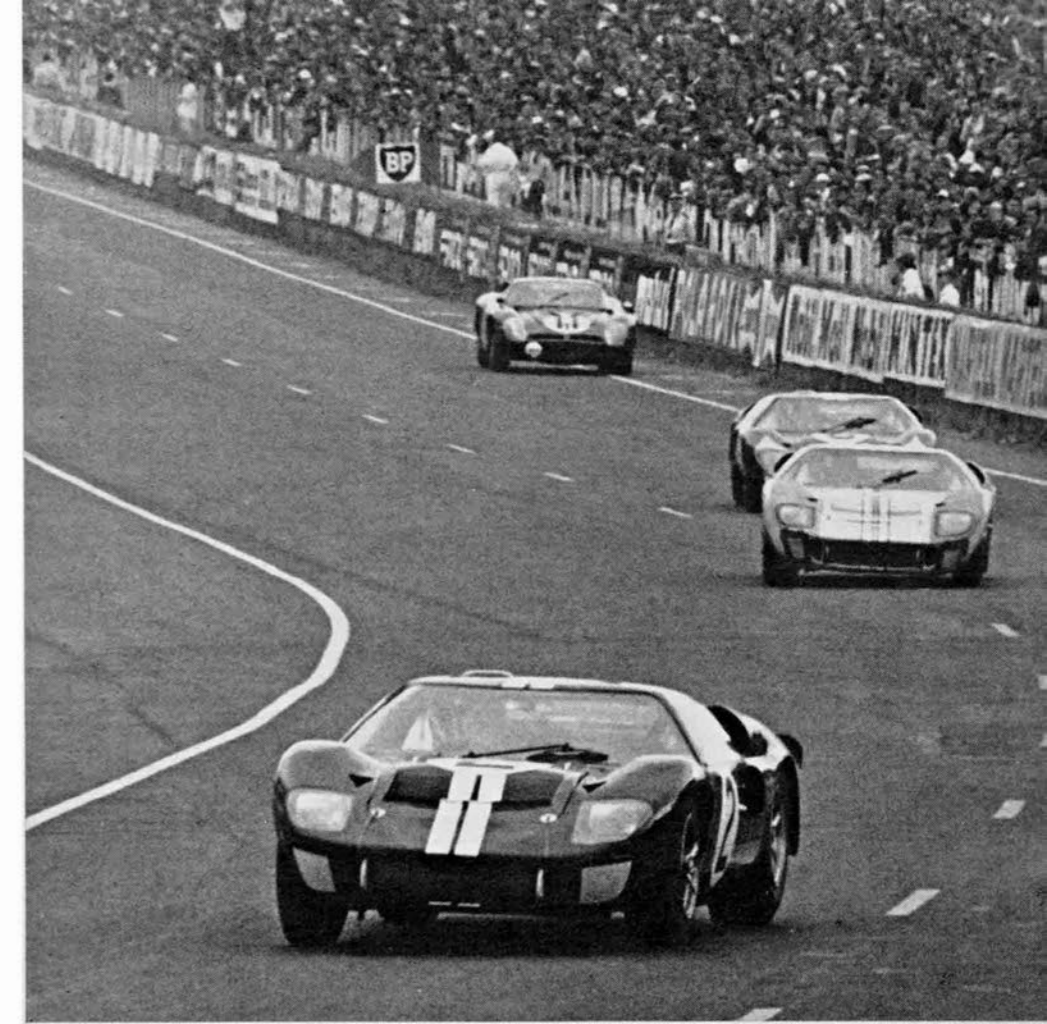




HAPPY HENRY Ford II has a right to smile—his cars have just achieved Ford Motor Company's biggest racing victory.



FORD CAME prepared for anything and everything. This is a corner of the huge service facility which accommodated the 13-car Ford force.



GT-40 MARK II of McLaren/Amon leads two more Fords and a lone Ferrari during earlier hours. Ford-Ferrari battle lasted 10 hours, then faded.

ONE, TWO, THREE, FORD

Victory at Le Mans: Made in U.S.A.

