

**A**LTHOUGH there is an increasing tendency amongst car manufacturers to incorporate improvements and modifications in their products, as and when such a course is possible, not waiting until any specified period of the year; nevertheless, the arrival of the Olympia Show makes a brief review of sports car tendencies permissible; provides, as it were, a basis for appreciation of the progress made in the foregoing twelve months, indicating, albeit vaguely, what developments we may look for in the near future.

Undoubtedly the outstanding feature of the present trend of design, so far as sports cars are concerned, is the arrival of "silent speed" qualities in cars of quite moderate list price, a feature that embraces a considerable degree of luxury in bodywork and equipment as well as a high output from engines which, nevertheless, function

smoothly and without apparent effort. Perhaps this development was not exactly unexpected by those who have observed for some years past the diminishing dividing line between the "normal" car and the sports model, and have noted with considerable interest the warm reception given by discerning British sportsmen to the better class Americans and other unobtrusive, high performance cars. How does the out-and-out enthusiast regard this new trend? The writer must confess to a slight pang of regret, a doubt as to whether the lid is not closing down rather rapidly upon the "real" sports car, just as the artificial "sports" fittings and adornments of a year or two ago hinted, perhaps, at a distant era of purely utility motoring. Yet performance, coupled with noise and harshness is out of place in 1935, and, as a survey of design reveals, there is, in any case, no sign of deterior-

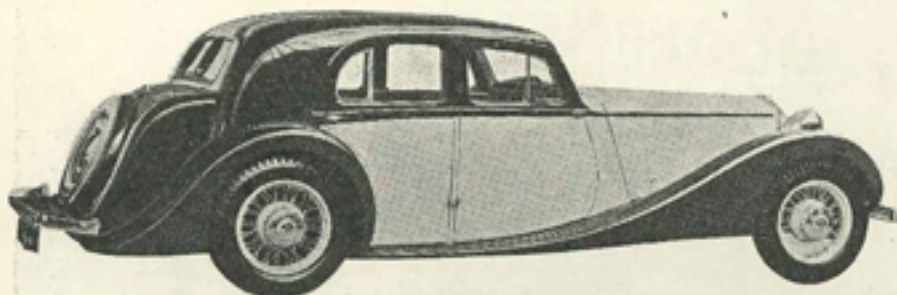
ation of mechanical excellence.

Another noticeable development is the increasing adoption of independent wheel suspension. This is particularly encouraging, because the public, demanding refinement, is becoming intolerant of harsh springing, yet obviously performance is quite seriously dependent upon a sense of absolute control at all speeds. The solution seems to rest with the abolition of the conventional axles.

In this country interest still centres very largely in the high-performance car of absolutely straightforward engine design, the necessary "life" obtained by careful attention to detail, and the essential qualities of smoothness, silence and durability kept continually to the fore. Bentley, Alvis, Talbot, Lagonda, S.S., M.G., Crossley and Siddeley Special, are amongst the British "marques" with models of this kind. Overhead valves are used

## THE TREND OF SPORTS CAR DESIGN

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The M.G. grows up! This is the attractive new six-cylinder two-litre saloon, nominal rating at 15 h.p. Priced at £375, this car offers the exacting motorist splendid value

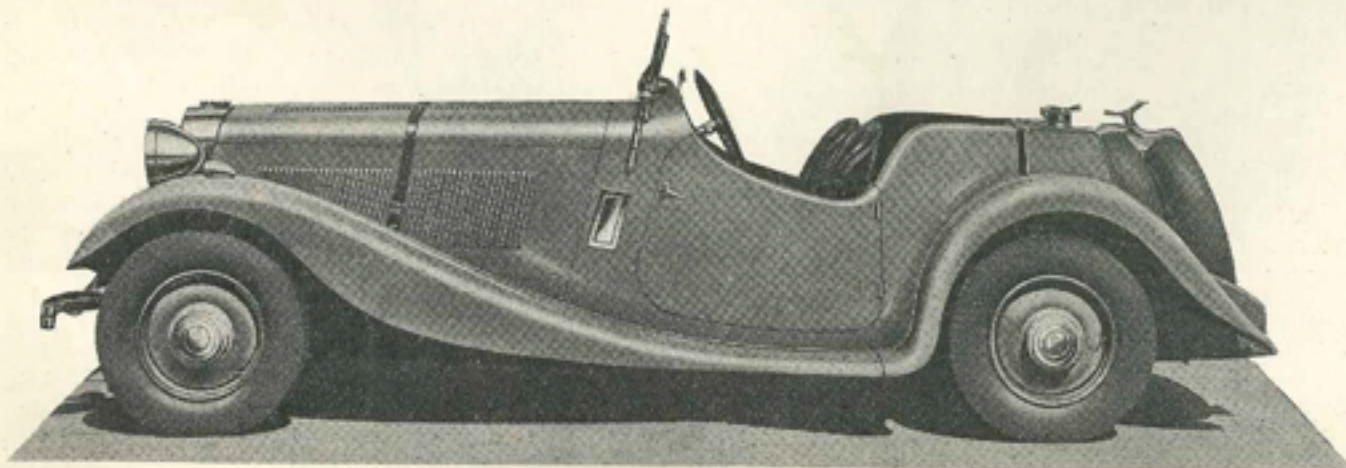
almost exclusively, operated by push-rods and rocking levers, a method that has proved suitable for extremely high-speed power units, and which renders tappet adjustment easy without complicating service routine. Engines of this type show a remarkable efficiency and unquestionably they are well suited to the latest requirements of sports car users.

