

Quest for the Boojum

A trek through the cactus gardens of Baja California in the ultimate off-road vehicle.

BY STUART F. BROWN

It sounds Australian. Its appearance—a towering, leafy rat's tail—suggests something from the pen of Dr. Seuss. Both wrong. Boojum trees are real, though rare. And they are found in certain regions of Baja California, the western Mexican peninsula that juts 800 miles south into the Pacific Ocean.

Finding the boojum tree became a fixation as I flipped through books on desert wildlife in anticipation of a trek through the remote and rugged Baja backcountry. The boojum's droll moniker and primeval appearance qualified it as a special quarry to pursue, a botanical unicorn.

Last spring, record rains transformed large areas of normally parched Baja into a riot of blooming cactus and wildflowers. A fine carpet of tender vegetation sprouted from the desert floor, making the terrain look like a garden tend

JOE POCOMINI





A forest of spindly boojum trees rises behind a muddy, four-passenger Hummer. Overhanging plants such as the needle-tipped agave at left made it wise to keep the windows rolled up.

ed by meticulous caretakers. It's a stirring transformation if you are lucky enough to witness it. A few rainless weeks later, the scorching sun would turn most of the greens back to browns, and the rare zenith of verdure would be a memory.

Aside from straddling a burro or a serious dirt motorcycle, the only way to reach some of the remote stands of boojum and unique cacti indigenous to Baja is with a civilian version of the Hummer, the military-utility vehicle built by AM General Corp. of South Bend, Indiana. Garden variety four-wheel-drive sport-utility vehicles and pickup trucks begin to drag their axles

and differentials when dirt roads dissolve into rocky stream beds, then into micro-canyons—and it's time to turn around. Here the Hummer can press on regardless, due to its capable drivetrain and lofty 16-inch ground clearance, about twice that of most four-wheelers.

Known for its role in the Persian Gulf War and in the driveways of celebrity showoffs, the wide-track Hummer is the product of one of those "military specifications" that sometimes spawn procurement horror stories. In this case, though, the Army paperwork merely said what the truck should do, without prescribing every last nut and bolt.

Among other things, the high-mobility multipurpose wheeled vehicle (HMMWV, or humvee in milspeak) had to be able to climb a 60-degree grade

without bogging down and stably traverse a 40-degree side slope—while carrying a two-ton payload. Engineers were free to find their own design solutions, and the military ended up with an almost unstoppable rough-terrain vehicle that's easy to drive and difficult to roll over. Somewhere along the way the Hummer nickname attached itself to the truck. For more information on the Hummer's unique technology, see "Under the Skin of the Ultimate Off-Road Machine."

Arich fund of knowledge exists about Baja "roads" and smashed vehicles. In 1967, desert-racing enthusiasts organized the first Mexican 1000, a brutal event that was run at breakneck speed along the nearly 1,000 miles of mostly unpaved road connecting Tijuana with the tropical



JOE POLIMENI

tear parts. Periodic liaisons with a 40-foot flatbed truck carrying 2,000 gallons of diesel fuel and gasoline in four portable tanks kept the Hummers nourished.

Wind, rain, and road construction have gradually changed Baja's complexion, leaving remote bypassed sections of the old race route to the forces of erosion. Sections of it have become truck hell, winding through cactus heaven.

During the first two days of my hard-driving, four-day off-road journey from San Quintin in the north to La Paz in the south [see map], we more than once climbed into thickening stands of boojums—just like the ones in my books. Like most desert plants, the big woody shrubs flourish at a specific elevation that suits their temperature and humidity preference. Distinct bands of specialized flora give the hilly terrain of desert Baja a layer-cake appearance.

Ascending for the first time into the boojum stratum, I called on the citizen's band radio for an urgent pit stop. It was really an excuse for a stroll through the moist, bloom-perfumed air this year's pronounced El Niño weather condition had brought to Baja. The recurring climatic event caused the northern jet stream to split; its serpentine lower fork herded drenching storms generated by warm southern-Pacific waters eastward across the normally arid peninsula [see "El Niño: The Weathermaker," May].

Tall, thorny, and jacketed with freshly sprouted leaves, some boojums were branched, while others consisted of a solitary spike. Occasionally, I



ROBERT G. WURTZ

The towering cardon cactus is common in Baja and can weigh as much as ten tons. Locals use dried ribs from the plant's skeleton to make fences, fish spears, and rafters for houses.