BY JOSEPH LOWREY

SPECTACULARLY, 427-cu. in. Fords won first, second and third places in the 24-hour Le Mans sports car race to establish new lap and race speed records while grinding down tough Ferrari opposition.

In contrast, all five 289-cu. in. Fords, which should have backed up the big prototypes by winning the sports category, were eliminated from the race, one by a crash, the other four by identical engine failures.

Three Chevrolet-powered cars which started the race were eliminated by troubles not directly related to their engines. The lone Chaparral suffered an electrical failure and two Bizzarini cars from Italy experienced cooling difficulties.

Should one regard this as victory at the third or the fourth Le Mans attempt for Ford? Certainly the cars which went fast, but not far enough, in 1964 and in 1965 were Fords. It is easy to forget the Ford-powered Lola which Eric Broadley entered for the 1963 race. This car failed to finish, but provided the inspiration that led to all subsequent Ford GT cars.

Whatever its history and its cost, Ford's victory at Le Mans in June, 1966, was hard-fought. Enzo Ferrari sent new P3 cars from Italy which were much faster than those of past years. Ferraris entered by the North American Racing Team, Pedro Rodriguez and Richie Ginther driving, led the race at several stages during the

first 8 hours. Eventually, a killing pace shattered all serious Ferrari competition, but only a few of the big Fords. The Shelby American team remained to stage a virtual dead-heat finish between its surviving two cars. Bruce McLaren and Chris Amon took the decision by a mere 20 ft. from Ken Miles and Denis Hulme. The surviving Holman & Moody car of Ron Bucknum and Dick Hutcherson was in finish formation but a dozen laps to the rear. Lap records had been broken repeatedly by the Fords during the first 3 hours. Though the pace was slowed when serious rivals disappeared, the old record for race distance was broken after little more than 23 hours. After having won six consecutive Le

Mans victories Enzo Ferrari was utterly defeated on this occasion. Even his production models in the sports category were defeated by smaller-engined Porsches from Germany.

Practice during the week before the race was not without excitement. Finding enough accomplished long distance drivers for the event provided some of the action. More than 100 drivers are required, even without reserves for the two nominated men per car. Many drivers of single-seat cars prefer to avoid Le Mans. Ford in particular looked hard for the right men after losing various intended drivers. Jackie Stewart was unfit after his crash in the Belgian Grand Prix. Dick Thompson, who was due to co-drive with Graham Hill, was rejected by the *Automobile Club de l'Ouest* after a practice incident in which the Ford of Scuderia Bear was nudged into the scenery. Ferrari lost an angry John Surtees as partner for Mike Parkes when the team manager let it be known he planned to replace Surtees at part distance with reserve driver Ludovico Scarfiotti.

The last hour before the start was more than usually worrying for many people, because the weather, which comes to the Sarthe countryside from

the not-so-distant Atlantic Ocean, was at its most capricious. Most cars had been shod with dry weather tires which have very few tread grooves in their broad expanses of durable rubber. When rain started to fall, many pit crews replaced the dry tires with less durable, but more clinging, wet weather tires. Minutes before the start, the rain gave place to sunshine again and some mechanics rushed to change tires once again.

While this pantomime was in progress, Henry Ford II arrived at the circuit. It was he who waved the start signal and escaped safely to trackside with the French tricolor before the fastest-sprinting competitors were able to get their cars moving. In the next frenzied seconds Graham Hill got clear away ahead of the field; Whitmore stalled his engine and was involved in some nudging with cars from farther back in the line when he got moving; and a NART Ferrari was slow to start. On this first lap, Ford troubles began when Hawkins, in a Holman & Moody 427 Ford, had the left drive-shaft fail at more than 200 mph on the straight. A spin-limiting differential provided a sort of 1-wheel drive which got Hawkins around to the pits.

Scarfiotti had the best-placed works Ferrari, in fourth position, and the Chaparral moved into an encouraging sixth spot.

