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Motor homes built the way they ought to be

by Jim Liston
EDITOR

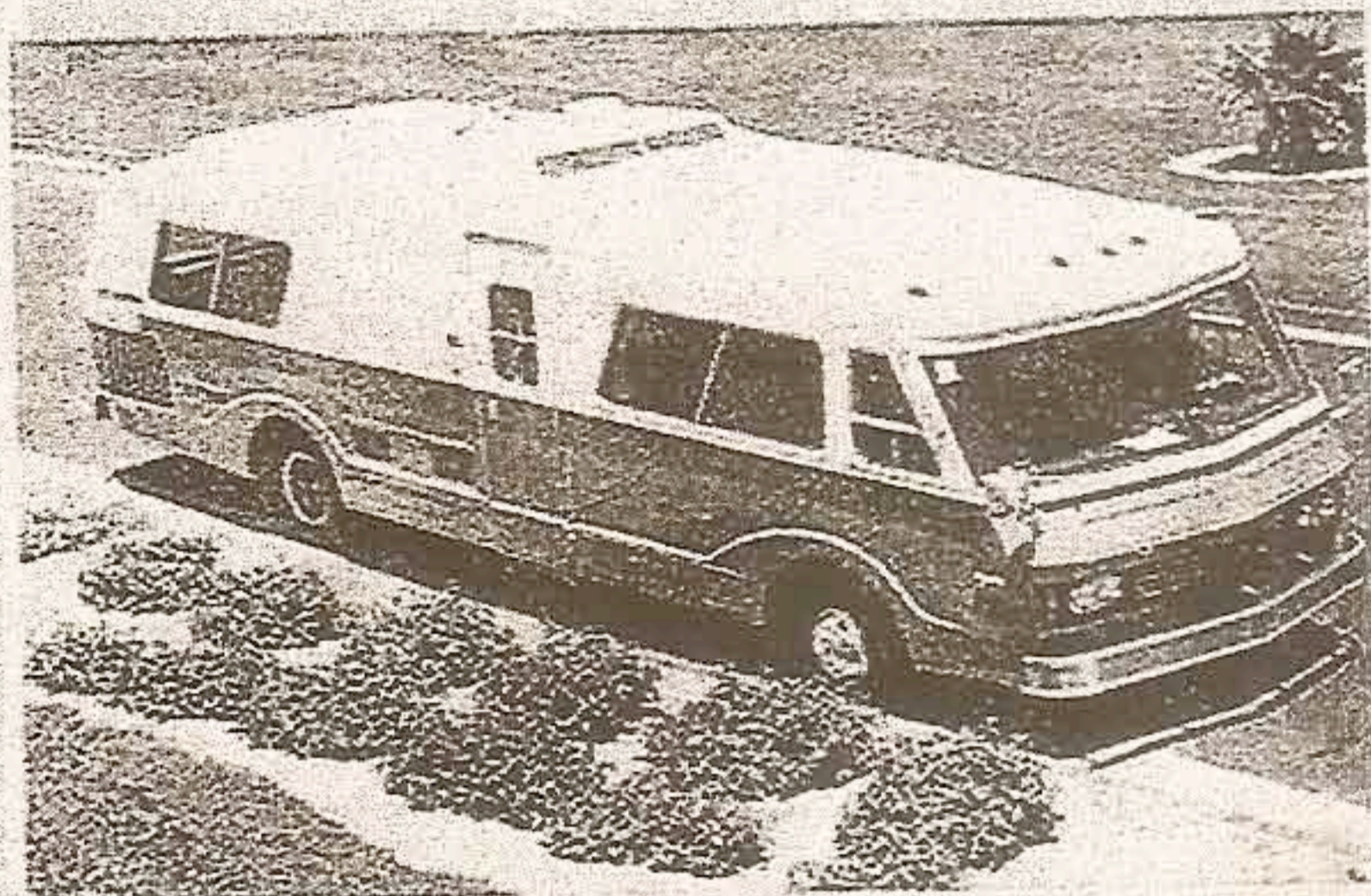
Picture this: You're at the wheel of a motor home rolling at 70 mph. It's so quiet you can easily talk with people seated at the dinette behind you without raising your voice; so quiet you need to check the tachometer against the speedometer. You hear the whiz of the tires and the swish of the wind. But engine noise is more than 20 feet away, sealed off in a rear compartment.

The coach is eager on the hills, never slows to less than 50—in second—on the steepest; it glides down the highway, smoothing out the dips and rough stretches with a pleasant, easy stride. The accelerator is responsive; the power steering has a good, positive feel. A truck pulls onto the highway and you hit the brakes at 70 and there's no sweat, no squeal, no fade. When your freeway exit takes you by surprise, you zip into the tight curve of the off ramp faster than you think you should with a vehicle of this type. There's no lean, no sway; the coach tracks like a sports car.

There's a wonderfully secure, solid feeling to the vehicle, and the more you drive it the more aware you become of the complete control you have. This is the way motor homes *should* handle; this is the way they'll have to perform and handle if they're to come up to this pace-setter recently introduced by the FMC Corp.

FMC is a worldwide manufacturer of diversified machinery, chemical, fiber and film products. It had been known for some time that General Motors' GMC Truck and Coach division was planning to enter the motor-home field as a producer. But FMC's 2900 R (29 feet; R for rear engine) entry came as a surprise. The prototype first appeared at the Family Motor Coach Assn. convention at Burlington, Vt., July, 1972, and all but stole the show.

It was the kind of vehicle coach fans knew from experience would be an ideal highway cruiser. And with its price of about \$30,000, which included *everything*, it was considered a real bargain by coach



FMC 2900R (top) is 29 feet long, 8 wide, with 81-inch track, built-in airconditioner, TV antenna on roof. GMC's 26-footer has sleek, aerodynamic styling.