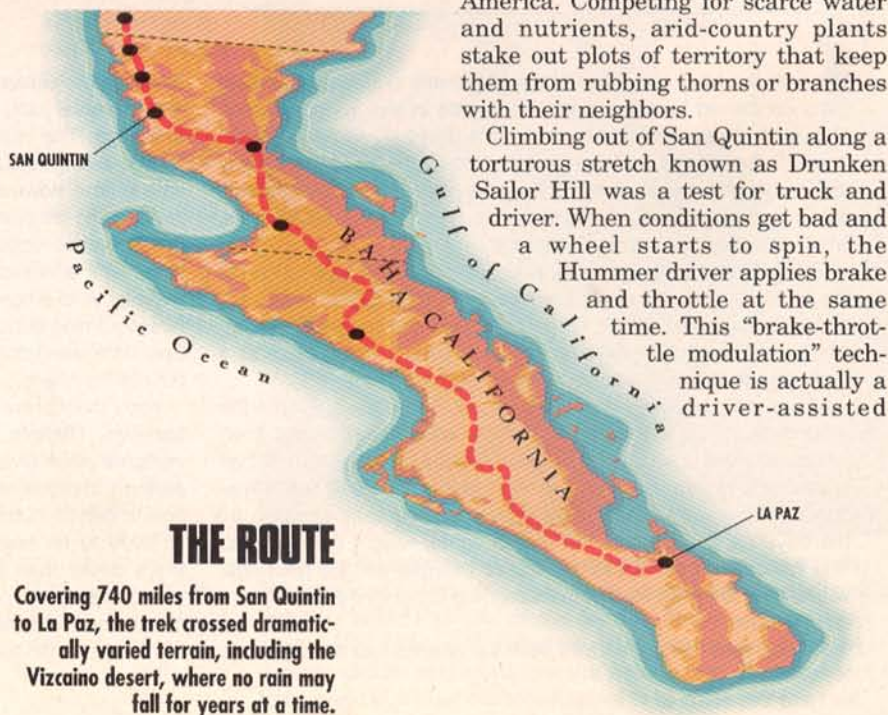
spotted a quirky renegade that traced a question mark against the sky. Often, the boojums grew in mixed forests with the saguaro-like cardon, Baja's tallest cactus. "Forest" is the correct term for a number of large plants grouped together. But the low density of a desert forest makes it look sparse to eyes accustomed to the junglelike woods of temperate North America. Competing for scarce water and nutrients, arid-country plants stake out plots of territory that keep them from rubbing thorns or branches with their neighbors.

Climbing out of San Quintin along a torturous stretch known as Drunken Sailor Hill was a test for truck and driver. When conditions get bad and a wheel starts to spin, the

Hummer driver applies brake and throttle at the same time. This "brake-throttle modulation" technique is actually a driver-assisted

port city of La Paz near the peninsula's southern tip. In those days, entrants included modified Volkswagen Beetles of all descriptions, Toyota Land Cruisers with Chevy V8 motors, and even a Rambler American sedan. Dirt bikers rode in the event too.

