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FOUNDED IN THE YEAR

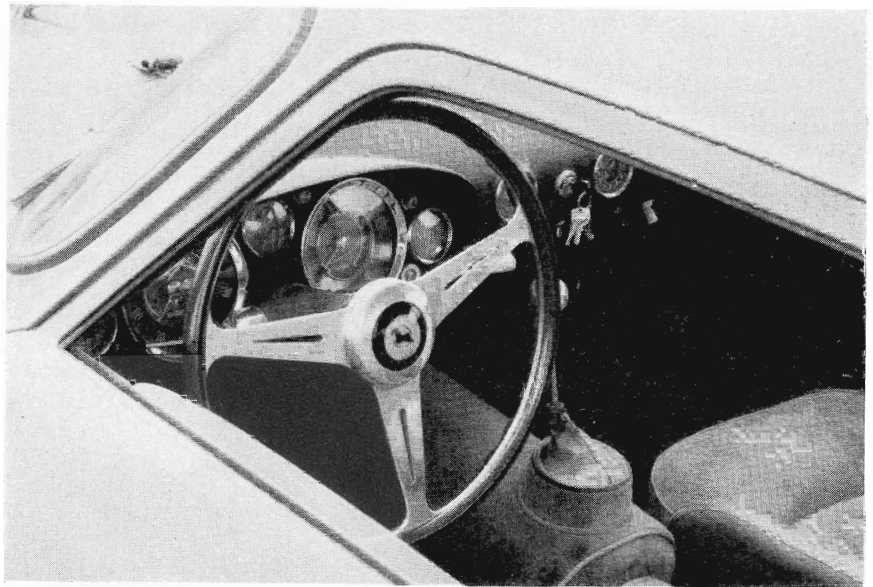


NINETEEN TWENTY-FOUR



THE DEVELOPMENT OF THE 250GT FERRARI

THOROUGHbred.—A cockpit in which any true enthusiast would dearly love to sit, whether it be as driver or passenger. The 250GT Ferrari, with its alloy three spoke steering wheel, rigid control gear-box with large alloy knob and impressive instruments.



[The 250GT Ferrari must surely represent the ultimate in modern high-speed sporting travel, or G.T. competition, and holds today a position rather similar to the Bugatti 57SC of 1939. In 1962 the GTO Ferrari coupés had a remarkable season of successes in G.T. racing and have become the standard by which any competition coupé is measured. The following article by K. H. Miska traces the story of a car that started life as long ago as 1948 and by steady development has become one of the world's greatest cars.]

IT WAS only with the advent of the type 250 Europa that Ferrari seriously considered series producing a touring car. Up to then, few touring coupés and convertibles were produced and, even then, these differed quite radically from each other. Touring of Milan, Vignale and Ghia of Turin practised their art and produced a few, at times bulky, coupés but never were any of these an attempt to series produce a real touring car. Frequently these were cars built for special customers and the chassis which were used, were those of outright sports racing machinery. Eventually Enzo Ferrari had the foresight to want to build a car which would be equally at home on the boulevard or the racing course.

Today's 250GT Berlinetta can be traced back to 1948/49, a time when the type 166 Inter was produced in very small quantities. Powered by the famous Colombo designed V12 of 60.0 x 58.8 mm. —1,995 c.c., this model produced a mere 110 b.h.p. at 6,000 r.p.m. The compression ratio was 7.5 to 1. Something that has not changed, with the exception of the Lampredi designed V12 powering the type 250 Europa, was the classic 58.8mm. stroke of this engine. This stroke measurement threads its way through all Ferraris leading to the 250GT. The 166 Inter used a single 32 DCF Weber carburetter. The five speed gearbox was only synchronised on 3rd and 4th. The car also laid groundwork for the suspension of the modern Berlinettas. Two wishbones, together with a transverse leafspring, were used in the front. Semi-elliptic leafsprings and radius rods were combined with a live axle to suspend the rear. The frame was simple. Large diameter steel tubes were used. Dry, the car weighed 2,160 lbs.

The type 195 Inter succeeded the 166. Essentially the car was the same but bore was increased to 65 mm. giving a displacement of 2341 c.c. Power output was up to 130 b.h.p. at 6,000 r.p.m. and while early models of this type used a single 36 mm. Weber carburetter, later models were fitted with three Webers. The five speed transmission was carried over, the ratios being 3.08 on 1st, 1.9 on 2nd, 1.38 on 3rd, direct drive on 4th and 0.925 on 5th. Frame and suspension remained the same, and it was on this type of Ferrari chassis that the first coupé body was fitted.

