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Moon and Trumpet Vine, 2019
Oil on canvas, 11 x 14 in



COURTESY WINFIELD GALLERY

CHARLES HOOD

Cochineal and the Color Red

The surprising history of
a small white insect

In the 1967 film *The Graduate*, in an early party scene, an older man wants a private moment with Dustin Hoffman's Ben, star athlete and titular graduate. They step outside, and as the pool shimmers behind them, the fellow wraps an avuncular arm around Ben. The rest of the scene is so iconic that even people who haven't seen the movie can quote it. The father figure says, "I just want to say one word to you. Just one word." Drama builds. "Are you listening?"

"Yes sir, I am."

And comes the now famous punch line. What will this one essential word turn out to be? Something noble, about honor and courage and morality? A stock market tip? The number of a cute girl? None of the above. It is one word, and it is not one we expected at all: "Cactus."

Ben is as confused as we are. "Exactly how do you mean?"

The man beams down knowingly. "There's a great future in cactus." Pause. "Think about it. Will you think about it?"

"Yes, sir, I will."

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But he doesn't say *cactus*, of course, he says *plastics*, and the then-hip audience members rolled their collective pre-Woodstock eyes at the squareness of the Man. Too bad the movie didn't let in a bit of queer botanizing, because it turns out, once you study it, cactus has had an impact as great or greater than the avocado, the banana, the maize ear, or the chili pepper. Not just any cactus, but the humble, the ubiquitous, the easily overlooked prickly pear cactus.

Prickly pear—genus *Opuntia*, with dozens of blends and species inside that umbrella—is both native and introduced in California and, as a cultivar, is both a food crop and an ornamental garden plant. Prickly pear is also host to a parasite, the cochineal bug, which looks like a crust of white toothpaste but when scraped and dried creates a carmine dye that, starting in the 1520s, was Spain's most lucrative export from the New World, second only to silver and far ahead of sugar, vanilla, cotton, tobacco, gold, sisal, and slaves. Cochineal dye was traded globally; it made native growers in Oaxaca rich, made the Spanish importers and the Dutch and Venetian dye masters richer still,

suffered a slump in demand in the nineteenth century, and is undergoing a revival now. The *Opuntia* cactus has also been an out-of-control pest plant in many places (South Africa, Australia), or, where it is being intentionally cultivated for food, it is the cochineal bug that is the intruding pestilence. As a symbol, the cactus itself and the cochineal bugs that grow on it would make a terrific state flag, a much better fit for California's boom-and-bust lifestyle than any lumbering, stodgy, utterly extirpated grizzly bear.

The story starts with Cortés. It is easy to call the conquistadors ruthless, bloodthirsty colonizers (mainly because that's exactly what they were), but contra Neil Young's song "Cortez the Killer," they had not waltzed into a cheery, blissful Eden. Can you love a song but mock its lyrics? According to Mr. Young, in the world of Montezuma, "Hate was just a legend / And war was never known / The people worked together / And they lifted many stones." Hmm, nice scene, but utter balderdash. For reality, try A. A. Gill: "It's a great historical joke that when the Spanish met the Aztecs, it was a blind date made in serve-you-right heaven. At the time, they were the two most unpleasant cultures in the entire world, and richly deserved each other. Still, the story of how stout Cortés blustered, bullied, and bludgeoned his way to collapsing an entire empire with a handful of contagious hoodlums is astonishing."

The Spanish didn't invent cochineal harvesting, but they did commandeer the recipe—and acres and acres of undercultivated prickly pear. Preconquest it had been used in South America for royal capes and in Mesoamerica as a paint on codices. As soon as it arrived in Europe, dyers began to experiment wildly. Mix it with arsenic? That produces a rich cinnamon. Urine salts? Nope, they dinge it down just to weak gray, and everybody already had plenty of that. Tin makes it brightest yet. As formulas developed, it turned out to bind equally well with wool, silk, or linen, and, with the right mordants, it just became brighter and more insanely red. It also was used for cosmetics (lipstick, cheek rouge) and, occasionally, as medicine—can it cure whooping cough? Some treatises thought so.

