SCI ROAD TEST: FORD'S THUNDERBIRD

'Bird for '58—a controversial concept

THE ORIGINAL Thunderbird was hatched late in '54 but the project had been launched long before, when the sports-car movement in the U.S. was very new and its potential could only be guessed at. The number of home-grown two-seaters that could be sold to the American public had to be determined, and for this the early Bird was created. Sensing limitations inherent in the "sports car" concept, FMC avoided using that label and called its unique product a "personal car," meaning one with a high measure of individuality.

The little Bird scarcely had gone on sale and begun to test the market when its designers went to work on an obviously more widely saleable type of personal vehicle, a four-seater. As the answer to "how many two-seaters will the market absorb?" became clear it was decided to retire the two-place package in favor of a similarly individualistic product that, with doubled passenger carrying capacity, might have twice the two-seater's sales potential. To those who, within and without FMC, felt in the words of John Keats, "Thou wast not born for death, immortal Bird!" there was just one rational answer. In the car business the point is to sell as many cars as possible.

It is doubtful that anyone appreciates the two-place Bird any more than the people within FMC. Here was a car for which hordes of consumers felt actual, emotional love. There are Ford executives who claim that the little Bird has earned more free publicity for the firm than the Model T ever did. It certainly has brought FMC far more prestige and voluntary free promotion than the Lincoln Continental, to which it bears a certain essential resemblance. It quickly proved that a clever U.S. manufacturer can tackle what traditionally has been a foreign specialty, compete with it with great success and even establish a form of leadership in an erstwhile alien field. And in spite of the fact that most citizens have the very mistaken idea that the Bird "costs about the same as a Ford," the little Bird promptly became one of the most potent status symbols on the domestic scene.

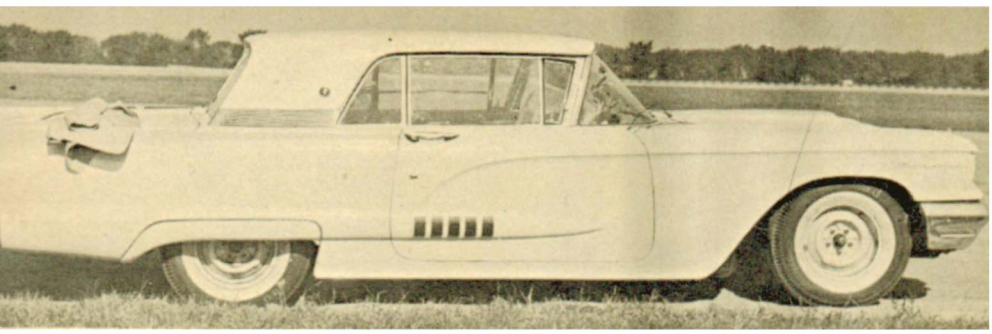
By means of the two-place Bird FMC learned a great deal about the kind of people who buy cars of this type. About 92 per cent of them ordered their cars with automatic transmissions, a sure sign of tastes that are far from spartan. Further proof that this basically is a luxury market came with the discovery that a very high percentage was purchased by two- and even three-car families. Market research showed that owners liked the little Bird for its style, performance and handling. Loud and numerous complaints were tabulated, aimed at its difficulty of entry and exit, and its limitations on comfort, passenger space and luggage space. The ceiling on sales turned out to be about 16,000 per twelve months, with few takers outside of metropolitan areas and car-happy Southern California. To sell more units and to sell them more widely, the four-place Bird has been launched and the little Bird's legend as a classic has begun.

Front is blunt looking, with four headlights set in fenders; riding lights and grille in bumper.

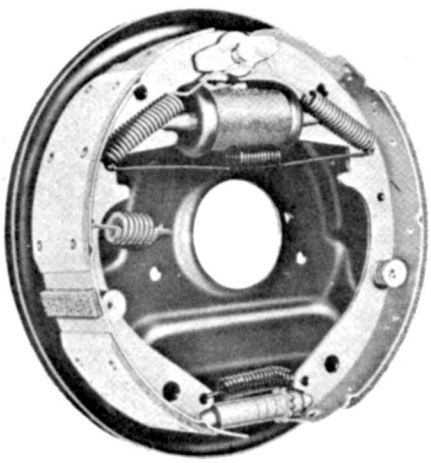
We first saw and drove the new car at FMC's Dearborn proving ground. The initial impression was startling. We expected to see something small and lean but what we found looked big and broad . . . part Continental Mk II and part Turnpike Cruiser, having little resemblance to the little Bird. There was a similarity in the top's profile but, below the greenhouse, it was a plumper, heavier, longer, more massive vehicle; yet it couldn't exactly be called big.