The last of the Inter models was the type 212 first built in 1952. Boring the 2,340 c.c. engine out to 68 mm. resulted in the type 212 Inter engine of 2,562 c.c. Horsepower increased to 170 at 6,500 r.p.m. and three Weber 32DCF twin-choke carburetters were used. A new gearbox was built with the following ratios; 1st being 3.15, 2nd 1.95, 3rd 1.40, 4th 1.00 and 5th 0.91 to one.

Again suspension followed along lines used on previous models. For European use the car was built on an 8 ft. 6 $\frac{3}{8}$ in. wheelbase. On the shorter 7 ft. 4 $\frac{1}{2}$ in. wheelbase the same model became known as the 212 Export. Models came through with the single carburetter layout and for racing the three Webers were bolted on. The factory issued two catalogues for this type; the first showing various touring cars with coachwork by Ghia, Farina and Vignale while the second showed a lean coupé with body by Touring. These coupés by Touring were also known as the Tuboscocca. The American Ferrari exponents Kimberly and Spear raced these cars in early Watkins Glen and Bridgehampton races.

The Type 250 Export of 1951 represented the last increase of displacement in the series of models which paved the way for the versatile Type 250GT Berlinetta. Rather than use the Colombo based engine for the 250 Export, Ferrari decided to try a lined down version of the Lampredi designed 340 America engine. This meant that the 58.8 mm. crankshaft was abandoned for a 68.0 mm. unit and with the bore the same 68.0 mm. as on the 212 Inter a capacity of 2,963 c.c. was obtained. Even though 220 b.h.p. at 7,000 r.p.m. were realised from this engine, it was not a success. Three 36DCF Webers, multi-disc clutch and a 4-speed gearbox were used, the weight being 2,200 lbs.

In 1952 this 250 Export engine, using three 4-choke downdraught Weber carburetters was used in the 250MM model, a sports car used in the Mille Miglia.

Following the 250 Export came the first serious attempt to series produce a Ferrari. The 1953-55 period saw two models of the Type 250 Europa produced. One model retained the 250 Export engine and the other returned to the 58.8 mm. crankshaft. Bore on that model went to 73.0 mm. This configuration was to be the basis of all the touring cars and sports racing cars that followed; the exception being the 4.9-litre touring cars built to special order only. First let us examine the 68 x 68 mm. 250 Europa. Power was similar to the Export model at 220 b.h.p. at 7,000 r.p.m. Three newly designed Weber 36DCF twin-choke carburetters were employed. A most important design change was not visible to the eye; the old 5-speed transmission was replaced by the 4-speed box developed for sports car use. Its ratios were 2.54 to 1 on 1st, 1.7 on 2nd, 1.255 on 3rd and direct drive on 4th. Also there was a change in the braking system; two master cylinders and the two leading shoe system were incorporated. In other respects the car remained the same as its predecessors but weight, through luxurious outfitting, went up to over 2,300 lbs. dry. Built on a 9 ft. 2 $\frac{1}{4}$ in. wheelbase chassis the 250 Europa was rather large by Ferrari standards.

Built on essentially the same chassis but with wheelbase of 8 ft. 6 $\frac{3}{8}$ in. was the concurrently produced Type 250 Europa with the 73 x 58.8 mm. engine. Power was 220 at 7,000 r.p.m. while the 8.5 to 1 compression ratio was lower than the square engine. There was a choice of three final drive ratios for the Pinin Farina bodied coupé. On the gearboxes Porsche patented synchromesh was incorporated. Standardised suspension was carried over from the days of the Inter models but the single transverse leaf-

spring in the front was eliminated in favour of conventional coil-springs. In small quantities these cars appeared in competition but still did not threaten the supremacy of the Mercedes Benz 300SL. Gendebien and Stasse competed in the 1956 Liège Rome Liège Rally but Mercedes and Porsche opposition limited them to third place. In the Mille Miglia of that year the first of the light Grand Touring coupés, driven by Gendebien, battled with the Mercedes 300SL of Metternich and Einsiedel to come in fifth overall and first in G.T. over 2,000 c.c. The G.T. Ferrari had arrived!