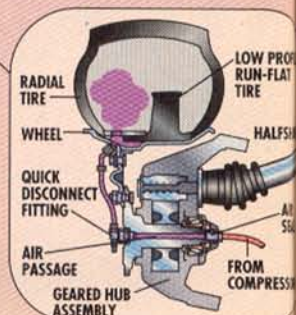
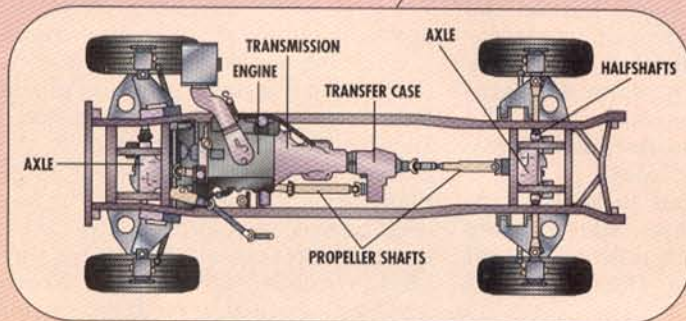
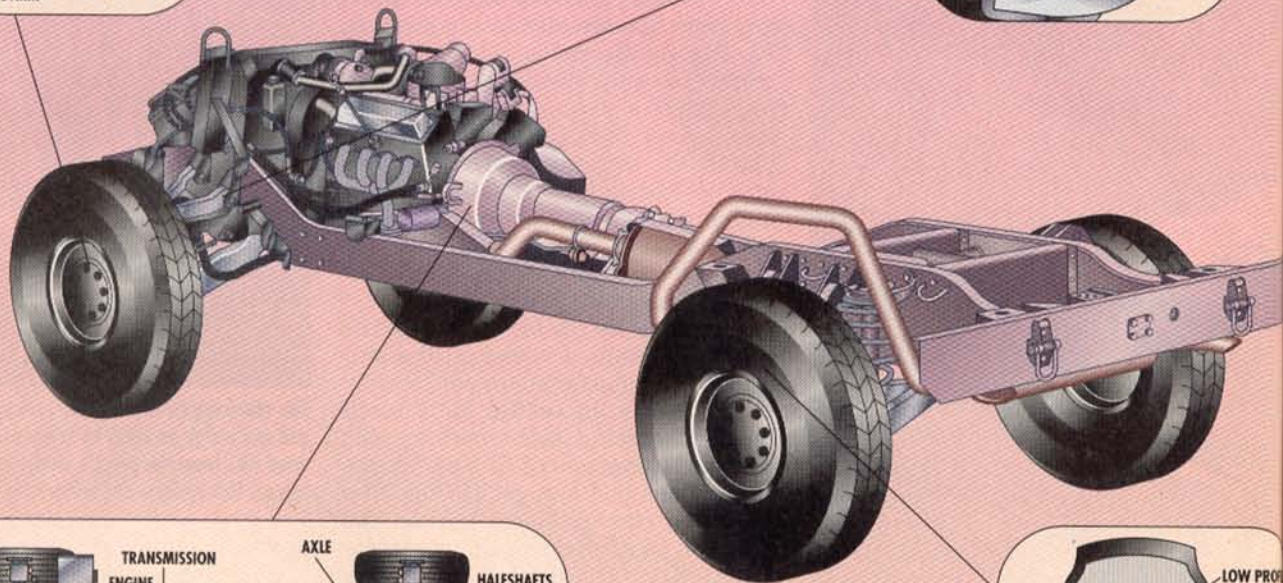
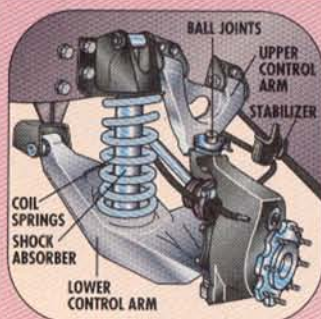
This spring I retraced major sections of the original Mexican 1000 route, driving both diesel- and gasoline-powered Hummers in a paramilitary operation commanded by off-road racer Rod Hall, who has won the event 13 times and is the sole veteran of the 1967 race still showing up at the starting line. My Hummer experience included hardtop and canvas-roofed versions configured with seating for two or four passengers, plus substantial cargo storage. We were mechanically self-sufficient, packing along a supply of spare wheels and other wear-and-



THE ROUTE
Covering 740 miles from San Quintin to La Paz, the trek crossed dramatically varied terrain, including the Vizcaino desert, where no rain may fall for years at a time.

GERALD R. RUSSELL

UNDER THE SKIN OF THE ULTIMATE OFF-ROAD MACHINE



Beneath the boxy expanses of the Hummer's skin reside working parts conceived from the outset to operate in truly rough country. Designers began by locating the entire drivetrain—engine, transmission, driveshafts, and differential gearcases—out of harm's way above the lower edge of the box-section steel frame. Disc brakes are mounted inboard, racing-car style, next to the differentials, where they are shielded from damage.

The Hummer's interior hosts a big central "doghouse" covering the high-mounted drivetrain hardware, but the truck's wide track and well-distributed weight keep its center of gravity low. Thus, tipiness isn't a problem. Military versions exploit the doghouse as a mounting point for machine guns or antitank weapons.

