. While sitting in a tree, listening in on one such day, she finds out about a smuggling racket thriving in the place, and from there begins her adventure.

In Amche Parking, author Kanishk Devgan inspects how parking lots appear in modern verse, including in August Kleinzahler’s poem, Watching Dogwood Blossoms Fall in a Parking Lot Off Route 46, and Mark Terrill’s song, A Poem for Parking Lots.

The first edition of the parking magazine was available free online. The second edition printed 500 copies and has sold 100 so far, via online orders at ourparking.net. Radha also got sponsors for this edition. And there’s an advertisement in the magazine, for the book Bombay Imagined by architect and photographer Robert Stephens.

Through the magazine, Radha says, she wants to make people aware of the ways in which India’s cities are changing, before they become barren landscape like many American ones, where as much as 40% of public realms are just parking.

Where will the next issue be based? “Singapore, maybe,” she says. “It would be a nice challenge to grow the community beyond India. And Singapore’s take on the automotive industry, including its high taxes on acquiring cars, would be a good study.”

Radha RH, 23, a public space designer, has released two editions of the periodical so far, set in Bengaluru and Goa. She wants people to be more aware of how India’s cities are changing, before they become barren landscape like many American ones, she says.