Welcome to the era of cochineal, the red that out-reds everything else, a red that starts as insects on cactus and that when dried and cooked and mixed with this and that gave the sixteenth century the gift of a luminous, saturated

red that lit up the world like sunlight after a dreary winter. According to one account, British women even outlined their nipples in red.

To meet demand, Spain oversaw cochineal farms stretching from Tlaxcala to Chile and across into Brazil. It was illegally smuggled elsewhere, not always surviving but ultimately creating lesser industries in the Canary Islands and Java. Spain traded both west and east, and by the end of the sixteenth century, Mexican-grown sacks of dried cochineal helped to dye silk in Japan and China. Cochineal was an international hit. Emily Dickinson wrote about it and Byron did too, and El Greco, Velázquez, Zurbarán, Van Dyck, and Van Gogh all painted with it. Vatican cardinals buttoned it on when electing a new pope. British redcoats marched cochineal-dyed wool uniforms across the village greens of Lexington and Concord, Boston and Albany, Yorktown and Saratoga. One of cochineal's virtues as a dye, besides being vivid and indelible, is that it is consistent. If you want to batch-dye large quantities of fabric and create uniform uniforms (forgive the pun), this is the product for you.

All of this high-voltage color starts with an insect smaller than a grain of rice. It lives in parasitic colonies on the skin of cactus, taking a tithe of water and nutrients but usually not causing lethal harm, or at least not when in a natural state. (More on the pest and lethality aspects in a moment.) Once you look for it, you can see it all over. Very little prickly pear in California is completely free of cochineal, and there are three species that live here, including the kind that was harvested for dye in Mexico, *Dactylopius coccus*. As a product, it puzzled early naturalists. Was it a worm? A kind of grain? What part of the cactus did it grow on? After all, another red dye, madder, comes from plant roots.

Not until microscopes became a thing in the late seventeenth century did the insect's body and lifestyle get a preliminary review. Quick version is that the lady cochineal lives her life in one place and has lots of eggs; the young ones move around a few weeks; finally they settle down. At that point they do what mama does: create a white waxy coating, develop a red acid toxic to most things that want to eat them, drill down into the cactus with a mouth needle that is shaped like a stiletto heel, and parasitize the cactus for the rest of their sessile lives. (There is a male

insect, but it has no color.) All goes on in harmony for one year or a hundred years until too many cochineal colonies taking too much cactus sap kill the host plant, or else it goes on until a gentle swish of a whisk broom harvests the cochineal into a jar to be dried in the sun, mixed with clay, pressed into cakes, and shipped around the world and later reconstituted into premium-grade ultra-red dye.

What's so special about dried bugs? As historian of color Carolyn Purnell says, "There is red, and then there is *red*, the color of vixen lips and midlife crisis." Want to announce the end of the drab, worn-out Middle Ages and drumroll in the new kid on the block, the Renaissance? Cochineal will do it. As Purnell says, "It's the color that Louis XIV wore on his heels to prove that he could crush his enemies easily. It's the color that Christian Louboutin puts on the soles of his signature stilettos so women can announce, in a flash, their luxury and style. It's the color that often shows up on va-va-voom dresses and that gives its name to those districts where illicit pleasures find expression." She goes on to note that while it is true "red does sometimes invite us closer," more often, "it stops us in our tracks. It's a color that demands and commands awareness. Red insists that we forgo everything else and pay attention to the matter at hand. It warns us not to go any further, unless we're willing to risk life and limb. Stop signs were originally yellow, but American standardizers realized that the color wasn't immediate enough. Red is urgent. It's the color of focus. It's an insistent *now now now*."

No wonder it was such a hit. How much was it worth? During Shakespeare's time, sugar was an exotic spice and a luxury product—it was known and available, but pricey. You used it to show off: along with cinnamon, cloves, claret, and rose water, one dashed a quick slug of sugar onto the boiled beef if guests were expected. Yet in contrast, this new dye was so coveted in England that a thirty-pound bag of cochineal cost more than a metric ton of refined sugar.