Using independent suspension at all four wheels avoids the ground-clearance limitations of the rigid axles found in most four-wheelers. Final drive is through geared hubs that reduce halfshaft speed by a ratio of about 2:1 at each wheel. This final multiplication of torque right at the wheels greatly decreases stresses on the driveline and permits the use of lighter-weight components. The halfshafts connect to the top of the geared-hub housings, where they are protected from marauding rocks by heavy suspension A-arms.

A secondary benefit derives from the geared-hub arrangement:

Because the center of the hub is unoccupied by the usual halfshaft and universal joint, an onboard tire-inflation system becomes easy to design. The Hummer's central tire-inflation system isn't a silly techno-selling feature of the sort that sprouts on luxury cars from time to time, however.

Adjusting tire pressure on the go from 15 psi in soft sand to 30 psi on asphalt to obtain the best traction and handling bolsters the Hummer's effectiveness as a military vehicle and helps any user make optimal progress across changing terrain. What keeps the air hoses running through the hubs from twisting themselves to death? Special rotating couplings sealed with O-rings let the wheels turn, but not the hoses.

Wars draw armies into horrendous conditions for wheeled transportation. Remote oil drilling, mineral exploration, and ranching ventures place civilians in similar circumstances, where Hummers perform impressively. Though almost nobody else really needs one, a certain number of affluent commuters shell out \$40,000 to \$57,000 to be seen in the tough, broad-shouldered Army truck that's cooler than a Range Rover. Although actual mileage may vary, as they say, the Hummer's fuel consumption ranges from about nine to 15 mpg for the diesel version, and approximately six to 12 mpg for the thirstier gasoline model.—S. F. B.

traction-control strategy that stops the spinning wheel and redirects torque through the front and rear differentials to the wheels with good bite. Growling up the hill, the Hummer readily powered out of deep gullies and sand holes using the modulation trick.

Hummers come with a 6.5-liter General Motors V8 diesel engine that produces an abundance of mud-defeating torque. A gasoline-fueled 5.7-liter GM V8 is now offered for those who don't like diesel clatter or aren't near a fuel source. But the standard motor's effortless pulling power makes it the better choice for the Hummer's intended rough-country mission. The Army wanted the truck to be simple to drive, so full-time power is sent to all four wheels through a heavy-duty four-speed automatic transmission.

When driving fast in high range across sandy ground, the transmission can be set in a mode that locks the center differential to equalize front and rear axle speeds, reducing the tendency of four-wheel-drive vehicles to weave slightly left and right. I appreciated this benefit as I picked up speed through soft, silty soil, as fine as talcum powder, which flattened out into temporarily rain-soaked dry lake beds. At times like these, I used the Hummer's central tire deflation/inflation system to bleed pressure down to a mushy 15 psi that greatly enhanced soft-ground traction and steering. On paved roads, pumping the tires back up to 30 psi delivers the best handling and fuel mileage.

Real off-road racers, by the way, would never use this sissy differential-locking feature. They want their vehicles to be twitchy so they can throw them sideways at more than 100 mph to lose speed in turns, throw dust in the face of the competition, and get there first. From time to time I observed veteran Baja terror Rod Hall, a composed and compact man. Our pace, I suspected, probably felt to him more or less like standing still.

We were "treading lightly," which means respecting the fragile environment by sticking to established trails. If you want to see something off the beaten path, you walk there. Deserts have a long memory; an area in southeastern California still shows the tracks of tank treads made by General Patton's armored troops as they trained for combat in World War II. Slow-growing plant species still haven't fully reestablished themselves. The ability to reach seldom-visited country with a vehicle like the Hummer carries with it a special

obligation not to cause any damage.