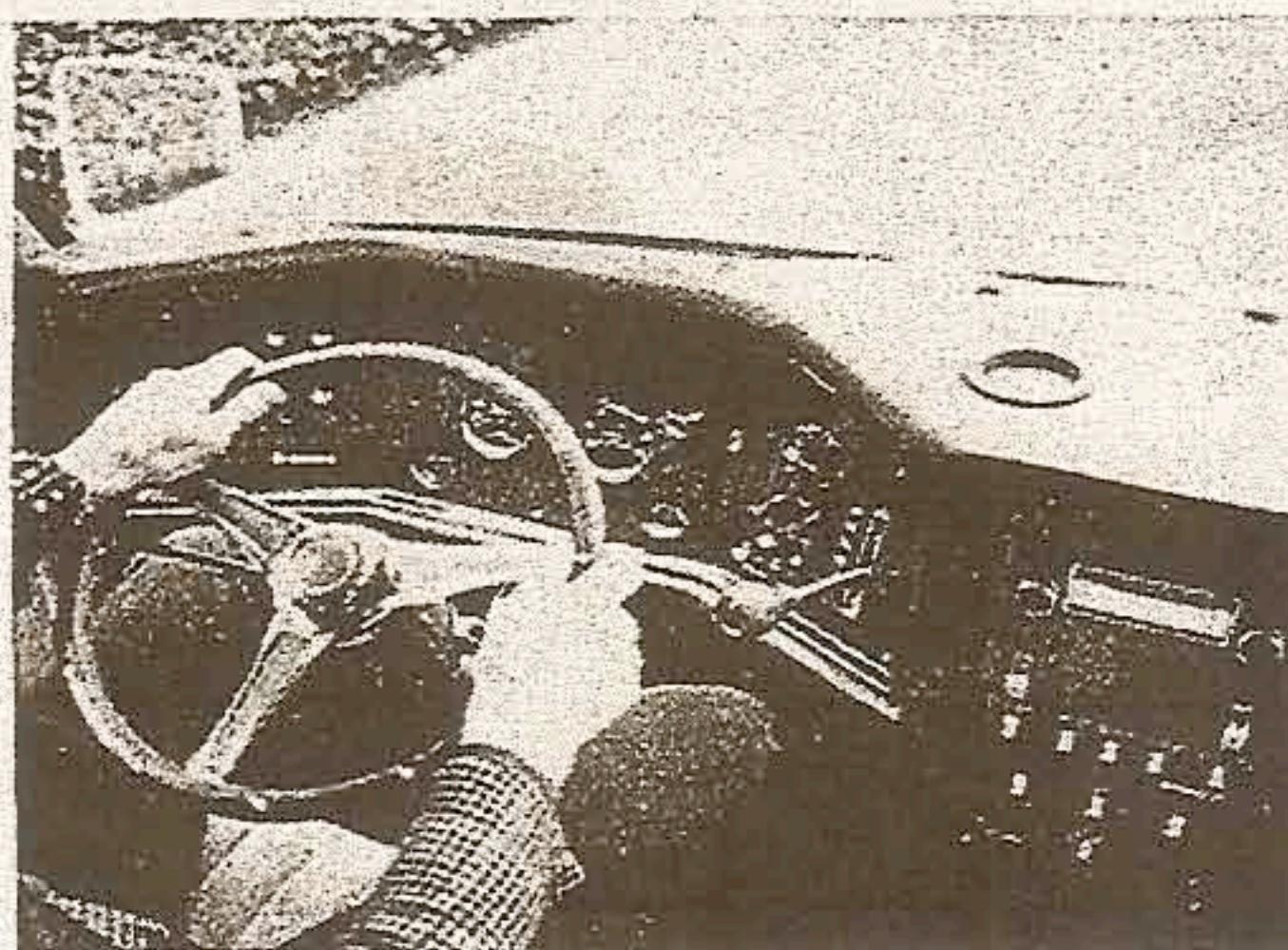
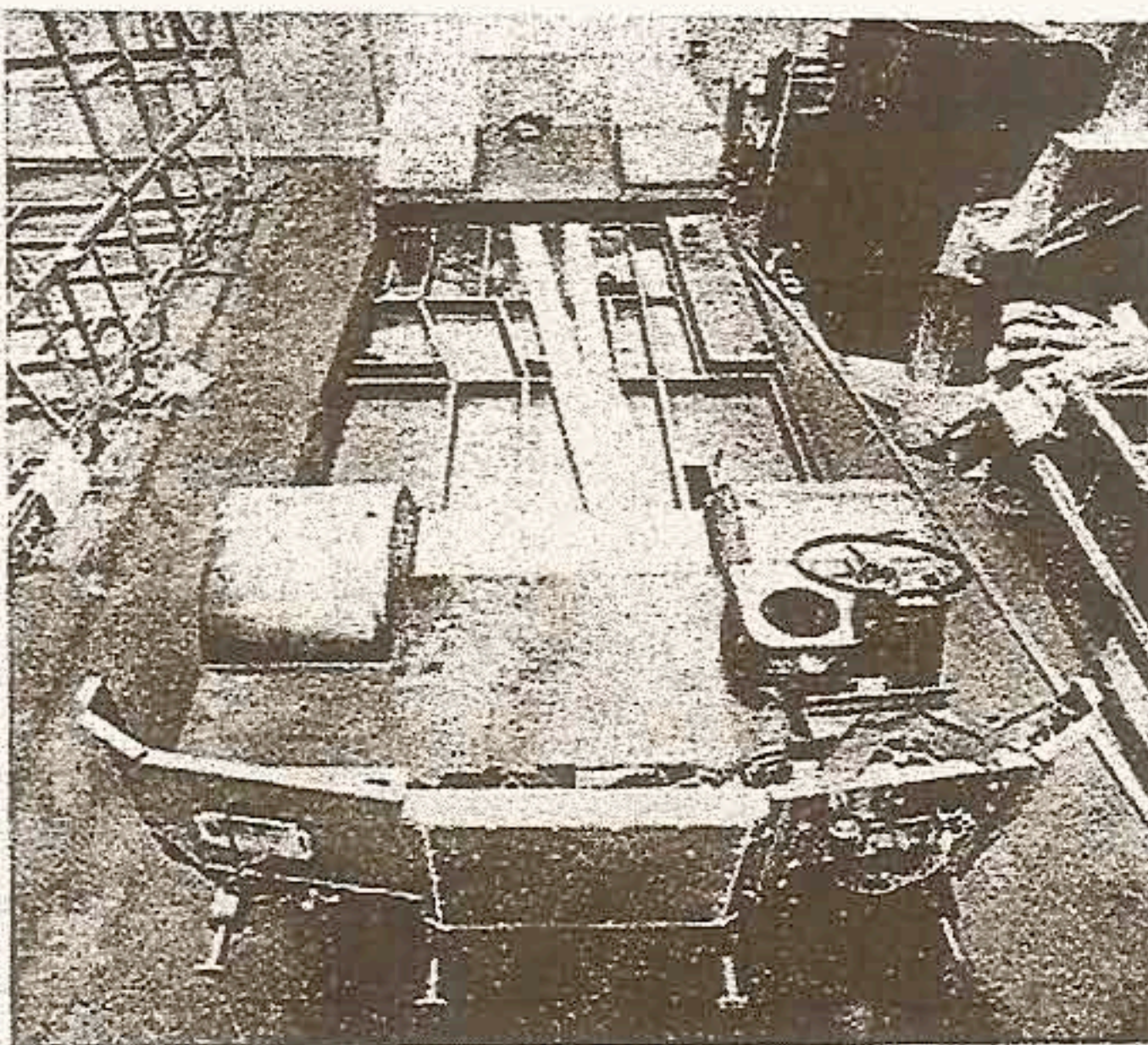
buyers accustomed to prices that start at \$35,000. A short distance away the GMC was attracting big crowds with its front-wheel drive, low roofline and floor, and air springs mounted between tandem rear wheels.

As two different engineering approaches to a design problem the FMC and the GMC offer an interesting comparison.

From their beginning, 15 years ago,

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popular mechanics



FMC starts by welding its own steel chassis, to which aluminum frame (left) is welded. Plastic conduits in center carry accelerator, brake and gear selector cables and heater hose. All joints on underbelly are sealed to prevent corrosion. Cockpit of FMC has good instrument array with panel at right supplying a digital readout on the coach's domestic equipment.