Once the 250 Gran Turismo was born in 1956 it went from strength to strength. All features of the 250 Europa were retained in elegant versions of the 250GT but competition coupés began to take on the shape now found in the short chassis Berlinetta. The classic V12 now produced 240 b.h.p. at 7,000 r.p.m. Compression was still 8.5 to 1. Set on a chassis of 8 ft. 6 3/8 in. wheelbase the G.T. with the 4.55 to 1 final drive ratio could reach 60 m.p.h. in 6 sec. The standard European run for one kilometre from a standing start was completed in 26.8 sec. With the fastest rear axle offered for sale the car was theoretically capable of 157 m.p.h. at 7,000 r.p.m.

1957 saw independent Ferrarists more active with the 250GT. Gendebien repeated his 1956 Mille Miglia triumph by finishing third overall and first in index of performance. The Tour of France and G.T. races at Monthéry and Castelfusano fell to the de Portago driven light Scaglietti bodied 250GT coupé. Gendebien became a G.T. specialist when not driving sports racing Testa Rossas; he gained victories in the Giro Sicilia and Tour de France.

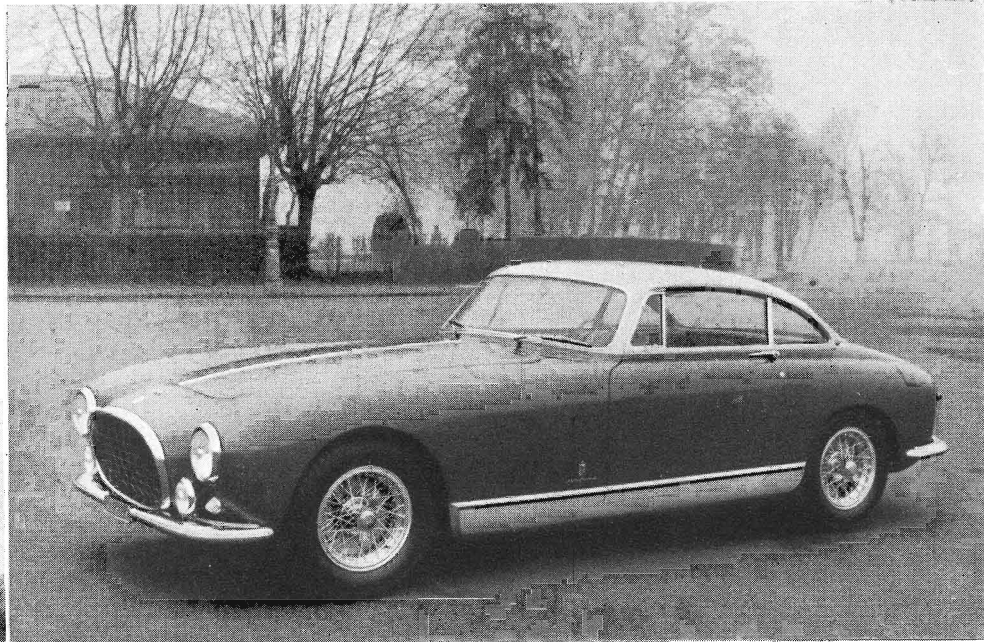
For 1958 the FIA had set a limit of 3-litres for sports racing cars. Ferrari built a number of 12-cylinder Testa Rossas and with these swept the Manufacturers' Championship. Engines of G.T. Ferraris built after 1958 and right up to the present owe much of their performance to these Testa Rossas. During 1959 it was decided to use the cylinder heads from 1958-59 production 250 T.R.'s in constructing the 250GT. The spark plugs were moved from the inside of the V to the outside or exhaust side. A suitable

shield protects wires leading to the spark plugs. The siamesed intake ports of the old heads were done away with in favour of six separate ports. The three 36.0 mm. twin-choke Webers were replaced by the larger 38DCL3's; Testa Rossa sports cars used six of these. Certain 250GT's, built for special customers, breathe through three 4-choke 38IF carburettors. These special G.T.'s now were up to 267 b.h.p. at 7,000 r.p.m. versus the standard 240 b.h.p. at 6,800 r.p.m. cars. Experiments with disc brakes had been started by Peter Collins, his personal car serving as a test bed for a set of Dunlop disc brakes, and these became standard in 1960 with the introduction of the short-chassis competition model, of 7 ft. 11 1/4 in. wheelbase.

