

HUDSONS THAT MIGHT HAVE BEEN...

by Michael Lamm

It was 1942, a year of war. Auto manufacturers had stopped building cars, and no one knew when production would begin again. War materiel, not cars, occupied the nation's minds and factories.

Detroit's Hudson Motor Car Co. had started producing Martin bombers. Most Hudson executives and workmen, from late 1941 on, busied themselves with the details of supplying the war effort. No one had either the time or inclination to think about the day when cars would roll again.

One person, though, did give thought to post-war models. He was Arthur H. Kibiger, now technical manager of styling with American Motors, at that time the 35-year-old assistant director of styling with Hudson. Kibiger had ideas that couldn't wait for the fighting to stop, and he considered wartime a good period to initiate something genuinely different—to cast off the limitations of pre-war tooling and start fresh.

Hudson had long held a reputation for innovation and inventiveness. While the company could and did claim many engineering and styling firsts throughout its history, the Depression had left Hudson short of breath and shorter of cash. Thus many of the company's farther-out ideas hadn't reached production in the years before WW II. Kibiger reasoned, though, that war's end would bring not only a tremendous demand for new cars but also an opportunity to vastly improve the automobile as America knew it—by bold planning this time rather than through slow evolution. Kibiger had a new generation of radically different Hudsons in mind for after the war.

In early 1942, he began planning a racy Hudson sports model. This car was the first of a series Kibiger would develop between 1942 and 1944. It was initially intended to be a small, low, fast, high-quality two-passenger vehicle. In appearance, it looked radically different from anything built before then, because it incorporated such departures as hidden headlights, smooth-sided unibuilt body, wraparound windshield, curved door glass, wraparound perimeter frame and bumper, and a hinged, molded-plastic, removable roof assembly. No U.S. production car of that day had any of these features, much less all of them. Kibiger's design integrated every one of these items plus a few more.

Wheelbase was projected at 85 inches, one inch longer than the present Lotus Elan S/E. Overall height at 48 inches stood a good foot lower than any pre-war production model and only one inch higher than the Elan. Planned weight was 1600 pounds dry.

The most amazing aspect of this experimental, though, was its engine. Kibiger proposed a 132 cubic inch mid-engine design utilizing a Square Four (like the Ariel motorcycle Square Four). It was air-cooled, and all four cylinders stood upright at the corners of the square. The engine had two crankshafts which rotated counter to each other to cancel

out inertia forces. This design principle is even today considered the secret of a really smooth four. All cylinders used a common camshaft and overhead valves (sodium-cooled), with a new type of compact valve spring to keep down total engine height.

Taking this one step further, Kibiger laid out his engine so the twin crankshafts were of a built-up type. That is, each crank bearing and crank-throw cheek was grooved, ribbed, lapped, and mated to take the torque. Each throw was machined separately and individually, then bolted to its mate. The thought here was that a machined assembly would be superior to a casting. In addition, if any crank journal became worn, it could easily be replaced.

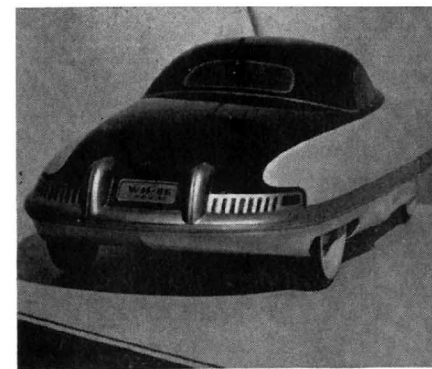
For this small car, Kibiger also designed a compact, self-contained transaxle with an aluminum-cased four-speed transmission and attached differential. Rear suspension echoed the German Adler Triumph Junior of 1935, with transverse torsion bars and tubular trailing arms that today remind one very much of the Porsche or VW front setup.