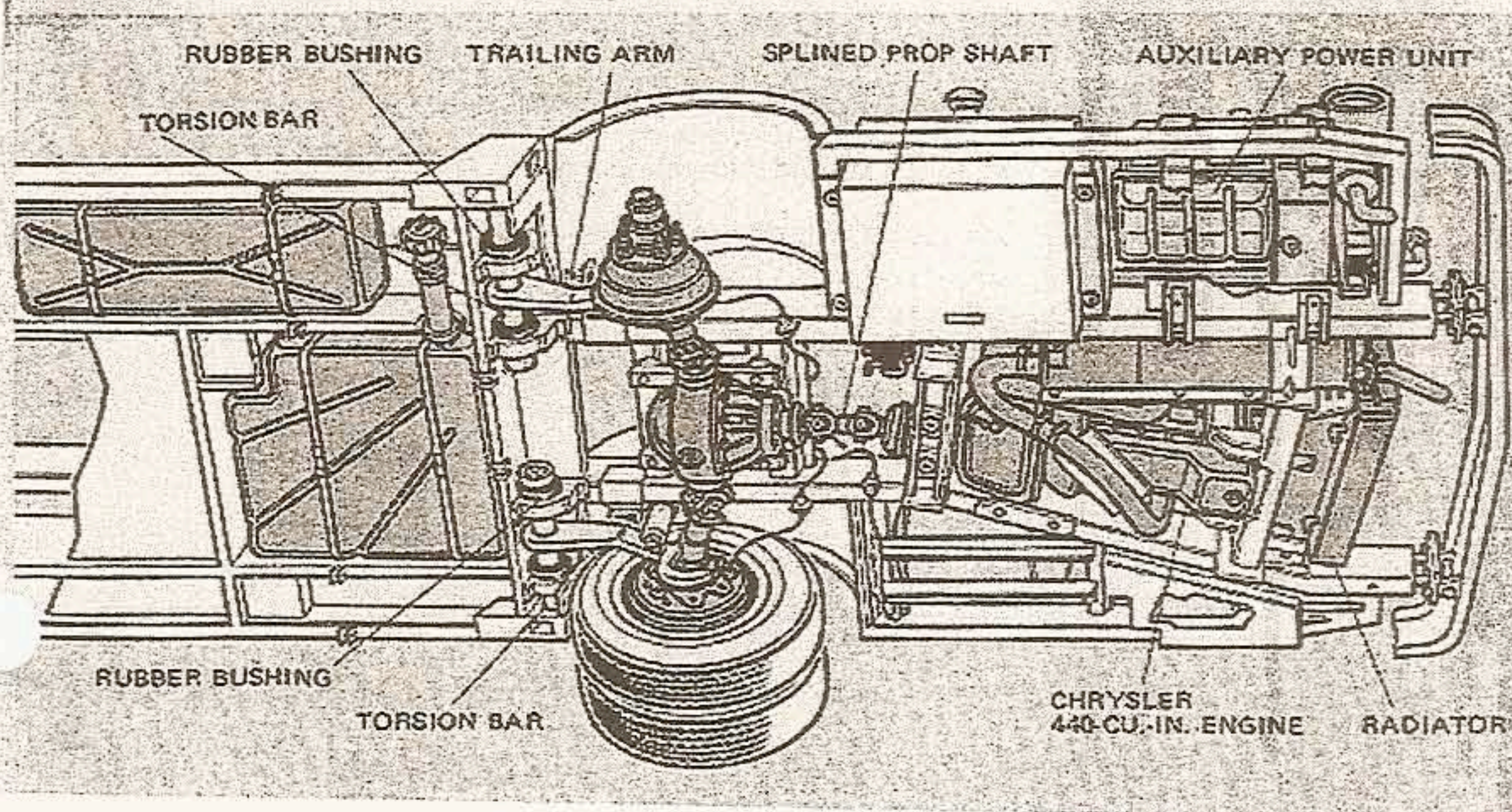
most motor homes have been built on truck chassis. The adaptation results in several things that are less than ideal—a high center of gravity with poor lateral stability (sway on turns and in crosswinds), hard-riding truck suspension, poor acoustical and thermal insulation—and, in many instances, insufficient power.

Truck manufacturers whose chassis are used by motor-home builders have lately improved suspension systems and braking power and lowered the high center of gravity. But engineers have long contended that the right way to build a motor home is from the ground up, with body and chassis engineered as a unit.

The engine of the FMC is in the rear to eliminate a long drivetrain and to make possible a radically lower center of gravity. Noise and heat are behind, and mechanics never have to enter the living quarters to tune the engine. A Chrysler 440-cu.-in. engine is coupled to a heavy-duty, three-speed transmission, and oil pan capacity has been increased to insure adequate cooling without adding transmission coolers.

FMC uses four-wheel independent-suspension-type chassis. Front suspension is an 11-leaf transverse spring with "A" arms; the rear suspension is a torsion-bar system.

On the rear wheels a trailing arm is welded to a tube held in rubber bushings and clamped in brackets. In the middle of this assembly, which is bolted to the frame, is a torsion bar. This is the same torsion bar FMC developed for military personnel carriers which have been torture-tested from the Arctic to Panama.



Torsion-bar suspension accounts for coach's remarkably quiet, smooth ride. The tube to which the trailing arms are welded passes through heavy rubber bushings that eliminate lubrication, noise and vibration. Engine compartment affords good access and is vented on three sides.

The differential is mounted on the chassis frame with a sliding spline shaft so the drive wheels can bounce and the shaft merely gets longer or shorter. This substantially reduces the unsprung mass.

Motor homes built on truck chassis have Ackerman steering. Alec Turner, chief engineer, maintains that FMC's three-piece automotive-type track rod is superior to the one-piece track rod used on trucks. The turning radius is a remarkable 31 feet. A $14\frac{1}{8} \times 3\frac{1}{2}$ -inch brake lining is used on all four wheels.

The exterior of the coach is gold and white, colors molded into the fiberglass shell. A clean roof (one-piece molded fiberglass with no joints) with vent stacks, auto airconditioning condenser and TV antenna concealed, reduces air drag and wind noise. Two 115-volt off-road airconditioners, that get power from a land line or the 6500-watt Onan generator, are concealed beneath the closet of the vehicle and are exhausted under the coach.

The combination of a steel frame and welded aluminum upper cage gives the FMC full roll-over strength. Legislation requiring this and other safety features was anticipated by FMC to avoid costly design changes later.