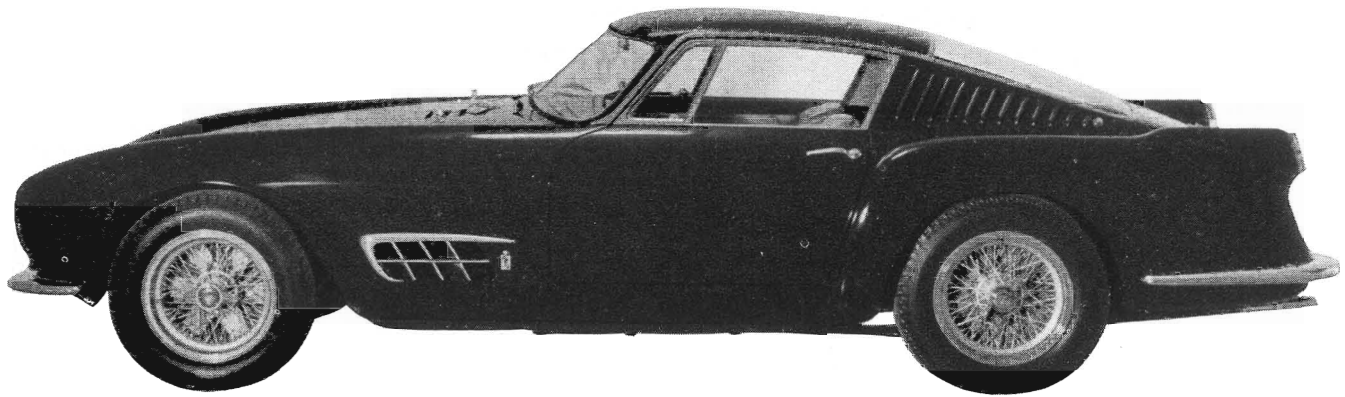
At this point a more accurate analysis of this fabulous dual-purpose engine is in order. The machined from solid bar crankshaft runs in seven main bearings, one on each side of the six throws. An ordinary gear type oil pump is driven off the front of the crank and oil is supplied to the mains of the connecting rods by means of regular crankshaft drilling. Dry sump lubrication is not used. The two overhead camshafts are driven by triple chains. Very short rockers actuate the valves and the end in contact with the cam is now a roller follower in lieu of the older radiused contact surface. Two hairpin type springs close each valve. Both intake and exhaust are at 45 degrees to the cylinder head. The combustion chamber's surface is based on two imaginary spheres centered about the valve stems. Compression ratio is a, by modern American standards, modest 9.8 to 1. All those beautiful valve springs, valves and rockers are enclosed in the traditional Ferrari valve covers; these are held down by sixteen nuts. Fuel is supplied by two pumps; one mechanical and one electrical controlled by the driver. The gasworks have been described above. Timing of G.T. Berlinetta engines as opposed to the conventional G.T. cars is only a hairbreadth away from the 250 T.R. sports cars. Intake duration for the G.T. is 276 degrees whereas the Berlinettas enjoy 294 degrees, only 4 degrees less than the Testa Rossa; exhaust duration being 270 degrees for G.T.'s and 290 degrees for Berlinettas and T.R.'s. In terms of valve lift the Berlinetta is

Continued on page 178

EARLY DAYS.—A Pinin Farina-bodied 250 Europa Ferrari. In touring form the early cars were rather over-bodied and heavy.



THE START OF THE REAL THING.—An early 250 Europa Ferrari with lightweight competition bodywork by Farina. This car was used in numerous open-road races, such as the Mille Miglia, Giro Sicilia, etc.



250GT FERRARI—continued from page 175
 pure Testa Rossa; 0.398 in. for intake valves and 0.394 in. for exhaust. The G.T.'s open both valves on 0.354 in. A last graphic example of the drastic difference between G.T.'s and Berlinettas is in terms of timing overlap; 82 degrees for the latter and only 44 degrees for the former. What is probably most remarkable is that even the wildest and starkest Berlinetta may be driven on the street without fear of fouled plugs if one simple precaution is taken: rev. it!