As work progressed, a full-sized prototype was built. It had to be constructed in almost total secrecy and under great hardship, because neither workmen nor material was readily available during those war years. As things turned out, the car became plagued with compromises. Wheelbase grew to accept a standard Hudson in-line six amidship (rather than the Square Four). Also, the perimeter frame and bumpers were over-gauge, so the car took on much more weight than intended. The prototype, which was never photographed, ended up with belt drive, and this didn't help performance at all. Finally, the sportster simply died of complications.

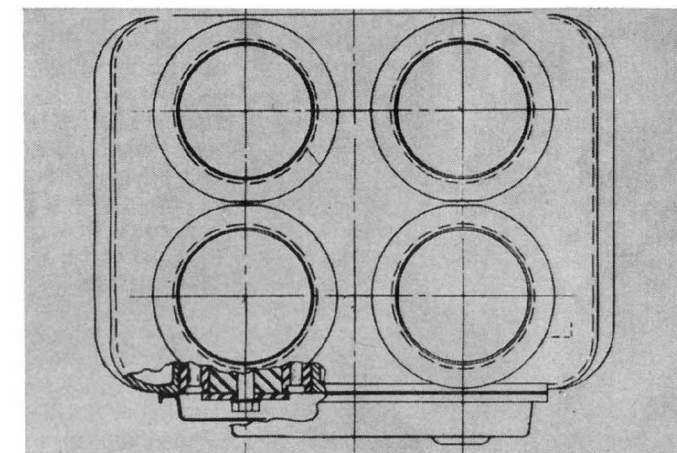
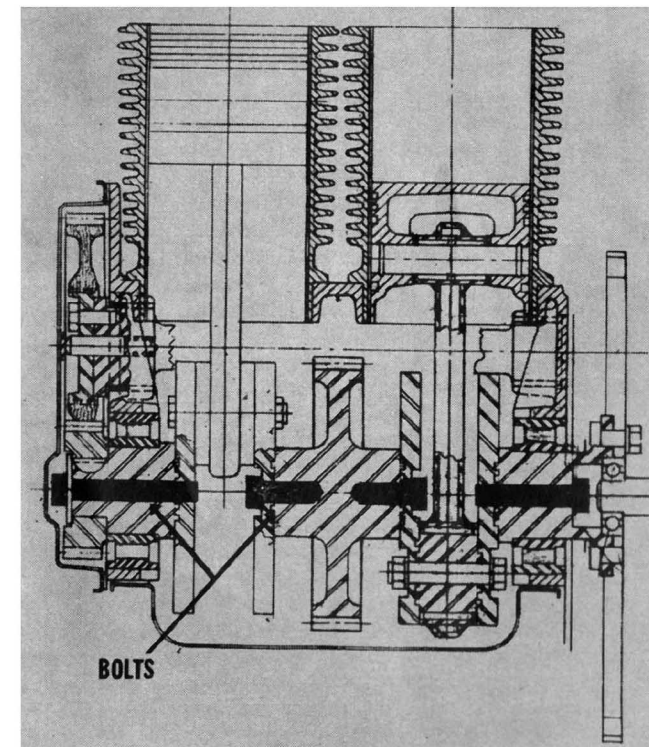
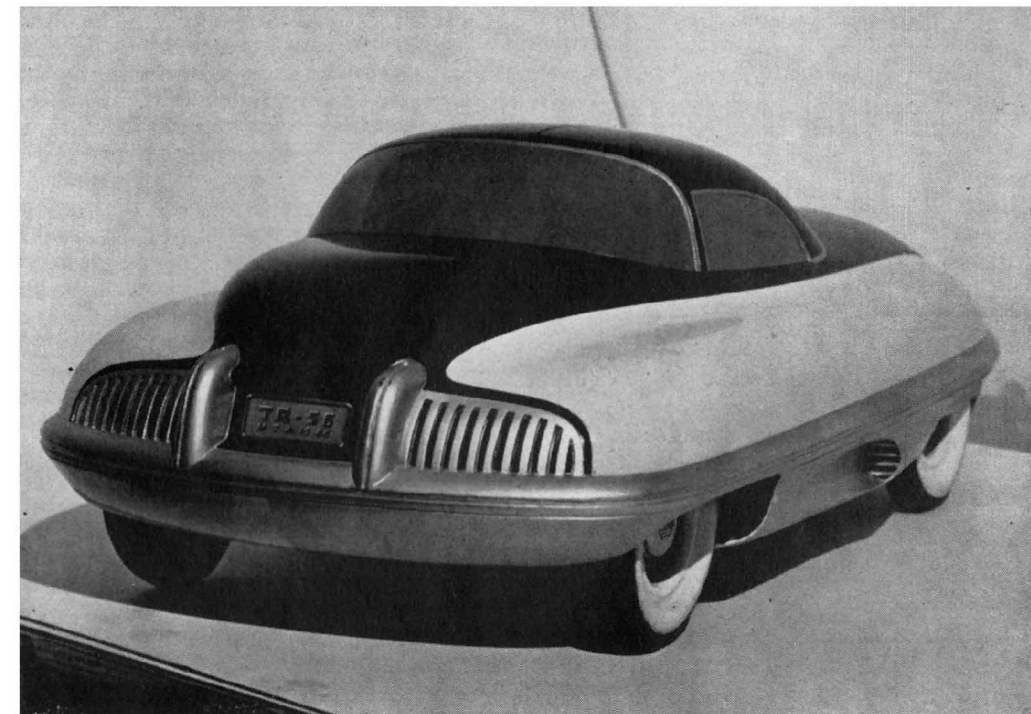
When the small-car project slipped quietly from the realm of feasibility, Kibiger immediately switched to another design, this one quite different from the first. It was June, 1942, and Kibiger's boss, Frank Spring, Hudson's director of styling at the time, left Detroit to vacation in Mexico. The new project, dubbed Program 5, began as a 102-inch wheelbase car that again held a fistful of innovations.