It's easy to step aboard the FMC; there are no steps to climb. The flat floor extends all across the interior width in front, so in addition to the driver, two passengers can share the view and they can stand erect

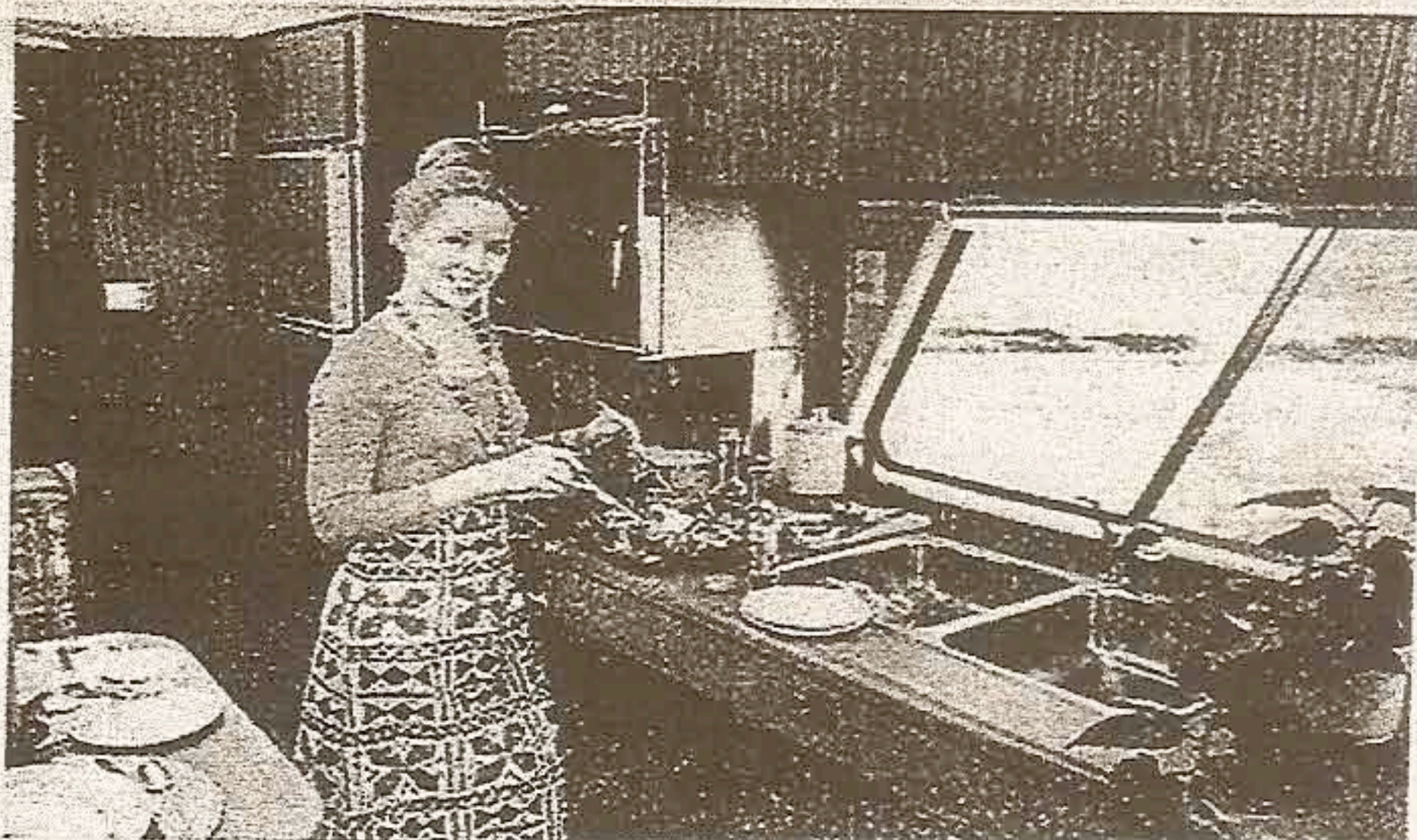
when getting in or out of the seat. In addition to the passenger door, there's a driver's door—something *every* motor home could use.

The instrument panel gives the driver solid information with calibrated water temperature, oil pressure and amperage gauges and a tachometer. A "domestic panel" gives a readout on the amount of water in the water tank, the amount of fluid in each of two holding tanks; battery condition, waste destruct system and vehicle leveling indicator. The latter is a camping convenience; it shows which wheels are low; when the coach is leveled within two degrees, panel lamps go off. This system is soon to be coupled to an automatic self-leveling device.

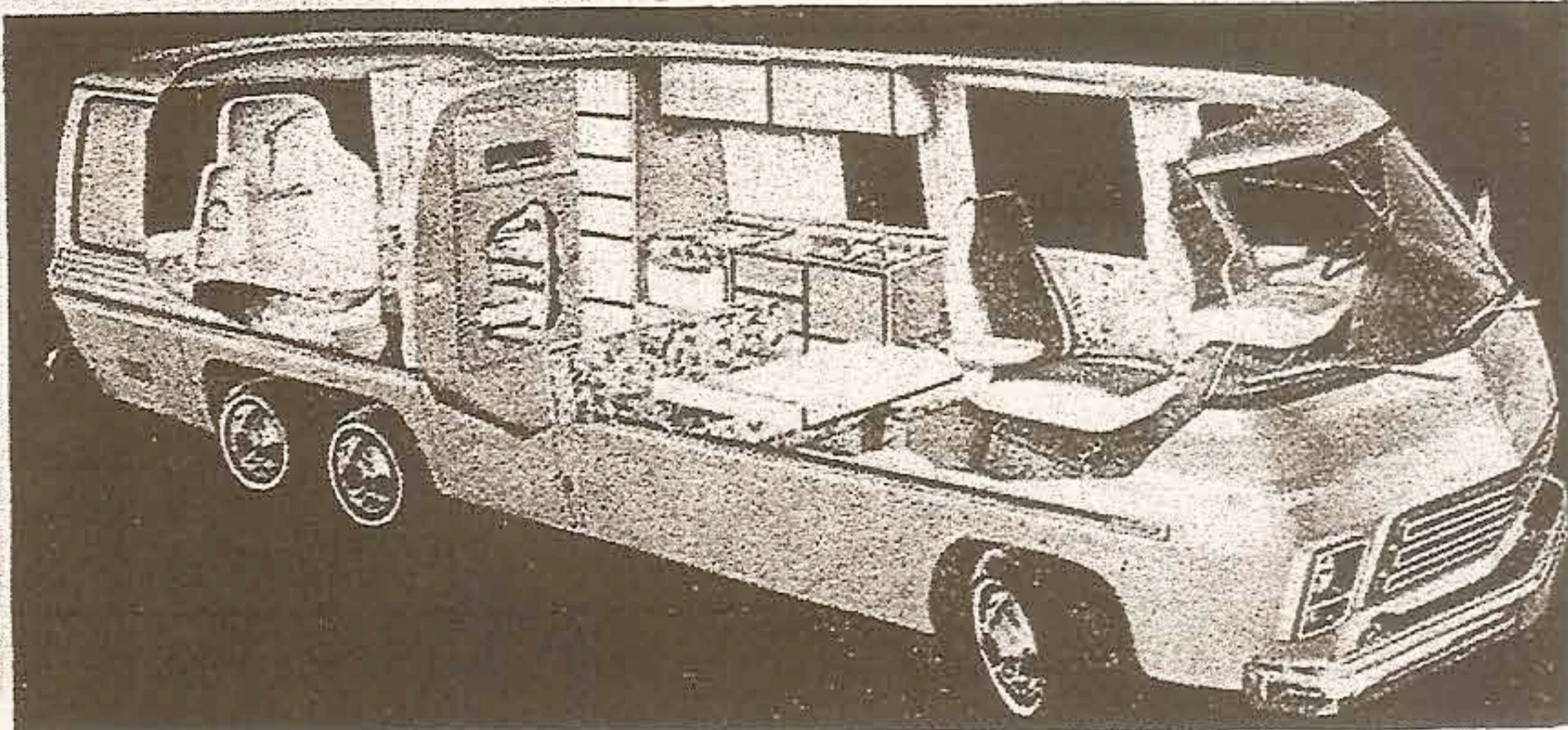
The FMC's interior closely resembles a well-appointed commercial jetliner. Vinyl-clad aluminum walls, wood-grained Formica cabinets, and molded fiberglass bathroom fixtures make it a beautiful, easily-maintained vehicle. The galley, bath and bedroom/living room are well planned and—there's only one word for it—"restful" after a day behind the wheel.