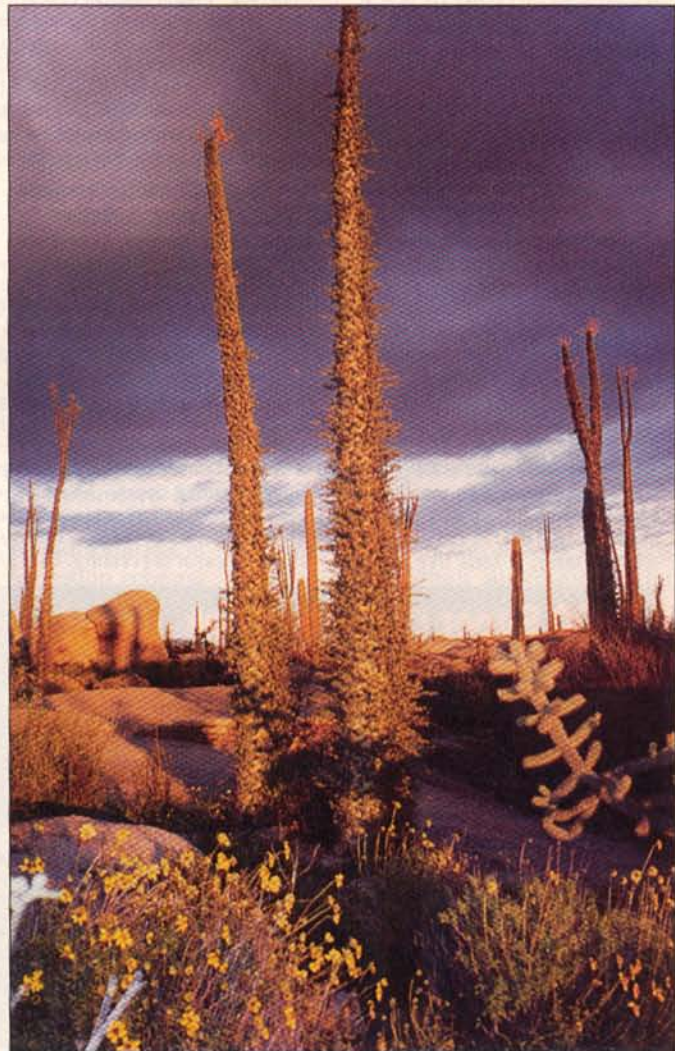
Baja's economic mainstays are agriculture, tourism, and fishing. The peninsula's population totals about 2.9 million, but most of them live in the northern cities of Ensenada, Tijuana, and Mexicali. Large areas of Baja's interior and southern reaches are thinly settled, with not an electric pole in sight. Several times I drove for more than 20 miles without seeing any inhabitants. The presence of sufficient ground water and rainfall in lonely pockets of mountainous terrain supports small, isolated subsistence ranches whose owners occasionally trek with burros or horses to an outpost to buy and barter supplies. Mostly, Baja is a rugged and empty place.

And it is a place full of rocks. Seasoned Hummer pilots like to demonstrate the vehicle's ability to nose up to and climb a 22-inch vertical obstacle such as a chunky boulder. I experienced a maneuver known as "high-centering," which would be a severely equity-depleting tactic in other off-road vehicles. Once accommodated by the right or left front suspension, a horrible rock will slide beneath the Hummer's steel-armored rocker panel. Then the rear wheel clambers over the geological impediment, and that's that.

Rolling over hills, across plains, through mud, and around patches of quicksand, I spotted many distinctive forms of plant life, including forests of chubby-limbed elephant trees. They look like miniature versions of the baobab tree of West Africa familiar to readers of the children's book *The Little Prince*. There were barrel cacti with waxy yellow-green blooms,

fuzzy-looking chollas bristling with aggressive, barbed spines, and sharp-tipped agaves, one type of which furnishes the makings for tequila. In fact, the richest variety of cacti on earth is found here, about 120 species in all, almost three-quarters of them unique to Baja.

At trail's end, I rolled into idyllic La Paz, population 180,000, right on schedule. Although too much terrain had jounced by in too little time, these glimpses of a remote and beautiful world set my resolve to return one day. Driving Hummers down Baja under the conditions they were really built for brought together some of my longtime enthusiasms: exotic machinery, desert wildlife, and following back roads to see where they go. Having fulfilled the boojum quest, I am now back in my 30-mpg Honda Civic, navigating the freeways of Southern California. Evenings, I tend the potted cacti and succulents on my front porch. ES



Technically not a cactus, but rather a spiny shrub, the boojum tree also bears the Spanish name cirio, given for its resemblance to the tall candles that were burned in colonial mission churches. Boojums can sprout new leaves within 72 hours of a rainstorm, later dropping them to conserve moisture until the next splash of scarce water arrives. The tallest ones attain a height of 60 feet and are estimated to be about 360 years old.