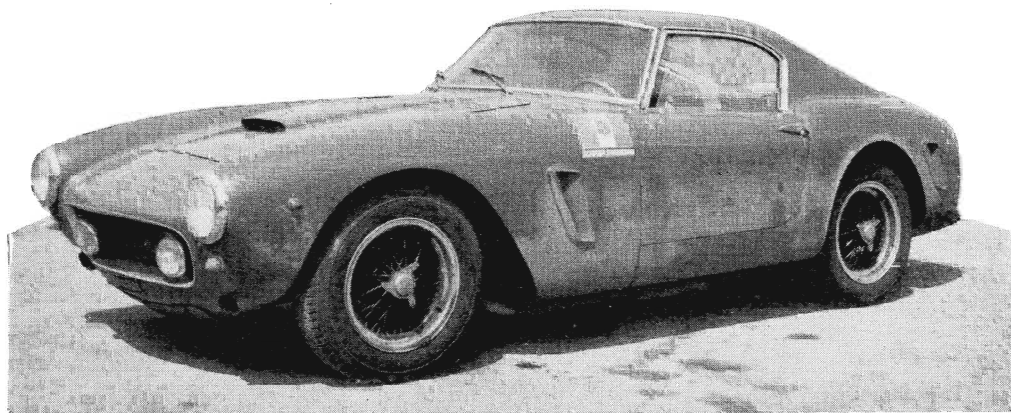
Going back to 1958-59 we discover that Ferrari built an open model to supplement existing G.T. cars. This new model became known as the California and may be had with either the normal G.T. engine or the slightly detuned Testa Rossa engine, better known as the Berlinetta engine. Bodies are by Pinin Farina and Scaglietti. A California was driven into fifth place at the 1959 Le Mans and at any S.C.C.A. race one is likely to see one of these cars in racing trim. However, most drivers seem to prefer the short chassis Berlinetta with the potent engine, an almost unbeatable combination.

Ferrari never attempted to series produce a 4-seater until the Pinin Farina bodied 2+2 model was first shown in New York in 1961. Basically the same as the 250GT, this design combined the amazingly flexible V12 and 4-seater comfort found in few

other cars of such performance. This type was designed to replace the standard 250GT and one thousand are to be built at a rate of about one per day. The engine had to be moved forward about 6½ in. to make room for extra seats and rear track also had to be increased 1.6 in. In the process of this enlargement weight tended to shift to the front when only a small amount of fuel was carried. From the normal 49/51, weight distribution changed to 55/45. When the 26 gallon tank is full it improves to 53/47. With three people up and a full fuel load the 2+2 is probably the heaviest Ferrari ever built. It weighs a startling 3,800 lb. Nevertheless, performance is fabulous; sixty miles per hour being reached in 8½ sec. The Aston Martin inspired 0-100 and back to rest test is accomplished in 25 sec. Also, for the first time a genuine overdrive is offered with a Ferrari. Only sold with the 4.56 to 1 rear axle the Laycock de Normanville overdrive operates only when 4th gear is selected. The flexibility of the V12 is astounding. Lazy drivers can lug, heaven forbid, the 2+2 away from 1,000 r.p.m. in high gear but far more exhilarating must be the feeling when the throttle is cracked open at 5,000 r.p.m. while in second. Maximum usable revs are 7,200 which will propel you at 129 m.p.h. in 4th and 136 in 4th overdrive. As usual, interior appointments are elegant and the natural leather seats

SHORT CHASSIS.—The competition 250GT "Berlinetta" of 1961, with Dunlop disc brakes all round, short chassis and 267 b.h.p. →

TOURING ELEGANCE.—The production Ferrari 2+2 which is developed directly from the 250GT, with 3-litre V12 engine, 4-seats and disc brakes. ↓



← IN PRODUCTION.—A 1958 250GT Ferrari with Farina bodywork. Similar shaped bodies weighing a lot less and much starker inside were built by Scaglietti for racing customers and the factory team.

PERFECTION?—The 250GTO Ferrari → as raced by U.D.T.-Laystall in 1962. The GTO has been untouchable in G.T. racing and Enzo Ferrari does not consider it necessary to improve on it for 1963, being sure that customers will uphold the name with 1962 models.



exude quality en masse. Disc brakes are standard equipment. Combining the genius of Pinin Farina and the race proven V12 results in a most coveted touring car of superlative performance.

At the end of 1961 a new G.T. Ferrari was tested at Monza. At once named the "Anteater" by American sports car papers, this car was derived from the unsuccessful Tavano/Baghetti 1961 Le Mans coupé which used a 6-carburetter engine. At the annual Ferrari press party a production version of the Monza car was shown and given the designation 250GTO*. Changes included the use of a full Testa Rossa engine but with cam covers finished in black crackle. Carburation is by six Weber 42 DCN twin-choke instruments. The 4-speed transmission of 1961 gives way to a 5-speed unit and now the gear change operates through a gate with a reverse lock-out. Weighing about 2,000 lb and with 300 b.h.p. available at 7,400 r.p.m. this car became an immediate winner. However, for the first event counting toward the Constructor's Championship Ferrari did not send a 250GTO to Daytona in Florida. Stirling Moss won with ease on an interim model of the 250GT. This car sported a lengthened tail and leaner appearing bodywork.