Originally, the 2900 R had a base price of \$22,958 with optional features available. But it soon became clear that those who were interested in this coach—third and fourth-time purchasers of motor homes—wanted everything. The present price of about \$30,000 is for a single design with everything "standard." To list only a few: 60-gallon fuel tank; 60-gallon fresh water tank; 65-gallon dual waste holding tanks; AM-FM radio, stereo tape deck, front and rear 28,000-B.T.U. auto airconditioning,

Well-lighted bath has skylight and window, molded plastic vanity sink, tub-shower, marine toilet. Galley's wide window, eye-level oven, 8-cu.-ft. refrigerator, ample cabinet space make cook happy.

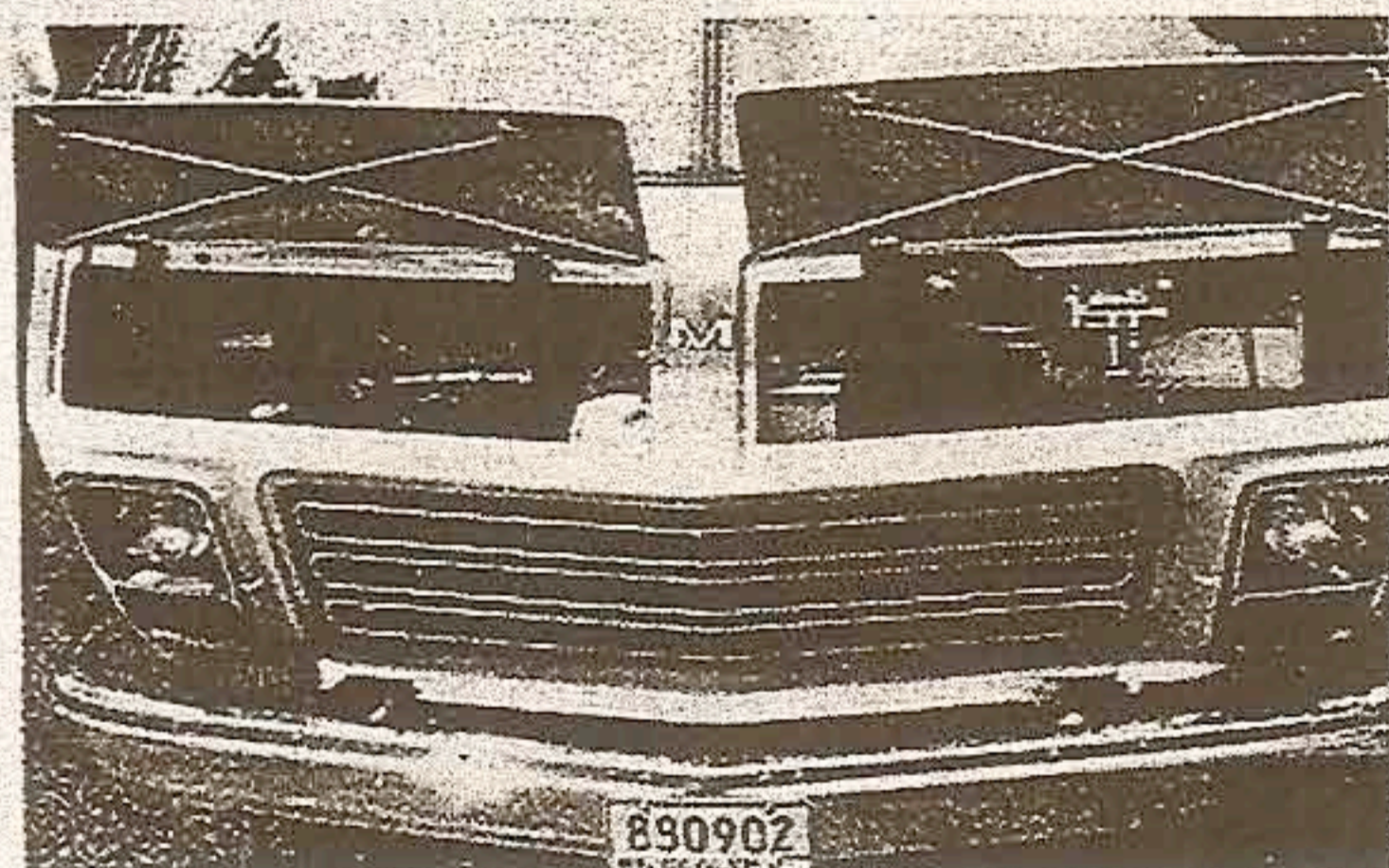


GMC's 26-foot model sleeps six; 23-footer sleeps two less for about \$1000 less. When open, bath and closet doors divide vehicle into two private compartments. Coach is only one step off ground but the driver sits above the engine with an excellent view of the road.