Eight Fords in the prototypes half of the field were the 427-cu. in. GT Mark II coupes, with basically stock V-8 engines ahead of their independently sprung rear wheels. All were running with a single Holley 4-barrel car-

MOUNTAIN of spare parts helped Ford field its battle-ready battalion.



PHOTOS BY GEOFFREY GODDARD, JOSEPH LOWREY

LE MANS

buretor, to the surprise of European observers, but with complex cross-coupling of exhaust pipes between cylinder banks to deliver evenly spaced gas pulses in each of two unsilenced exhaust outlet pipes. With aluminum alloy cylinder heads and transistor ignition, but retaining rocker-arm valve gear, the engines were rated 475 bhp at 6200 rpm with a piston speed at the 7000 rpm rev limit of 4400 ft./min. Seven of the cars were fitted with Ford 4-speed transaxles and one carried a ZF unit with a similar twin-plate Borg and Beck racing clutch.

AS RIVALS for these Fords there were three examples of the latest P3 Ferrari coupe, with double overhead camshafts instead of the more familiar Ferrari single camshaft above each half of the 60° V-12 engine. Two of the cars had sets of six 2-barrel Weber carburetors. The third car had Lucas timed fuel injection into its induction pipes. In contrast to the rather wedge-shaped Fords, these new Ferraris had an appearance of being sculpted in three dimensions by an artist, but with drab paintwork and holes where components had been fitted and removed again. Their detail body finish was a sad contrast to the smaller-engined V-6 Dino Ferraris.

So many unlucky incidents can happen in a 24-hour race that it is difficult to take a lone entrant seriously, but after its victory in a 620-mile race at Nurburgring, the solitary Chaparral was attracting plenty of interest. As mentioned, the two other Chevrolet engines were in Bizzarini prototypes. This team seems to have more ambition than cash, and one of its prototypes was the known front-engined Grifo and the other a new 2-seater with engine behind the driver.

Five of the production 289-cu. in. Ford GT-40 coupes started. All carried four 2-barrel Weber carburetors and ZF 5-speed transaxles. The total of 13 Ferraris on the start line (the same as the total of Fords) included a trio of 121-cu. in. V-6 Dino rear-engined models and older front- and rear-engined V-12 cars in 201-cu. in. and 268-cu. in. sizes., in addition to the three new 242-cu. in. cars of 3.14-in. bore and 2.91-in. stroke.

From Germany, Porsche brought six of the latest flat-6 air-cooled 121.5-cu. in. models, two production sports/racing coupes, a normal street 911 coupe and three special cars with very long streamlined body tails to suit a fast circuit. From France were en-



PORSCHE PROTOTYPES finished 4-5-6 right after Fords, but more than 20 laps behind. These had long streamlined tails.

tered promising Matra coupes with 117-cu. in. BRM engines based on the V-8 Grand Prix unit, CD coupes with the transverse engine from a front-drive Peugeot sedan moved to a location behind the driver and Alpine coupes based on the rear-engined Renault Gordini.

Big Fords were expected to dominate the early stages of the race. This they most certainly did by holding the first three places throughout the first hour. The Shelby American, Holman & Moody and Alan Mann teams each had a car in the pace-making trio. Always there was a Ferrari (either that of Scarfiotti or of Rodriguez) in fourth position throughout this first hour. Often these two fastest Ferraris were in fourth and fifth positions. Joakim Bonnier in the Chaparral moved up and down between fifth and seventh positions during this time. For this first hour, Dan Gurney, who established a firm lead, averaged 137 mph. He and Ken Miles took it in turns to break the old lap record of 138.4 mph. With an hour gone, the NART Ferrari was in fourth place, 44.5 sec. behind the leader.