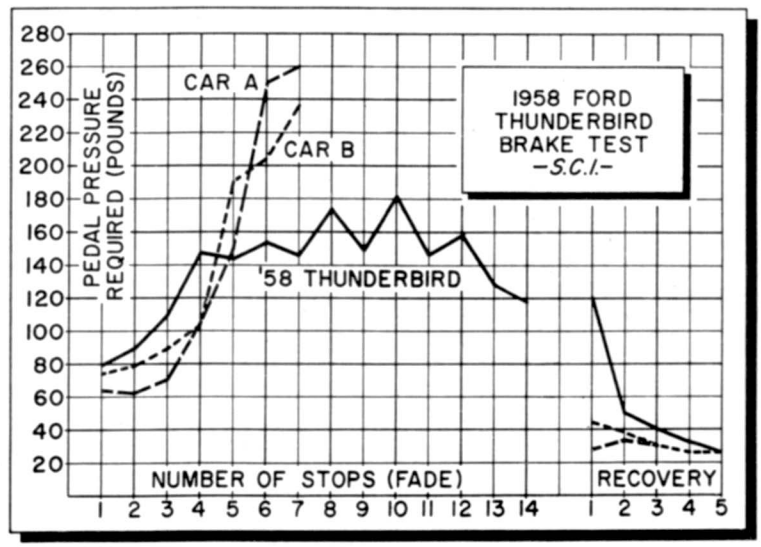
Evidently the base line for the new Bird's design was the height of the little Bird . . . this approximate height was selected as a means of establishing a family resemblance between the two- and four-seaters. All the rest of the car's proportions are keyed to this vertical dimension. The wheelbase is tied to this height and to the minimum distance in which four people can be seated in comfort. Unit body-frame construction was chosen primarily for its effect on interior space saving. It made possible lowering the floor pan to the bottom of the frame side boxes, which added almost four inches to the floor-to-roof measurement. Now the Bird's occupants sit on chair-height seats (as they *must* within a short wheelbase, and not only for reasons of comfort) but have about 1.6 inches more headroom than in the smaller Bird.

In tight bend at high speed, even the license plate leans. Inside wheel lifts; outside tire squats under heavy loading.



Long and low, new Thunderbird represents Ford's effort at a four *seater "sports" car, such as it is.*





LEFT. Each brake assembly has a ¾ inch segment of cerametalix lining welded to the trailing shoe. RIGHT. Chart shows results of Ford Motor Co. brake tests. All vehicles were loaded to simulate a four passenger load with a full tank of gasoline. Stops were made from an actual 90 mph at intervals of about one mile and at a deceleration rate of 15 ft/sec² (about 0.5 g). After coming to a stop, the car is accelerated at full throttle to 90 mph, a speed which is maintained for some ⅞ mile, when the next stop begins. Since decelartion is held constant, the increase in pedal pressure required during a series of stops serves as a useful measure of fade. Recovery stops are made immediately after the fade stops with no interval for cooling. Circumstances are the same except that stops are made from a sustained 30 mph. Decreasing pedal pressure recovery is still taking place, while consistently low readings show complete recovery. Cars A and B represent "better than average fade resistance of two 1957 American-built cars" according to FMC.

The confusing thing about the new Bird's skilfully-devised proportions is that it's hard to decide just how big or small the car actually is when it stands alone. The giveaway comes the moment you see it alongside what, in this context, can be called "impersonal" Detroit cars. Its lowness of top, hood and deck are dramatic. It stands out sharply in a crowd of conventional sedans, in a typical flow of traffic. Because of this and its near-total lack of decorative trim (front and rear grille and light treatments meet this requirement adequately) the new Bird fully retains the "personal car" character.