The more highly developed sports car engine is not altogether neglected by English designers. Alta, British-Salmson, Rapier, Squire and Frazer-Nash have engines with double o.h. camshafts, and all the Riley models have inclined valves in hemispherical combustion chambers, though in this instance valve actuation is by the special push-rod system exclusive to Riley products. Many other engines come to mind in which a single o.h. camshaft operates the valves, Aston-Martin having a somewhat unusual head arrangement on their generally very advanced unit, and it has to be

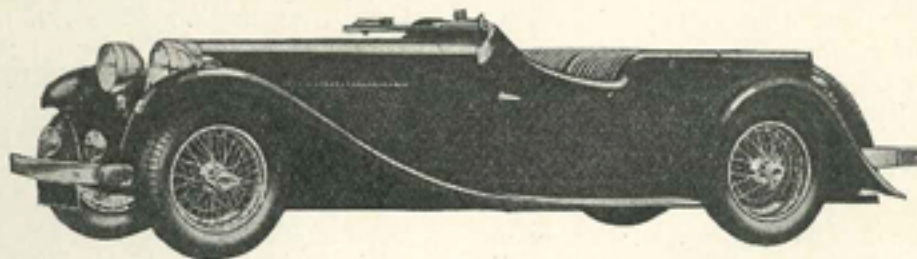
admitted that the more advanced engines *do* produce a truly creditable power output in relation to their size, while being less difficult to service than some people would have us believe. On the Continent overhead camshaft engines are by no means uncommon, and Bugatti and Alfa have double camshafts, driven, in the latter instance, from the middle of the crankshaft. The provision of this form of valve operation is simplified now that chain-drives can be both reliable and inexpensive, but it is worth noting that Bugatti, Alfa, British Salmson, Squire, M.G., Alta and others employ either a train of gears or a vertical shaft-drive. Novelty is otherwise entirely lacking, the ingenious drives once introduced by Bentley and Leyland having, apparently, failed to inspire other designers. Valve surge, rather surprisingly, still appears to present a problem, Alvis using nine grouped return springs per valve, and most makers resorting to at least

dual valve springs. It is a little difficult to accept o.h. camshafts with vertical o.h. valves, especially as tappet adjustment is usually complicated. On the other hand, it must not be thought that inclined valves inevitably necessitate double camshafts; Frazer-Nash, Singer, Lancia, etc., manage to provide high-efficiency head-shapes while operating the valves with but a single camshaft, and there is a very great deal to be said in favour of this layout; albeit in small engines space restrictions, in any case, seriously hamper ideal valve positioning. The superimposed arrangement has yet to attain the popularity predicted for it by certain technicians, though Crossley (on the Ten and 1½-litre), Marendaz Special, and Triumph, employ it to good effect.

Turning to engine types, the "Six" remains popular for sports car purposes, and on the Continent the straight-eight is widely used, in high revving, advanced form and also in the form of larger, lower speed engines for high performance luxury cars. Most of the Americans that we respect as possessing a very impressive performance are of the straight-eight variety, and an important development is the growing interest in "V" type power units, the even torque, compact combustion chambers, and convenient overall dimensions rendering "V" construction especially suited to sports chassis. The new V12-cylinder Rolls-Royce and the "V8" Riley unit