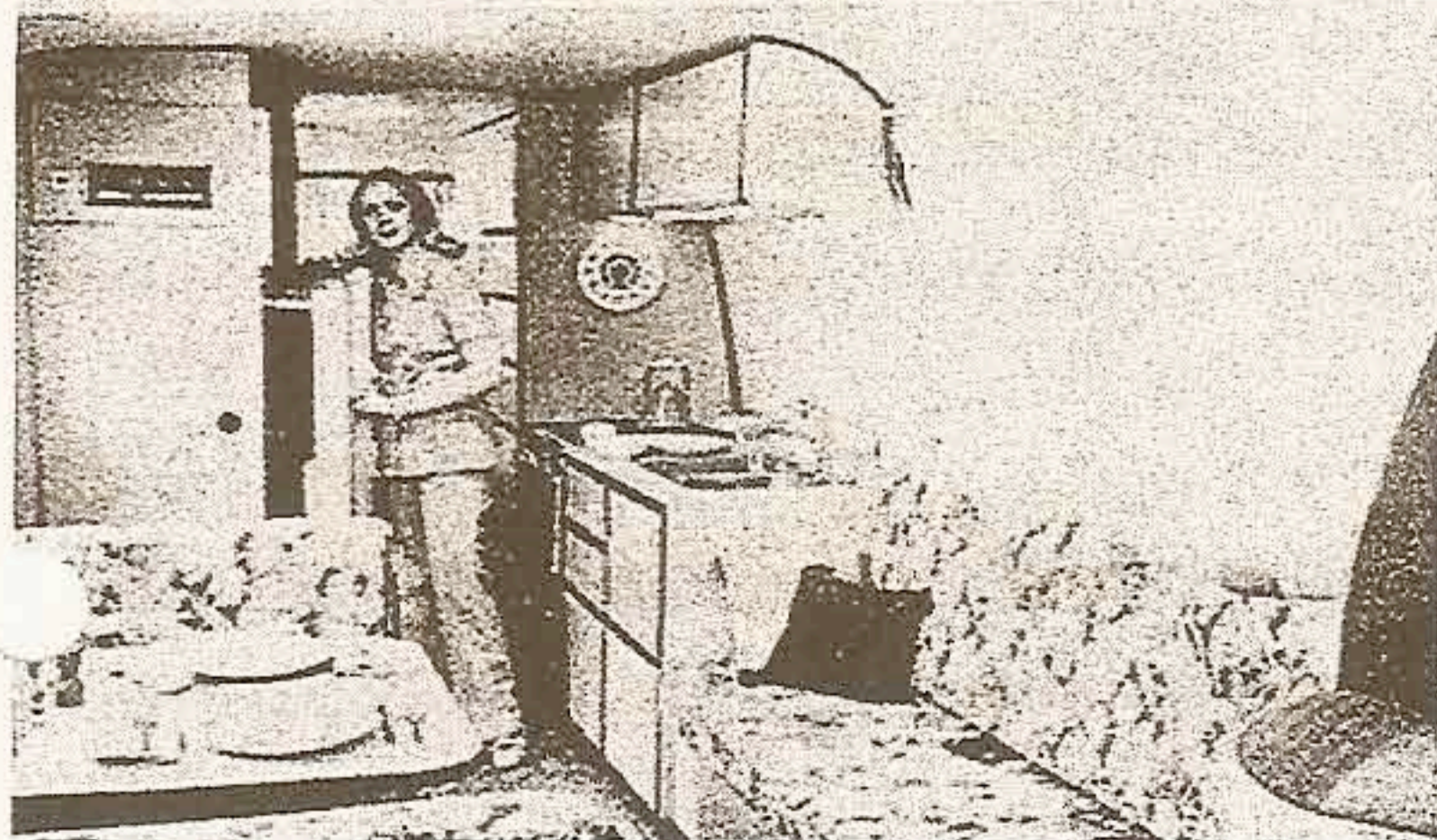
22,000-B.T.U. household airconditioning, 6.5-kilowatt auxiliary generator, Thermasan waste destructor, Michelin tires, TV antenna.

We drove the FMC from San Diego to San Jose, Calif., a distance of 468 miles in



Doors on front of GMC give access to cooling system, brake master cylinder, battery, oil dipstick.

Dinette converts to double bed; couch back raises to make double berth. Main bedroom/lounge is at rear.

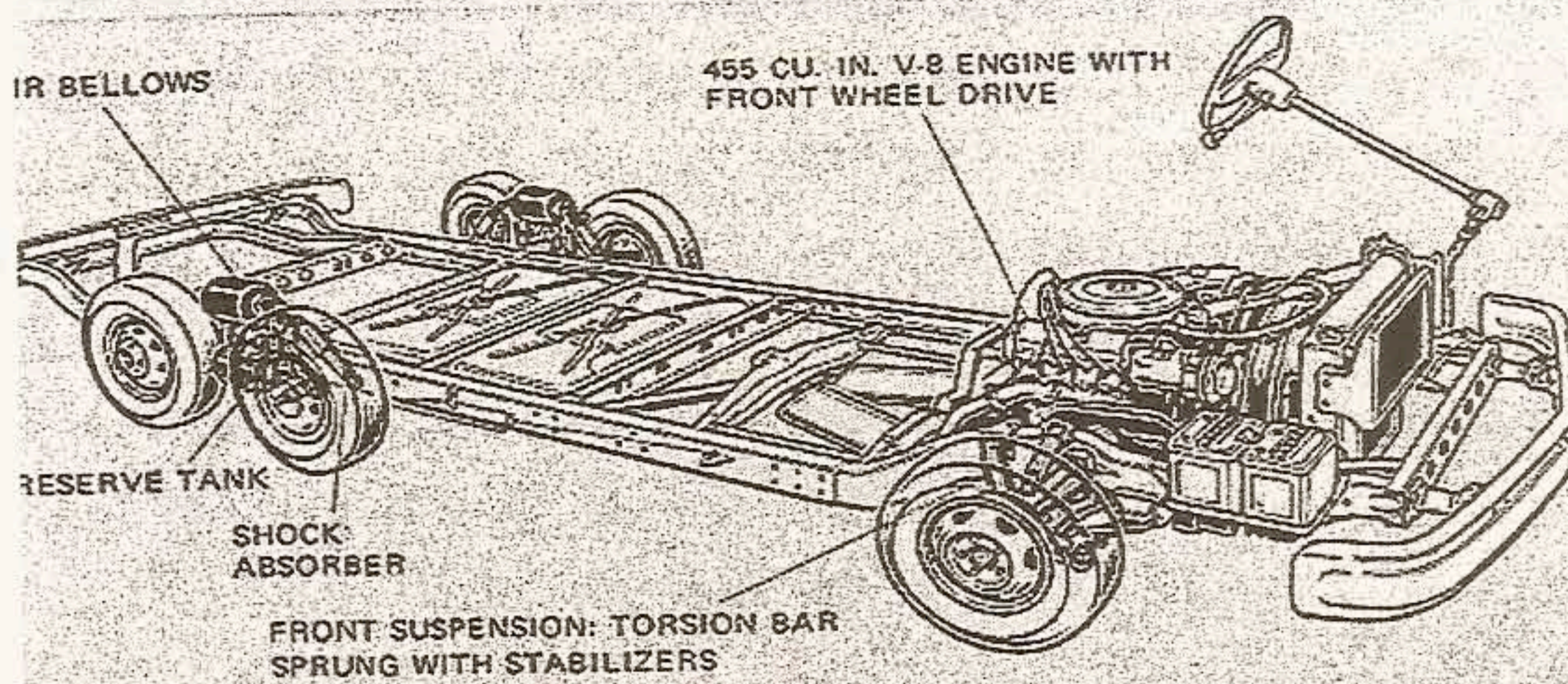


eight hours. We chose U.S. 5 through the San Joaquin Valley because it's notorious for its strong crosswinds. We knifed through them without effort, cruising steadily at a legal 70 mph. Despite the winds, L.A. freeway traffic, and 100° temperatures which required full airconditioning all day, we got 6.9 miles per gallon at an average speed of 58 mph. At the end of the day we knew FMC had here a whole new dimension in motor homing—an express cruiser (60-gallon fuel tank) capable of biting off at least 360 miles without a gas stop and with very little wear and tear on the driver. That comes pretty close to low-level aviation.

With all the good features in the 2900 R there are a few faults that are surprising oversights. The owner of a \$30,000 rig will want a better bed for his guests than is provided by converting the dinette. Likewise, the driver's seat and front passenger seat will, we're sure, have to be redesigned. The brake pedal is not directly across from the accelerator; you have to draw your foot *back* about four inches and raise it to land on the brake. Too slow in an emergency.