Just where it stands relative to bigness or compactness perhaps can best be told in inch measurements:

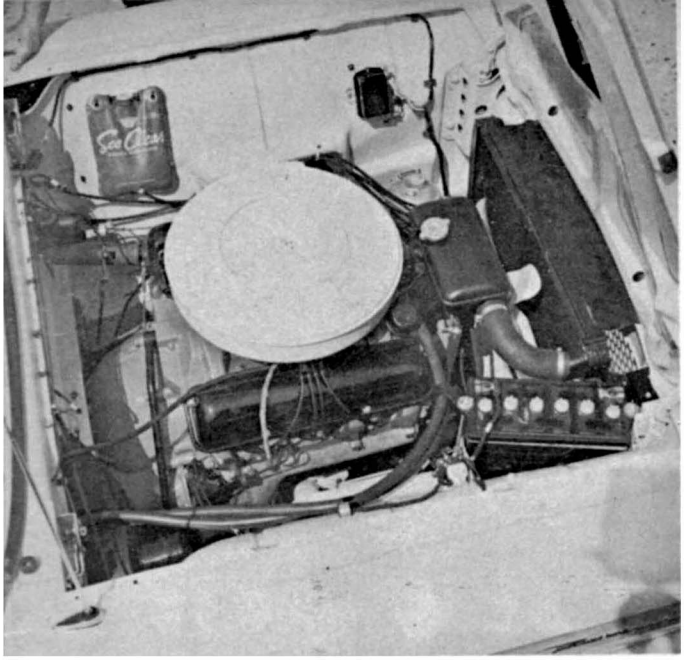
Car	Height	Wheel-base	Length	Width
'57 Bird	51.5	102	182	73
'58 Bird	52.5	113	205	77
'58 Ford Custom	57.1	116	202	78
'58 Mercury Monterey	56.5	122	213	81
'58 Lincoln	56.5	131	229	80

The new Bird is two feet longer than the old one and two feet shorter than the current Lincoln. It will compete on the Lincoln, Cadillac, Imperial market level as a high-performance personal car that is compact, that says "status" without extorting a size penalty.

Interestingly enough, the term "personal car" has fallen under the policy axe. It was a catchy term and caught on so well that other manufacturers began using it. They may have it, says FMC. The new Bird will be identified officially as a "luxury individual car."

In terms of luxury and comfort there is no comparison between the two Birds. The new car's seats are among the best and most comfortable we've ridden upon. Front and rear they are a refinement of the bucket-seat principle, having side bolsters on the seat backs that give firm, embracing, lateral support. The front seats are separately adjustable and the rake of their backs can be varied from near-vertical to some seven degrees tilt. Knee room for back seat passengers is not spacious, but hardly differs from that provided in the standard Ford hardtop.

A high shaft tunnel separates the seats down the car's center line. This inevitable structural element is identified as the car's "console" and has been made to serve every possible functional purpose. In it are mounted ash trays, radio speaker, and controls for power windows, heating, air conditioning . . . all but the last two within easy reach of any of the car's few occupants.



For a small car by Detroit's standards, the engine room is positively cavernous, so this may well become an engine swappers paradise. Header tank, used to reduce radiator height, should be useful for special builders.

Ease of entry and exit — a major cause of complaint in the old Bird—is remarkably good in the new four-seater. Contributing factors here are the widest doors in the industry (over four feet), the step-down floor, and a seat-back on the passenger's side that folds absolutely flat.

While the most important single reason for adopting unit body-frame construction in this case is the achievement of the largest internal space for the given external package, there are other reasons and other advantages. One is the improved stiffness, for a given weight material. The "frame" now runs the full depth and width of the body, giving it greater leverage to resist bending and twisting loads that even an X-frame could give. Without the sub-frame, you sit much closer to the ground and this lowers the center of gravity considerably. A further advantage is the elimination of squeaks and rattles without the need for lots of bits and pieces of rubber. Plenty of undercoating keeps the body from sounding like a big bass drum with you inside of it. The Bird's body, like the new Lincoln's (the Bird is assembled in the Lincoln plant) is *dipped* in rust-preventive bonderizing solution and this gives greater, more thorough penetration than is possible with the conventional spray technique. Unit construction potentially makes possible important weight savings, but in the new

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1958 FORD THUNDERBIRD PERFORMANCE

TOP SPEED:

Estimated	125 mph

ACCELERATION:

From zero to	Seconds
30 mph	4.3
40 mph	6.3
50 mph	8.2
60 mph	10.4
70 mph	12.8
80 mph	15.6
90 mph	19.2
100 mph	24.4
Standing ¼ mile	17.8
Speed at end of quarter	87 mph

BRAKING EFFICIENCY:

See Chart.