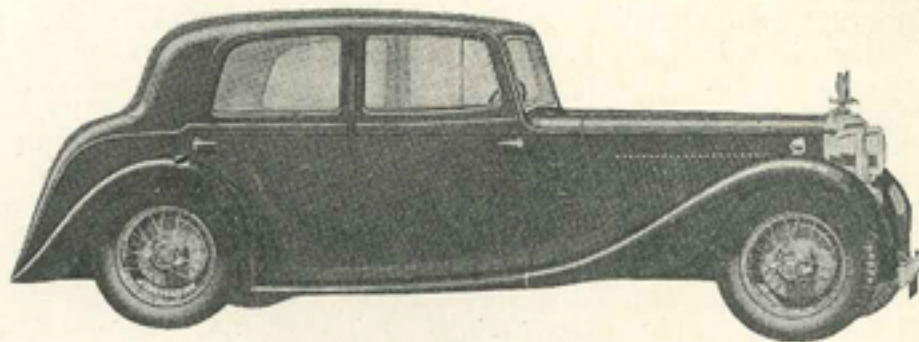


One of the best turned-out sports cars at Olympia—the smart 20/90 h.p. six-cylinder British Salmson Sports Two-seater, for which the makers claim a wonderful performance



Left—One of the greatest sensations of the recent Olympia Motor Show—the handsome S.S. Jaguar, for which a splendid performance is claimed

Below—The elegant Speed Twenty Alvis, one of this country's most popular quality sports cars



indicate that British engineers are not neglecting this type, while Hispano-Suiza, Lincoln, Daimler and Cadillac continue to sponsor the production of 12-cylinder engines of "V" formation.

Downdraught carburation remains popular, allowing as it does a big choke without promotion of "flat spots," and manifolding is now provided that is suited to this type of instrument.

Some makers still employ one carburetter for each pair of cylinders, three carburetter sixes being not uncommon, the aim being to obviate acceleration losses that result from inefficient distribution and impairment of volumetric efficiency consequent upon using long manifolds.

However, carburetters are relatively expensive components, and the increased fuel consumption and complicated throttle and mixture synchronization of multiple layouts must not be overlooked. Sufficient research has been carried out in connection with hot spotting to render single instruments on a "four" and twin carburetters on a "six" adequate for normal sports engines.

Supercharging makes disappointingly slow headway on production engines. This is surprising, because the stage has been reached when thoroughly satisfactory layouts can be sold at a profit for less than £30, these proprietary low boost sets giving a most beneficial performance improvement, and being approved by at least one big manufacturer of sports cars, providing pressures of 5 lbs. per square inch are not surpassed. Moreover, Auburn, Graham and Duesenberg make use of very high-speed centrifugal boosters, which are apparently proving perfectly satisfactory in the country of their origin, where very little patience is exhibited over "service" operations.

Amongst British makers Alta, Frazer-Nash, Lea-Francis, Marandaz Special, Squire and Vale, alone, use superchargers on their faster models, Squire being an exception in that a Roots blower features in all models of this high-efficiency 1½-litre chassis. On the Continent, Alfa retains the double Roots blower on the 2.9-litre, O.M. has two supercharged models, and on the "Type 500" Mercedes-Benz retain their famous "touring" layout incorporating a clutch-controlled Roots blower delivering air through the carburetter.

Compression ratios continue to rise generally, and very high pressures are used on certain side valve engines, alloy heads being now more in evidence for engines of this type. On the Continent the quality of pump fuel is restricting such development, and there is reason to think that here, and in America, the limit has practically been reached in production engines, and will now remain stationary until a further advance is made by the fuel people.

Alloy heads are now rid of troubles with inserted valve seatings, and experiments with plated combustion chambers and better water passages are engaging the technicians.

Light alloy engine construction generally is hampered by high cost, but the Siddeley Special engine is a representative example,

and A.C. use "wet" cylinder liners in an alloy block.

Crankshafts behave much better nowadays, because designers at last realise the vast importance of general rigidity and also pay more attention to individual crankshaft problems. Opinion is still divided as to whether a large number of main bearings should be used, or preference be given to fewer bearings of greater area. Though bearing loads and rubbing speeds have increased enormously, lubrication systems are now almost entirely satisfactory. The amount of oil passed through a bearing, rather than the pressure at which it is introduced, is now considered important. Adequate oil cooling will constitute an increasing problem as the vogue for modern body styles spreads in sports car circles, so that little air flows beneath the engine, and as extended use of light alloys promotes conduction of heat to the sump.

Undoubtedly the best solution is the provision of dry sump lubrication, as used by Aston-Martin since the introduction of their o.h. camshaft engine, and its present rarity is due to expense rather than the need for an additional oil pump, modern gear type pumps being essentially reliable. As things are at the moment, it is notable that sumps

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