If you've ever wondered what it would be like to boss a big transcontinental bus on the highway or slip into the pilot's seat of a commercial airliner—you'll get a pretty authentic answer when you climb into the "cockpit" (that's what they call it) of the GMC.

GMC gets rid of the long drivetrain and lowers the center of gravity by using an Oldsmobile front-wheel-drive unit with 455 cu.-in. engine, four-barrel carburetor and three-speed automatic transmission. The floor of the vehicle is only 15 inches off the



Low-slung chassis puts floor of GMC only 15 inches above ground. Low center of gravity gives the vehicle its stability. Rear wheels, cushioned by air springs, are in tandem and mounted outboard of the body for wider stance. Rear track of GMC is 82 inches. Wheel bases available are 140 in. and 160 in.

ground; the "flight deck" over the engine is 21½ inches above that so the view is high, wide and handsome. No motor home offers a more unobstructed view. The windshield wraps completely around to the pillar behind the driver's seat. (The big windshield wipers have the washers built into the arms so the fluid hits where it should.)

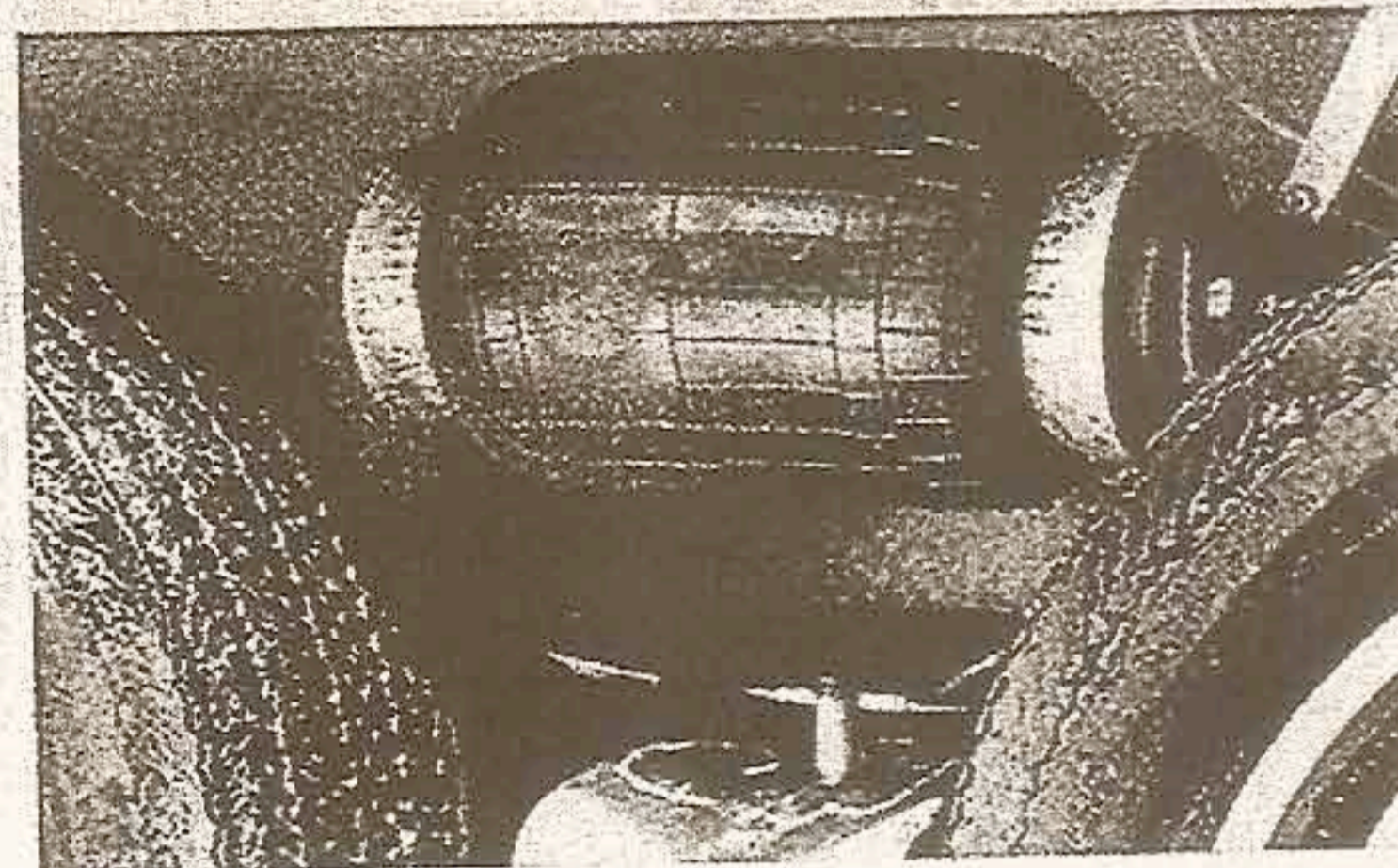
GMC licks the ride problem with "air springs," air-inflated rubber bags, mounted between independently suspended wheels in tandem. The air-cushion unit includes an automatic leveling valve that maintains a constant ride height at the rear tandem suspension. An optional Power Level System that overrides the automatic leveler lets you trim the rig at a campsite; it raises or lowers the vehicle as much as four inches.

The front wheels are independently suspended with torsion bars and stabilizers. GMC uses tandem rear wheels instead of duals, claiming that: (1) placed outboard, they provide a wider stance, hence greater stability (the GMC rear track is 82 inches) and, (2) the wheel wells do not intrude on passenger space.