SPECIFICATIONS

POWER UNIT:

Type	V8
Valve Arrangement	pushrod ohv
Bore & Stroke	4.00 x 3.50 in (101.6 x 88.9 mm)
Stroke/Bore Ratio	0.88/1
Displacement	352 cu in (5767 cc)
Compression Ratio	10.2/1
Carburetion by	One four-throat Holley
Max. Power	300 bhp @ 4600 rpm
Max. Torque	395 lbs-ft @ 2800 rpm
Idle Speed	500 rpm

SPEED RANGES IN GEARS:

(Manual)	
I	zero to 45 mph
II	9 to 70 mph
III	12 to top
(Automatic Trans)	
Low I	zero to 41 mph
High I	9 to 68 mph
High II	12 to top

SPEEDOMETER CORRECTION:

Indicated	Actual
30	30
40	39
50	48
60	57
70	66
80	75
90	84
100	93

FUEL CONSUMPTION:

Hard driving	9.2 mpg
Average driving (under 60 mph)	13.8 mpg

DRIVE TRAIN:

Transmission ratios	
(Manual)	
I	2.49
II	1.59
III	1.00
(Automatic)	
Low I	2.40
High I	1.47
High II	1.00
Final drive ratio (test car)	3.10 (automatic)
Other ratio	2.91 (optional), 3.70 (manual and OD)
Axle torque is taken by	Trailing arms

CHASSIS:

Wheelbase	113 in
Front Tread	60 in
Rear Tread	57 in
Suspension, front	Coil springs, unequal wishbones
Suspension, rear	Coil springs, trailing arms
Shock absorbers	Telescopic
Steering type	Recirculating ball and nut
Steering wheel turns L to L.	4.1
Turning diameter	38.5 ft
Brake type	Bendix Duo-Servo with Cerametalix spot insert
Brake lining area	194 sq in
Tire size	8.00 x 14
Rim size	5.5J x 14

GENERAL:

Length	205.4 in
Width	77.0 in
Height	52.5 in
Weight, test car	3870 lb
Weight distribution, F/R	53/47
Weight distribution, F/R, with driver	—
Fuel capacity	20 U. S. gallons

RATING FACTORS:

Bhp per cu in	0.85
Bhp per sq in piston area	2.98
Torque (lb-ft) per cu in	1.12
Pounds per bhp — test car	12.9
Piston speed @ 60 mph	1390 fpm
Piston speed @ max bhp	2680 fpm
Brake lining area per ton (test car)	100 sq in
Mph per 100 rpm	25.2

Jaguar

(Continued from page 29)

swinging the tail out as much as we dared on the narrow road, and we held with very little lean. Over the icy spots, the tail inching out, we were forced to back off, for with that little traction it's too easy to lean the tach needle on the peg. Once around the course and back to the starting line, inspection revealed that all four wire wheels were white with packed snow. We didn't clock our lap, but we know we didn't waste any time. Because of the snow and ice on the roads, top speed runs were impossible. We estimate 120 mph, but will postpone the actual runs until the ice clears.

One facet of the 3.4's behavior is worthy of comment. It's very much like skiing; the the faster you go, the easier it gets to maneuver. We were negotiating a lot of icy roads, the nasty kind that are dry for ten miles until you hit that big patch of ice and caked snow. At low speeds, on ice, we went through a motion we dubbed the "mambo"—a slight oscillation around the vertical axis of the car. We found that by going faster, say sixty, this condition disappeared, for the most part. When it did occur, it was very easy to control, and not at all dangerous. Incidentally, in fourth gear with the overdrive engaged, 2000 revs equals 60 mph! Care to try for the red line?

