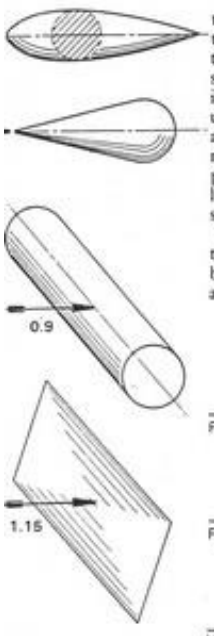
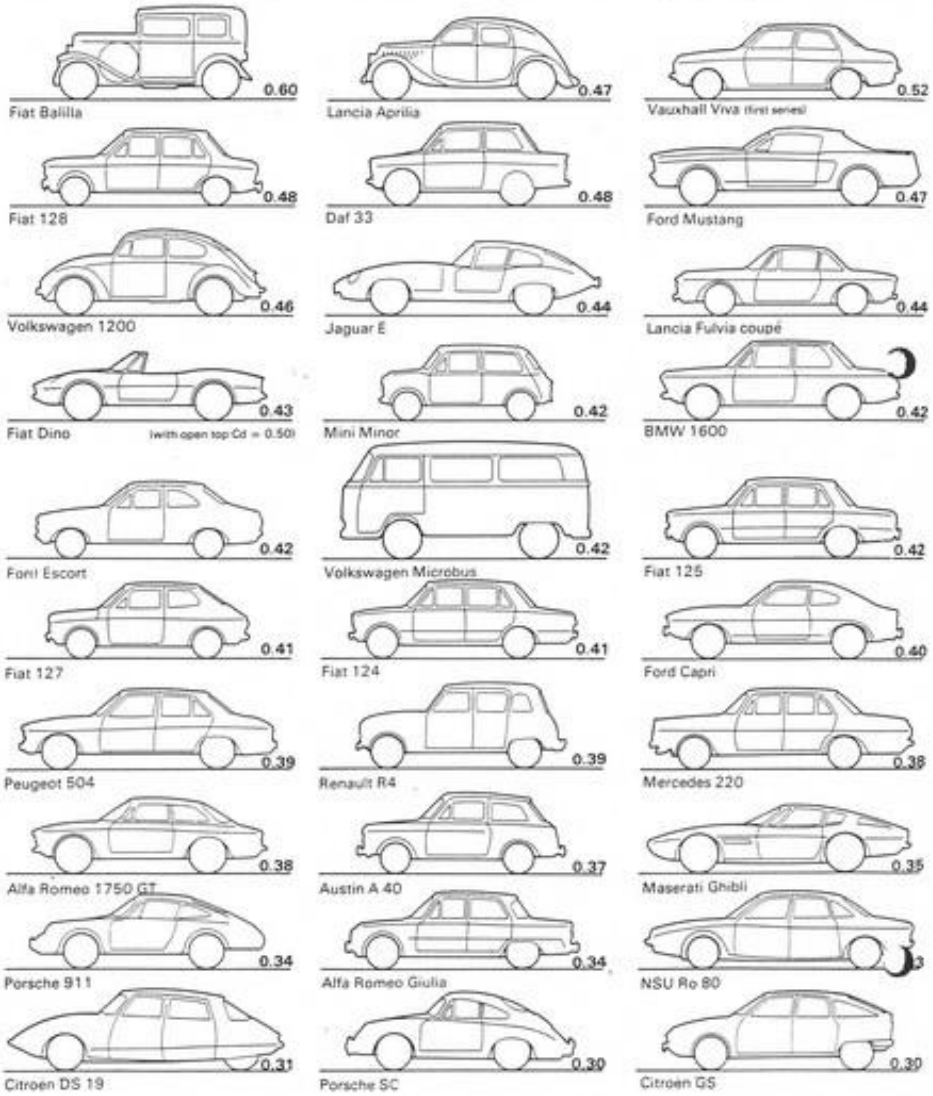


Cd figures for a symmetrical spindle-shaped body, a conical body, a cylinder and a flat plate. *Right:* Cd figures for a number of current production models, based on figures supplied by MIRA. Two pre-war vehicles are included for comparison: the 1932 Fiat Balilla and the 1937 Lancia Aprilia

the body surface) is free of turbulence. Second is turbulent flow, usually to be found downstream from the region of smooth flow, although this turbulence is still confined within the boundary layer. What happens is that at a certain point the layer begins to thicken until, reaching a critical combination of air velocity and viscosity (for air is a fluid), the boundary layer can no longer maintain its laminar nature. At this transition point the flow becomes turbulent within the boundary layer, although there remains a very thin laminar sub-layer actually in contact with the body surface.

The third type of airflow is called stalled flow, where the air just cannot follow the shape of the body at all but breaks away in eddies and causes a tremendous amount of drag. So long as the airstream has to accelerate over a body of gradually but steadily increasing cross-section, it will follow the contours closely. With a blunt or simply conical nose the acceleration is unsteady, and the airstream will break away at the first opportunity; the same will happen if it has to find its way around some protuberance, or if it has to close around a rapidly diminishing cross-section such as a sharply tapering tail.

Kamm's solution to this problem was brilliant: taking cooling air in at the extreme nose of the car where pressure was greatest, he ducted it carefully through the radiator and led it out again at the base of the windscreen where the pressure was about 55% of that at the nose. In other words, although this air was being exhausted into a high-pressure region (which



The article is actually from about 40 years ago, the principal detail being the auto Cd classifications are by MIRA, Motor Industry Research Association, now HORIBA-MIRA and still in Warwickshire, UK

Having taken an interest in the subject with regard to fuel consumption, the page was copied

to support an argument at work that a VW Beetle was less aerodynamic than a Combi and E Type Jaguars ‘hit brick walls’, the page having ultimately won the day.

The D and GS low drags were iterated in Citroen adds, however the GS didn’t realise the advantage in fuel use where I can only assume flat 4s have a breathing problem, as for Subaru petrols, because our sedan Ds consistently used less fuel than the GSs and was the same as my 5 speed Safari.
Cheers, Michael