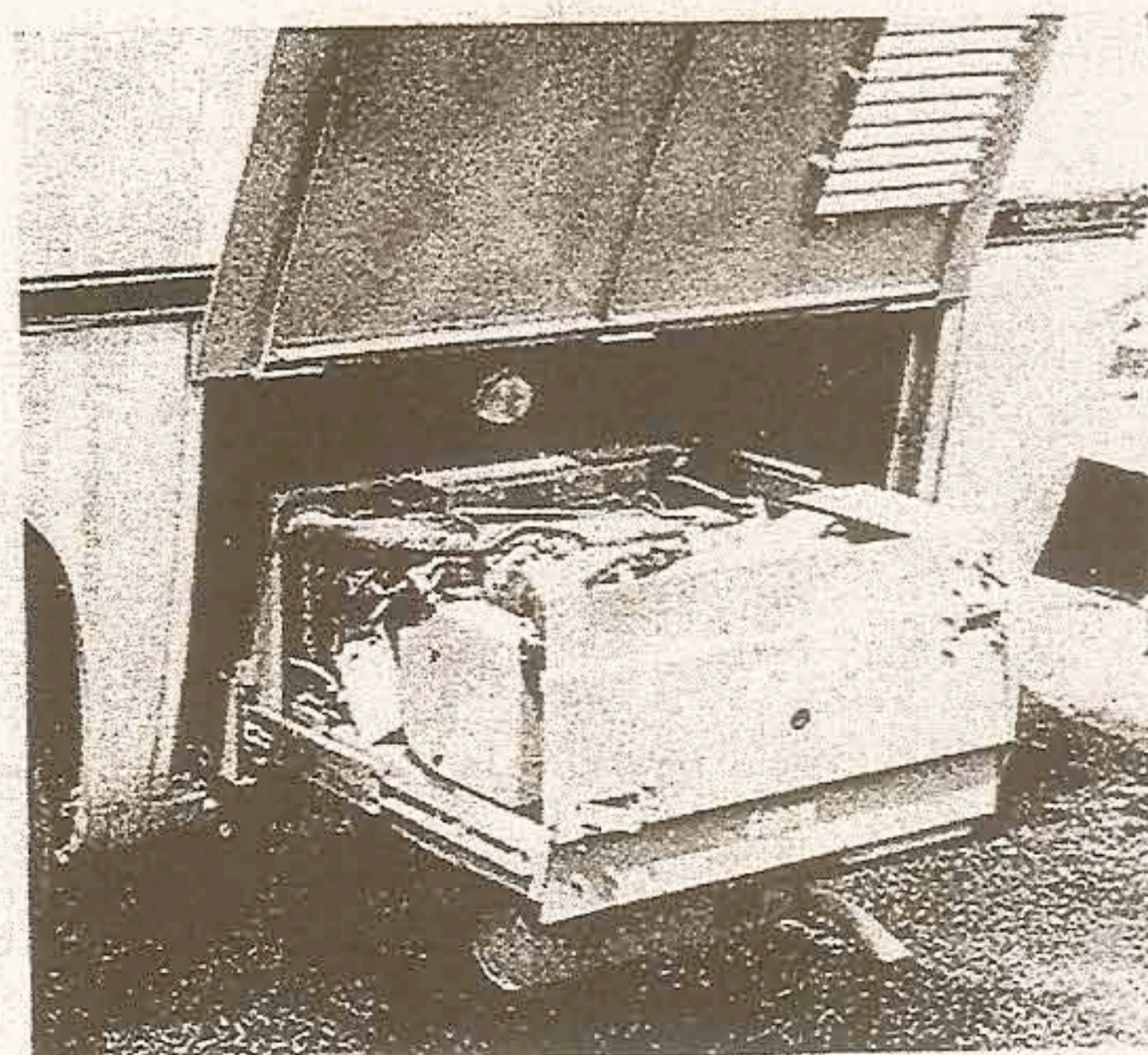
The body of the vehicle is shaped like an aircraft fuselage—and built like one, with a cage of aluminum ribs and stringers. The roof and upper side panels are aluminum; the nose and rear and lower panels are molded fiberglass to resist corrosion.

The glass areas are generous; windows in the living area are each 32 x 57 inches; the rear window is 32 x 66. Overhead cabinets in the galley are kept to a minimum to lend spaciousness. But there is plenty of storage under the sink and adjoining the

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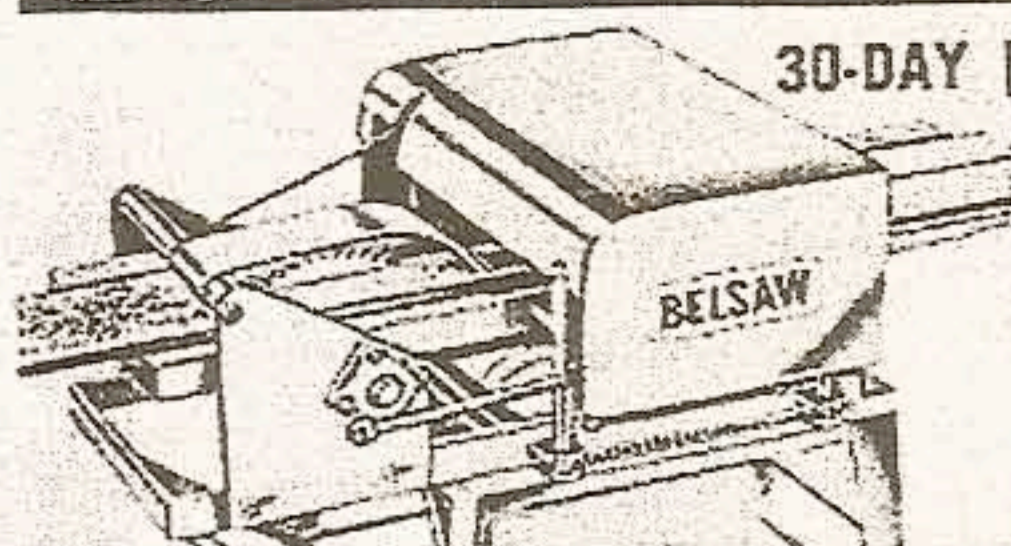
Air bellows is not concealed, is displayed as distinctive feature. Rear adjusts automatically to load under way, can be leveled at your campsite.



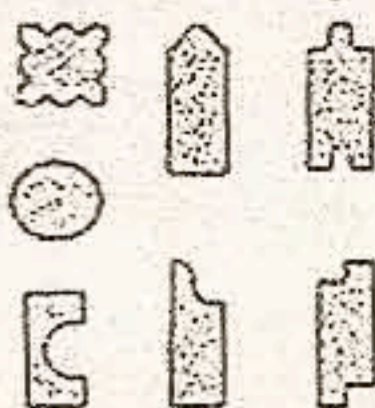
Motor generator, in left rear compartment, glides on ball-bearing tracks for easy servicing.



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MOTOR HOMES

(Continued from page 113)

range. The refrigerator is all-electric a.c./d.c. There is a 25x25-inch closet and three good-size wardrobe drawers. The molded fiberglass bath is 37 x 44 inches with a 42-inch vanity sink. The rear bedroom which converts to a dinette, has a 6-foot 6-inch bed, which is 48 inches wide (6 inches shy of standard double width.)

The GMC Motorhome comes in 23 and 26-foot models, six exterior colors, 15 different floor plans and a choice of four interior decors.

The base price for the 23-foot model is \$13,545; \$14,545 for the 26-footer. There is a long list of options, (most of which are "standard" on the FMC) but according to GMC "a very well-equipped" 26-footer costs about \$19,000.

We didn't have the GMC long enough to test it in anything but moderate crosswinds, but established that it doesn't shudder or wander when blasted by passing trucks and buses.

Averaging 50 mph on a windless day, but with the air conditioner running constantly we showed gas consumption of 10 mpg—by no means a bad showing since we had been accelerating freely on a number of steep grades without giving a thought to economizing on fuel.

Six-wheel braking—discs on the front, drums on the rear—makes this a sure-footed rig. The 455 engine makes it nimble and quick; the low center of gravity and suspension makes it stable—all in all, a delight to drive for hours at a time.

We found that the GMC has excessive rear overhang (technically, an acute angle of departure) that will cause a lot of scraping on parking-lot ramps and driveway entrances. The lowest point is the exhaust pipe of the motor generator; a lot of these will be dinged.

The bath lacks a skylight and is vented by a single fan. It may give some people a sauna, others claustrophobia.

Standard-size people will not be completely happy with the 48-inch-wide double bed.

But the shortcomings of both the FMC and GMC are few and easily corrected. Both have set new standards of performance and safety for the industry. It is to be hoped that both will soon produce smaller, lower-priced models that maintain these standards. ***