The ride is a remarkable combination of firmness and smoothness: comfort without wallowing. Small ripple bumps are absorbed; big ones are negotiated with a minimum of pitching or deviation. The size and action of the shock absorbers is perfectly balanced to the weight and suspension of the car. The smoothness of ride is counterpart to smoothness of detail.

Upon opening the wide doors, one is immediately impressed by the beautiful red leather that covers the foam-rubber padded seats. They're comfortable enough to sleep on, and the bucket-type front seats are designed with lateral support so that the driver can corner comfortably and safely. There is enough room to swing the arms around if desired and there is a maximum of visibility for a sedan. We drove the 3.4 hour after hour without stopping, and suffered no fatigue.

The edges of the windows and the dash panel—areas that in lesser cars are "decal" wood—are polished walnut. The Smith instruments are clustered in front of and immediately to the right of the driver, located in such a way that the tach sits right under his eyes. The speedometer and oil and water gauges sit slightly to the right and must be glanced at.

All small controls are push-button, except a two-speed wiper control that twists. Interior lights, instrument lights and heater-defroster blower are simple push-on push-off buttons. The temperature of the fresh air that enters the scoop and leaves the heater at feet level is controlled by a sliding handle. There are two storage compartments located to right and left of the panel; the former can be locked, while the latter is an open compartment for driving gloves and cigarettes. The handbrake is located on the left side of the driver's seat, and the overdrive switch (which works only in fourth gear) sits to the left and within finger-tip range of the wheel. In typical attention to niceties, the overdrive switch is made from a transparent material that illuminates when overdrive is engaged.

The engine compartment is filled by the engine, which is a bit of a tight fit at the fore end where the compartment narrows. You still have to remove the air filter to remove all the plugs, and the S.U.'s are not right where you can get at them; but accessibility is merely difficult, not impossible. It should not present any real problems, for *all* carburetor adjustments are now made from the top. Besides, the best place to take your Jaguar for service is back to Jaguar, who know how to get at things and what to do with the things they get at. One of the nicest touches, and symbolic of the thought and preparation that goes into the Jaguar you buy, is the arrangement of the road tools inside the trunk. These tools are located inside the recess of the spare wheel, covered, protected, and out of the way.

As you may have gathered, we like the 3.4 Jaguar sedan. The things we criticized are certainly of small importance; most fall under the realm of personal taste. In our opinion, the Jaguar 3.4 sedan that we tested is a magnificent automobile that no one in his right mind could seriously fault.

Len Griffing

T-BIRD

(Continued from page 19)

Bird these have been exploited only to a minor degree. The new Bird and the Lincoln are the firm's first unit construction cars and have been designed on the husky side. Time will indicate where metal can be removed without compromising the structure's strength and durability.

The new Bird we were able to drive was a production prototype powered by a 300 bhp, 352 cu in version of Ford's new engine with fully-machined wedge-shaped combustion chambers. The chamber is contained mostly within the cylinder, *à la* Mercedes-Benz, so that converting this engine to direct fuel injection should be extremely simple for the factory . . . when that time comes.

This is a very smooth, quiet V8 with hydraulic valve lifters and oversize crankshaft vibration damper. It mounts a single four-barrel carb and this combination will be the standard Thunderbird power package available for the high-priced six-passenger Fords. A dual four-throat manifold is not available but this lack will no doubt be exploited by speed equipment manufacturers. A point of interest to go-happy cats is the new Bird's extra-wide front track and spacious engine compartment. There is ample room there for the largest automobile engines being made in the world today and we'll no doubt be seeing privately-concocted '58 Birds hunkering down as the torque of 'way beyond 400 cubes hits the rear rubber. This will be the ultimate in lily-gilding, but the space is sufficient and therefore it will happen.

T-Bird

(Continued from page 52)

The stop-spec Big Bird's performance is quite comparable with that of the '57 Bird, which certainly is calorific enough for the public by-ways. It can accelerate with just about any *gran turismo* machine in the world today; its sheer displacement insures this.

Thunderbird engineer Forrest Poling, author, and T-bird planning manager Tom Case survey huge engine room.