California was never a central part of the dye trade, yet cochineal surrounds us, once we know how to notice it. Just find a stand of cactus and then look for the fuzzy white stuff that splashes the skin of the cactus pads. (It can also cover the fruit.) It does not have to be while you are out hiking; you can spot cochineal in botanical gardens and front yards. Once you have found some, take a Swiss Army knife and smooch a small patch with the broad side of

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the blade. A small puddle of intense carmine results, more vivid than Kodachrome. Just be sure to clean the blade off with a piece of tissue—wipe it on your jeans and you'll be left with a stain that commemorates the experiment forever.

We should probably pay more attention to cactus overall than we do anyway. From golden cereus to red-spined fishhook, California has thirty-five native species, plus I've seen half a dozen more "escapees"—exotic species that were once somebody's houseplants but now live second lives in the wild. A road off the California Route 210 freeway in Los Angeles called La Tuna Canyon commemorates not fishing but the persimmon-red fruit of the prickly pear, or *tuna*. The genus name, *Opuntia*, comes from a Greek city where people could grow plants just by sticking them in the dirt. The species names vary: there are 100 or 200 kinds of prickly pear, unless it is half that or twice that or unless most are hybrids. Feel like you might be coming down with a touch of scurvy? You can get vitamin C from cactus pads, usually listed in the market as *nopales* and, when you buy one, the *abuela* selling it to you most likely will have already scraped off the spines. Try grilling it with chicken and pineapple.

These connections are both astonishing and enduring, since the Spanish-Aztec axis is a spindle on which nature

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and culture still rotate today. To quote the poet Hadara Bar-Nadav, to begin thinking about history is “to kneel by the cochineal / head of the dead.” Everything around us in California shines with historical association. Palm trees may be thin and vaguely tropical, but they initially came to the state from the observation of Palm Sunday service in Catholic-run missions. Missions in turn gave us orange trees and fig trees but most especially mission-style architecture. White walls and red roofs: from tract homes to university libraries, Spanish colonial choices surround us on all sides. Another name for Highway 101 is Camino Real, demarcated by bells on hooks. Padre Serra may be a saint or may be guilty of genocidal war crimes (or both at the same time), but he and his soldiers, in first entering Alta California, bartered for meat and shellfish by trading handkerchiefs and other small squares of bright cloth. Cochineal bought land for more cochineal.

One reason it's so easy for us to be oblivious to color (and ignorant of where it comes from) is that we're immersed in it in ways never experienced before in human history. We can eat like kings these days but also dress like them. Indeed, we have so much dense, saturated color

shouting at us all day long I am surprised we don't have more migraines flaring up than we already do. Once you're surrounded by something, it's hard to slow down and actually see it. We don't know who first described water (as the joke goes), but it probably wasn't a fish.

On top of that, given the subjectivity of experience, color is painfully hard to talk about—is this shirt more mustard or more butter yellow?—and when we hear of one of Robin Hood's men being called Will Scarlet, a Hollywood costumer might not want to replicate historical accuracy, which would be drabber and browner than we prefer today. Carolyn Purnell: “In the Middle Ages, scarlet was not a color but a textile, an opulent wool cloth from central Asia, and scarlets could be red, blue, black, or any color in between.” In time, luxe fabric and luxe color became synonymous. “Most red dyes before cochineal were St. John's blood or Armenian red, both of which were derived from scale insects, related to but not quite the same as cochineal itself. However, true cochineal had three distinct advantages: the carminic acid was less fatty than that of the European insects, so it clung to fibers better; it could be produced more efficiently; and it made a more powerful dye.” Pre-cochineal, the Chinese favored a red derived from cinnabar, but India, like Europe, rendered its traditional profusion of red dyestuff from the lac insect, *Kerria lacca*. It was red, but not *that* red. Everybody was glad to give it up.

Mad Kit Smart, alternating “for” and “let” in an ecstatic celebration of God, produced these lines:

Let Ramah rejoice with Cochineal.
For H is a spirit and therefore he is God.

Let Gaba rejoice with the Prickly Pear, which
the Cochineal feeds on.
For I is a person and therefore he is God.