At this stage, many informed on-lookers were prepared to calculate that the Ferraris, although not in the lead, were going fast enough to win the race. Le Mans rules limit the big cars to 42.5-U. S. gal. fuel tank capacity and the smaller-engined Ferraris to 37 U. S. gal. In 1965, the 427-cu. in. Fords required refueling after 17 laps, whereas the Ferraris then had a much longer range. One prediction was that, requiring fewer stops for fuel and fewer renewals of disc brake pads, the lighter Ferraris at 2150-2180 lb., compared with 2660-2740 lb. for Fords, could give away up to 2 min./hr. on lap speeds. The pits are on a fast section of the course where slowing down and rejoining the race adds many seconds to the time actually spent at rest.

WITH GROWING amazement, these prophets saw all the refueling hoses left idle until, after 19 laps, the Chaparral pulled in for gasoline. It was not until the end of the 22nd lap that the first Fords stopped for

fuel. Others came in on their 23rd or even on their 24th laps. The two leading Ferraris stopped for fuel after 23 laps and the third fastest Italian halted a lap later. Thus it suddenly became evident that Ford had learned much about fuel economy at racing speeds during the past 12 months.

Because so many of the fastest cars had about the same fuel range, massed pit stops played havoc with lap charts and caused some nasty congestion. Graham Hill brought his Ford in for fuel after 23 laps, found two similar cars under repair and two being refueled. There was no room for him in the pits, so he managed another gentle lap of the 8.35-mile circuit before stopping again for gasoline.

At this time it began to rain again and the Chaparral crew began to suffer acutely from 8-bolt removable road wheel rim difficulties. The rims are light in weight, but slow to change in comparison with center-lock wheels. Stops to fit rain tires, and then a very few laps later to refit dry road tires, took about 6 min. each, plus time for slowing down to pit and speeding up to rejoin the race. The Chevrolet-powered car dropped to 16th place during the second hour.

FOR JUST 10 hours of the 24 the really fierce Ford-Ferrari battle continued. At the 6-hour mark the two Ferraris had been in first and second positions. Rodriguez and Ginther, followed by Scarfiotti and Parkes, went ahead of all the Fords when the American cars required longer stops for renewal of brake pads. Size and numbers won in the end, however. When the NART Ferrari stopped with gear selector trouble the Ferrari challenge was ended. Many spectators headed home to bed at 2 a.m., convinced that though there would be many more retirements, a Ford victory was almost certain.

Retirements there certainly were after the Ferrari challenge to Ford faded away. If the pace became gradually slower, the cars and drivers also became gradually more tired. It was after almost 18 hours that the Ford with which Dan Gurney had earlier lifted the lap record above 230 kph (to

143.0 mph) retired with an overheating engine which, by race rules, could only be refilled with oil or water at 25-lap (209-mile) minimum intervals.

One can summarize the race as a story of attrition and diminishing speed. Of the 55 cars which started there were 51 still running after the first hour. Among them were 11 of the original 13 Ferraris and 12 of the original 13 Fords. The race average stood at 137 mph.

At 10 p.m. when the race had been going for 6 hours, dusk and showers had slowed the average speed to 134 mph. With only one quarter of the race time elapsed, the field had been reduced to 42 cars, but still included 10 Fords and 10 Ferraris.

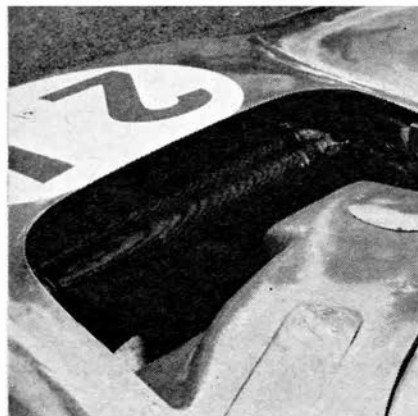
By 10 a.m., when three quarters of the race time had elapsed, lack of inter-marque rivalry during a sunny morning let the race average drop to 127.5 mph, despite which another 10 cars had gone out, to leave only 19 in the race. In this select band there were only three Fords and three Ferraris.

When the checkered flag went out at 4 p.m., the last almost purely processional quarter of the race had eliminated another four cars, leaving 15 of the original 55. Among these were just three Fords in first, second, and third places, as against two Ferraris in eighth and tenth places. When the race ended the overall average speed was still 125.5 mph, a great improvement on last year's 121.8 mph average.