At Sebring the 250GTO made its most convincing debut. Long distance experts Gendebien and Hill drove the car to a class win and placed it second overall. For the remainder of the season the car went from success to success. Class wins were recorded in the Targa Florio, Le Mans and at the Bridgehampton Double 400; only the Nurburgring 1,000 kms. falling to a private 250GT. However, the Ring saw another interesting variation of the 250GTO. Scuderia Ferrari entered one with a Superamerica derived 4-litre engine breathing through three double-bodied

Weber carburetters. Mairesse and Parks brought the experimental machine home second overall. The same car and team was entered to drive this car at Le Mans but mechanical troubles eliminated this strong contender for overall honours. The classic Tourist Trophy was easy prey for the G.T.O. and Innes Ireland led a 1, 2, 3 triumph of three G.T.O.'s.

Remarkable as it might be on the circuit, it is also a remarkable machine on the road. One American Ferrarist, who owned and raced many G.T. Ferraris, commented that the G.T.O. is an even more pleasant car on the road! He maintains that it is most tractable and overheating in traffic congestions is no problem. In its short lifetime the 250GTO has established an enviable record. It is also one of the most sought after competition cars as evidenced by recent European suggestions that "black market" G.T.O.'s bring higher prices than new ones. The demand is greater than the supply and it is obvious that to win one must have a 250GTO for serious G.T. racing.

The docile and elegant 250GT 2+2's and Californias will benefit from the racing experience gained by the competition G.T. cars whatever they might be at the time. It is a fitting reward that the buyer of a touring Ferrari should have the G.T. victories rewarded to him in this way.

* [There is some doubt about the origin of the designation G.T.O., for early in 1962 English speaking journalists were using the term, but people in Modena had never heard of it. However, later in the season it was generally accepted and a story came out that it was supposed to have been called 1962 250GT and as it was homologated for G.T. racing with the F.I.A., at some point in the paperwork it was written as 250 GT-O, meaning "Omologato" (Italian for Homologated) and in error the hyphen was missed out by a typist in copying the memo. Thence the G.T.O. was born on paper! — D. S. J.]

WORLD PRODUCTION FIGURES

World production of motor vehicles (cars and commercials) last year was :—

U.S.A.	..	..	..	6,900,000
Germany	..	..	..	1,688,000
Britain	..	..	..	1,674,530
France	..	..	..	1,536,133
Japan	..	..	..	990,705
Italy	..	..	..	930,000

Britain produced 1,249,426 private cars, 425,104 commercial vehicles, and exported 544,792 cars, a 50% improvement on 1961 and only 25,124 below the 1960 record. Europe took 66% more of our vehicles, or 199,336, the Commonwealth imported 235,869 and America 73,654. The leading British makers fared as follows :—

B.M.C.	..	600,279 vehicles to July 31st—exporting nearly 275,000
Ford	..	530,000 vehicles—exporting 270,000
Vauxhall	..	220,805 vehicles—exporting 111,930

FEBRUARY FLASH-BACK

A few points arise in retrospect since publication of last month's issue. The stolen Editorial Mini Minor was found in Swindon, so there is no need to apprehend anyone seen driving 634 GWL, although I would be interested in news of its missing accessories!

As a postscript to the description of Moto Meter instruments, I have had a 12-volt clock on a simple Meccano test-rig, running it off a 9-volt Exide dry-cell and it has kept perfect time, without any initial adjustment, for several weeks. — W. B.

DRIVING THE D.K.W. F12

An opportunity was recently afforded us to drive the new D.K.W. F12 model. We should have driven the car at Silverstone but owing to the fact that the circuit is still covered with several feet of snow we had to make do with a short run on roads near London Airport. Two cars were available, both left-hand drive, and on initial inspection it soon became obvious that the car is aimed at a rather different market than the Junior which competes with such cars as VW 1200, N.S.U. Prinz and B.M.W. 700 and this was confirmed by Auto-Union engineers who expect the F12 to compete with the Ford Taunus 12M and Opel Kadett.

On the road the F12 still remains very much a D.K.W., accelerating quite rapidly with a mild purr, braking extremely well with its new front wheel disc brakes, riding more comfortably than the Junior due to its longer wheelbase and having a greater air of quality about it which may well, for some people, make it worth the rather high price of £897 15s. asked for it in Britain. We look forward to much longer acquaintance with this car. — M. L. T.