Program 5 started out as a front-wheel-drive passenger car that would seat five-six people. It had a medium-length hood and rear deck, with two wide, thin-section doors that hinged gullwing fashion from the roof's centerline and held fixed, flush, curved-glass side windows (only the vent panes opened). These doors were big enough to admit both front- and rear-seat passengers easily, and the hinging mechanism itself was a masterpiece of engineering. Torsion rods held up the lightweight doors when open. Stepover sills (bottoms of the door transoms) were fifteen inches off the ground, but as Kibiger explains, "This car was planned for young America, not Mom and Dad."

A perimeter frame and bumper encircled the entire car. The floor was one inch thick and of honeycomb construction,



(Above and right) Here are front and rear views of Kibiger's first Hudson experimental sportster of 1942. Car was about the size of a Lotus Elan. It used a Square Four engine mounted amidship, had aluminum-cased four-speed transaxle. Unibuilt body incorporated perimeter frame. Plastic hardtop hinged at rear when doors were opened; but they could also be removed. None of the cars built in the U.S. in 1942 had any of the advance features of this one.



(Above) Illustration shows close-up of Square Four engine designed for Hudson experimental sports model. The engine displaced 132 cubic inches. (Left) One of the most interesting things shown in this illustration is built-up crankshaft, which bolted together throw-by-throw (note arrow). This way the throws could be machined instead of cast, and it made replacement simple if one section got worn. The engine, had twin crankshafts, side-by-side, which rotated counter to each other to cancel out inertia forces, making it run extremely smooth. These were some of the advance features of the Hudsons.

so it added strength and rigidity with minimum weight. The entire bottom surface of the car was smooth, thus reducing air drag.

Again, the engine was radically different and highly interesting. Remember that this time the car was planned with front-wheel-drive. Kibiger proposed a water-cooled, horizontally opposed, double-overhead-cam powerplant for Program 5. This engine again used the built-up crankshaft principle so that more cylinders could be added by simply bolting on additional crank throws. In other words, customers could order either four-, six-, or eight-cylinder versions—identical internal parts but simply more of them. This made excellent sense from a production standpoint.