WHAT HAPPENED to the failures? Of the three really modern P3 Ferraris, which were the only serious rivals for the Fords, the first was nudged into somebody else's accident by a Matra-BRM, the second met gear selector trouble, and the third retired with a sick and overheating engine.

The one and only Chaparral ran for 7.5 hours, losing time on slow wheel changes. Then, at 11:30 p.m., its battery refused to restart the engine after a pit stop and, under race rules, that was the end of the Chaparral's run.

FERRARI P3 had a gill-tube radiator to better resist racing vibrations.



One detail which helped to keep this 327-cu. in. car 515 lb. lighter than the 427-cu. in. Fords was two small aircraft batteries. Co-driver Phil Hill reported a charging selector switch failed.

Of the eight larger-engined Fords which started the race, one retired after 6.25 hours with a valve through a piston. Another went out after 17.75 hours with an overheating engine. One car encountered clutch trouble, another suffered the cumulative effect of assorted problems with valve gear, transmission and insecure bodywork. (The entire tail section fell off.) Another had a suspension upright broken by vibration from a warped brake disc which shortly would have been changed. That left three cars running at the head of the field, the least quick of them delayed by several brake disc failures. One could describe a car which wins the first three places in the race and also suffers such a wide variety of troubles as a well-balanced design, driven to its limit. There was no one marked weak spot among the Ford GTs.

In contrast, there were five Fords with 289-cu. in. engines at the start, four of which fell out with similar valve rocker gear failures after 1 hour, 11.25 hours, 15 hours and 16 hours, respectively. The remaining car crashed after 16.25 hours when an incompletely closed fuel filler on the side of the body let gasoline spill onto the tires at the Esses corner. It would seem that, with rocker-arm valve gear, 8000 rpm on the smaller Fords might pose more severe problems than the higher piston speeds of the longer-stroke 427-cu. in. units.

Contrary to what had been feared, rapidly increasing car speeds did not lead to accidents, though the Fords were exceeding 200 mph on the long, undulating straight towards Mulsanne. Nevertheless, French authorities seem to be uneasy about the extreme performance of competitors in what was once an event for touring cars. Next year, with the same limit of 42.5 gal.

fuel tank capacity, race officials propose to permit refueling only at about 250-mile intervals. Cars must deliver at least 6 mpg when driven at their hardest.

Because there is an "Index of Thermal Efficiency" prize in this event, based on each car's speed, weight and fuel consumption, all gasoline going into competing cars is metered. Thus it is known that the Ken Miles/Denis Hulme 427 Ford, which was nosed out by the winner at 125.5 mph, recorded 5.89 miles per U.S. gallon during the 24 hours of racing, much of it at somewhat reduced speeds after the Ferrari collapse. With experiences from earlier years, Ford judged the state of engine tune for the big engines very well on this occasion. The engines were geared for almost 35 mph/1000 rpm in high gear.

THERE IS talk of eventually reviving the one-time demand that cars above 91.5-cu. in. engine size must have 4-seat bodies. This and proposed limits on fuel capacity hint at changes in the character of future Le Mans races. Though this year's event saw speeds take a great leap forward, one can still see ways in which Le Mans cars could be much improved. Emphasis on engine efficiency probably will demand fuel injection engines for best results. Aerodynamic shapes, which are largely determined by wheel bulk, almost certainly will be improved by more forward driving positions. Aerodynamic braking must certainly be used for initial retardation from maximum speeds toward Mulsanne's acute corner. Tire manufacturers still must evolve designs which can be raced equally effectively on wet or on dry road surfaces. Especially for wet weather, today's tire designs may be too wide and too small in diameter.

Having achieved dual ambitions by winning both Indianapolis and Le Mans in 1966, Ford now will be strongly motivated to rest on its laurels. ■

V-12 FERRARI prototype of Bandini/Guichet lasted little more than five hours, ultimately retired with broken gears in the transmission.