How does the new Bird handle? We talked with test drivers who had shaken the car down in Mexico, over the all-telling first leg of the old Mexican Road Race, the leg from Tuxtla Gutierrez to Oaxaca. They bubbled with enthusiasm. In their caravan they had taken a number of more or less competitive cars of other makes and they ran away from these easily in the mountains. "Best handling car we've ever driven," they said.

Although the just-quoted gents must have led sheltered lives it *is* a very nice-handling car. Without power steering and in spite of its ample weight it still responds sensitively to a light touch on the steering wheel. The recirculating-ball steering gear is quite free of friction and backlash, and can only be criticized for its slowness.

The prototype we drove did not have the flat-cornering character of the smaller Bird. The new stress on luxury has dictated softer springs and shocks and the reference line of broad, flat hood and front fenders accentuates a degree of body roll that otherwise still would be very noticeable. The car can be cornered at above-average speeds with a feeling of security, comfort and exhilaration, yet with very little tire squeal. Fore-aft weight distribution is almost precisely 50-50 with four aboard. But even with a light load in the very slightly nose-heavy car, steering characteristics are nearly neutral. During hard cornering the rear wheels do slide outward . . . but very gradually, very safely. It's a balanced-steering car with a trace of oversteer; it would take exceptional exuberance to get this car into trouble on a curve.

The new Bird's front suspension consists of unequal-length wishbones (termed SLA for "short-long arm") with coil springs, outboard-mounted shocks and a link-type stabilizer bar. These shocks are of the cutoff type in which piston travel is hydraulically locked before the end of the piston stroke is reached. This permits

elimination of the upper suspension rebound bumper, a secondary source of jolts that can be communicated to the car body, harshening the ride.

Rear suspension follows the newly current coil-spring and trailing arm practice so that the steel springs at all four wheels can be replaced readily with air suspension units. A Panhard rod or track bar is fitted at the rear to enhance lateral stability, and the trailing radius rods help to control axle windup under acceleration and braking. The potential rigidity of the layout is softened by the provision of rubber elements between axle and trailing arms.

Any car as fast as the Bird needs exceptionally good brakes and the car's engineers feel emphatically that they have come up with a major improvement. The brake drum size is no larger than it was on the '57 model, and effective friction area actually has been reduced slightly by the removal of a two inch section of lining from one shoe in each of the four brake assemblies. Centered in the resulting space and welded to the shoe is a slug of cerametalix friction material, ¾ x 2½ in at the front and ¾ x 2 in at the rear. Unfortunately, the prototype cars equipped with this combination of organic and inorganic linings were undergoing brake tests in the mountains of Pennsylvania and were not available for sampling.

We did, however, obtain access to engineering brake-test records and a set of these is reproduced in the data table. In FMC's fade tests decelerating force is held constant at 15 ft per sec.², or at approximately .5 g. The increase of pedal pressure from stop to stop is taken as one important index of fade. Ford also makes its constant-g fade stops from 90 mph, while SCI makes panic-fade stops from 60 mph and takes decelerating force in g's from stop to stop as a fade index. A direct conversion of pedal pressure to g's is inadvisable, but the official Ford figures are perfectly meaningful for our purposes. The leveling off of pedal pressure indicates a stable condition. Because the drums are very hot, they are dissipating a lot of heat, yet they are not too hot for the brake linings, especially the ceramic spots.

To summarize, the new Bird is both hot and roomy. It is a very good-handling car, though not as good as the shorter, lighter, smaller Bird. But it still is fun to drive, exciting to drive and highly distinctive. It is not a small car and its only claim to compactness rests upon its exceptionally low lines. It is luxurious and comfortable in every detail, was self-consciously designed as a prestige product, while the little Bird's high prestige quotient was bestowed on it spontaneously by the public.

Readers of SCI are likely to regard the relative bigness of the new Bird as a design blunder, but that is because we think in terms of getting out of a smaller car and into the big Bird. FMC, on the other hand, is thinking of the millions of average motorists who will get the same feeling from stepping out of a conventional sedan and into the new Bird, that we would get stepping from the new Bird into the two-seater. It is for that big, broad slice of the citizenry that the new Bird was created.

Griff Borgeson