Program 5's transmission and differential were again made as one unit, and it stood below the engine rather than in front of it (as with most fwd layouts). Low-cost air condi-

tioning was proposed as standard equipment (since the door glass was sealed). As for overall dimensions, length was 186 inches, width 68, and height stood at 50—much lower and more compact than standard production cars of the day.

As for front suspension, Goodyear had just developed a new system called Torsiolastic. Instead of using leaves or coil springs, Goodyear embedded suspension couplings in heavy rubber donuts. This system was later used by the ill-starred Tucker and Keller cars of 1948, but Kibiger adapted it to his projects in 1943.

When Frank Spring returned from Mexico, he was shown what had transpired in his absence and was thoroughly taken with Program 5. When Hudson Styling presented Kibiger's ideas to the company's top management, they, too, were enthusiastic. A. E. Barit, then Hudson's president, ordered an immediate wooden space mockup built. Hudson's

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purchasing department began costing out the tooling and projecting production charges.

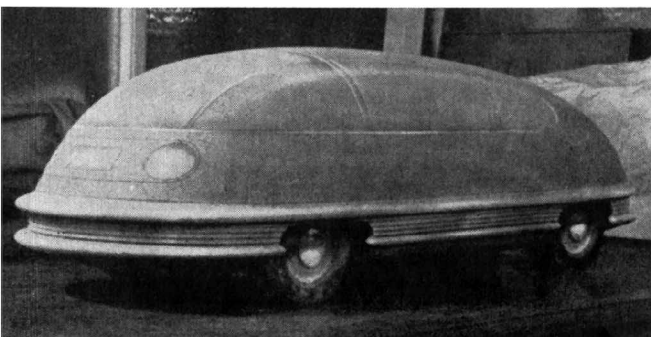
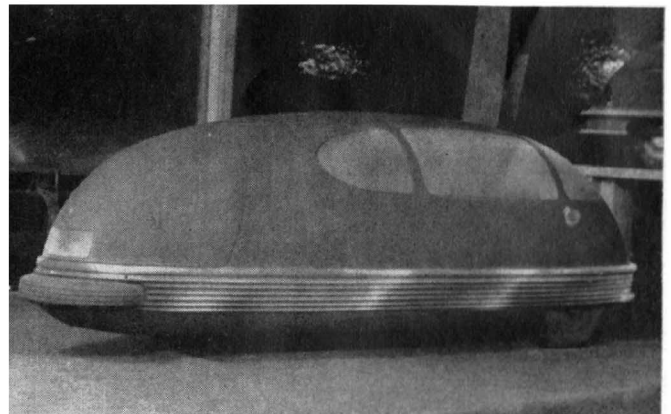
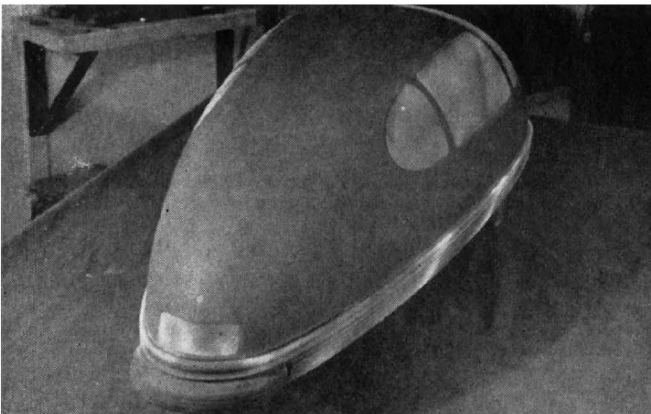
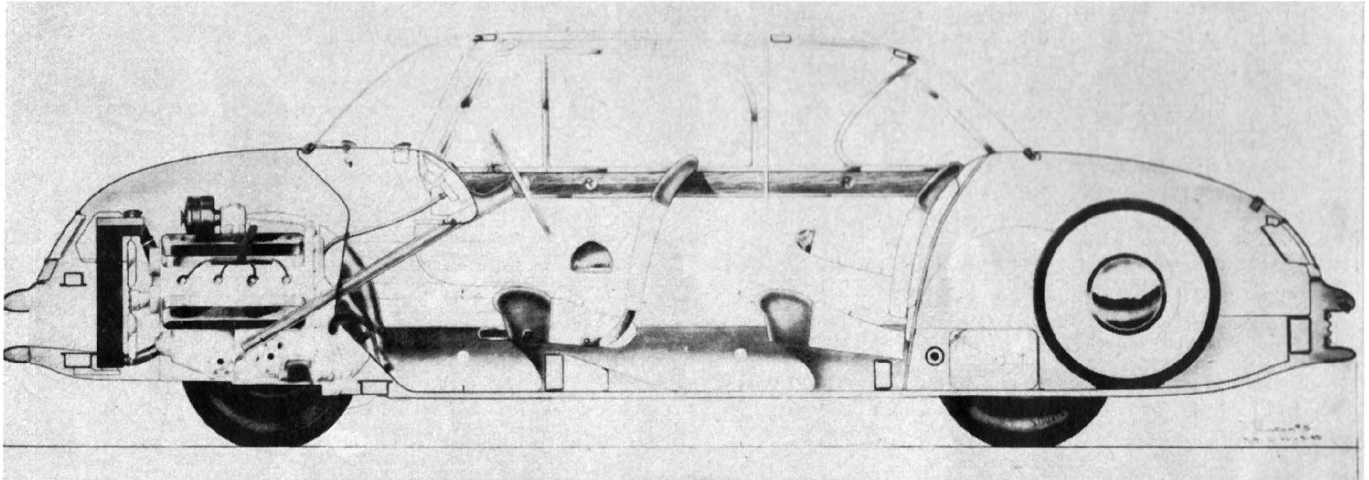
But even as the mockup and cost analysis began, Spring and Kibiger began experimenting with different shapes on the same body plan. All dimensions and the front-drive Power-Pak (as it was called) were retained, but small clays were made in highly streamlined versions. One was a three-wheeler which steered with the rear wheel. This avoided the difficulty of jointed, steerable driven axles up front. But the three-wheeler quickly proved unstable, so it was abandoned.