When Diego Velázquez painted *Las Meninas* in 1656, dim in the gloom are floor-to-ceiling red drapes, with Philip IV's status and cochineal-derived wealth allowing him the luxury of cochineal-dyed fabric on an immense scale. Velázquez used glazes of cochineal paint to portray the cochineal fabric of the Royal Alcazar palace of Madrid, the beating heart of the heart of the Spanish Empire.

Follow the trade routes and the world connects in red lines. In the Southwest, Native American textile artists unraveled trade cloth to reuse the red-dyed wool, weaving the color into their own stories and symbols. The garrison flag flying over Fort McHenry in “The Star-Spangled Banner” had its semiotic lasting-through-the-night stripes made the high-viz red that they were thanks to the alchemy of cochineal.

After several hundred years of glory and profiteering, cochineal had diminished in status by the late nineteenth century, once cheaper artificial dyes became available. By then pirate operations in the Canary Islands and elsewhere had already broken Mexico's monopoly. Fields went fallow and cochineal disappeared from trade and imagination.

Yet today it is back, as an organic and artisanal product (and as the name of a trendy restaurant in Marfa, Texas). Designers use it for dresses, and once more weavers and craft dyers investigate its subtle glow. The commercial stands now are mostly in Peru, for example on a 250-worker farm that produces 400 pounds a week of dried, ready-to-go cochineal. At the same time, the insect itself remains both saint and sinner. Cactus is native only to the New World, but like house sparrows and iPhones, now can be found worldwide. In places that have too much prickly pear and not enough natural control, various strains of cochineal have been intentionally released, since at their most intense densities, they can parasitize a host stand of cactus down to wilted stumps. Not all kinds of cochineal favor all kinds of *Opuntia*—there is a subtle art to getting the right match of appetite to host—but it can be a very effective biological control on what is often a highly invasive plant.

Other owners, though, want to keep their nonnative prickly pear stands healthy and intact, using the fruit for human use and pads for animal fodder. They want nothing to do with insect pests, no matter if those bugs are red, green, purple, or chartreuse. Ethiopia, Morocco, Tunisia, and Jordan currently have cochineal infestations, and they all feel about this the same way US Forest Service foresters feel about pine bark beetles or orange growers feel about the Mediterranean fruit fly—“even one is one too many.”

Who is right? All and none: the basic message of “mowing animals and plants out of their native ranges always has unintended consequences” still stands as true today

as it did when the first Europeans sailed their barnacle-encrusted, bilge-leaking, deeply unquarantined ships into the pristine bays and lagoons of the New World.

That is why I suggest cochineal should be the new state symbol of California. Forget ponderous ursine mascots—let's leave those worn-out symbols to UCLA and Cal. No, I want cactus for endurance, for our Hispanic heritage, for famine food, and the *tuna* fruit that makes such a great jelly on toasted bagels. What a tough-ass tree the cactus is. But more than that, I want to live in a place where the state color is Ferrari red, where our deepest passions can be painted and named, a place where my trans friend can look in the mirror and see staring back at her the smacky red of freshly applied lipstick. Red is the boldest color and also goes best with summer: white beach, blue sky, red swimsuit make up a new, improved trio of primary colors. Red is the state that beige becomes after it has been chased through the snow by wolves. (Wallace Stevens says a lion's roar reddens the desert.) Red wine pairs with red meat, with laughter and sex, and is best served in a glass with a wide, deep bowl. In another four or five billion years, our sun will be a red giant, swallowing Mercury and Venus. Red insists and burns; red does not go to bed either easily or quietly. Few towns would tolerate a brigade of pink fire trucks.

I want us to adopt symbols that resist simplicity. Cochineal, for all the painful complexity of its provenance, can do that for us. Let us praise the cactus worm: it represents a sensory revolution, a product once hidden in plain sight and now known and available to anybody. New artists are exploring what the color can do for us, and we may be entering a second renaissance of cochineal. Where it will go, we cannot yet be sure. Alexander Theroux: “Red confounds us in its many meanings, for it is magic itself.”

Poet and naturalist **Charles Hood** lives in the Mojave Desert. Though his choices in field kit rarely stray from shades of khaki, sand, and dung, he says that when he teaches, he prefers purple shirts and yellow ties, “just because Keats and Shelley deserve it.”