Then a four-wheeler followed with the same highly streamlined body shape. This version, too, had drawbacks, notably the huge, compound-curved windshield, which would be costly to produce and gave distorted vision. Both these streamliners kept the wraparound frame and bumper, the

gullwing doors, the honeycomb floor, and other Program 5 features.

So the most feasible proposal seemed to be Kibiger's original body configuration, the one with the stubby hood and rear deck. As it turned, when Purchasing finished projecting the costs of Program 5, they released a report that Hudson could build a much larger car for the same amount of money. And that put the lid on it.

Toward the end of 1943, Hudson's experimental fever subsided, and the portions that continued followed more orthodox lines. The final result turned out to be Hudson's Step-Down design of 1948. While it showed conventional engineering in most aspects, it did make use of some of Kibiger's ideas. The Step-Down plan itself had been used on all his wartime experimentals. He simply placed the floor on the bottom of the frame rails rather than on top. Step-Down Hudsons also incorporated his perimeter frame and unbuilt body construction. Smooth-sided body lines were also reflected in 1948 Hudsons, and the strengthening shadow groove that ran longitudinally down the envelope fenders and doors were another Kibiger touch. So his frantic, far-sighted wartime activity wasn't totally for naught. "If nothing else," Art Kibiger says in retrospect, "we had an awfully good time." /MT



(Top) After the sportster project died, Kibiger got to work on this Program 5 series. He designed this one in 1943, and although it had a size comparable with today's Javelin, it seated five easily. (Above left and right) These are an extension of the Program 5 idea. This is a three-wheeler which reached the clay stage. Encircling bumper hid perimeter frame and ended in spare at rear, which absorbed impact. Three-wheeler was decided to be unstable. Rear wheel steered. (Left) Finally Kibiger designed this four-wheeler (also an extension of Program 5). Windows were fixed, with low-cost air conditioning projected as standard equipment. Gullwing doors, a la Mercedes-Benz, are visible.