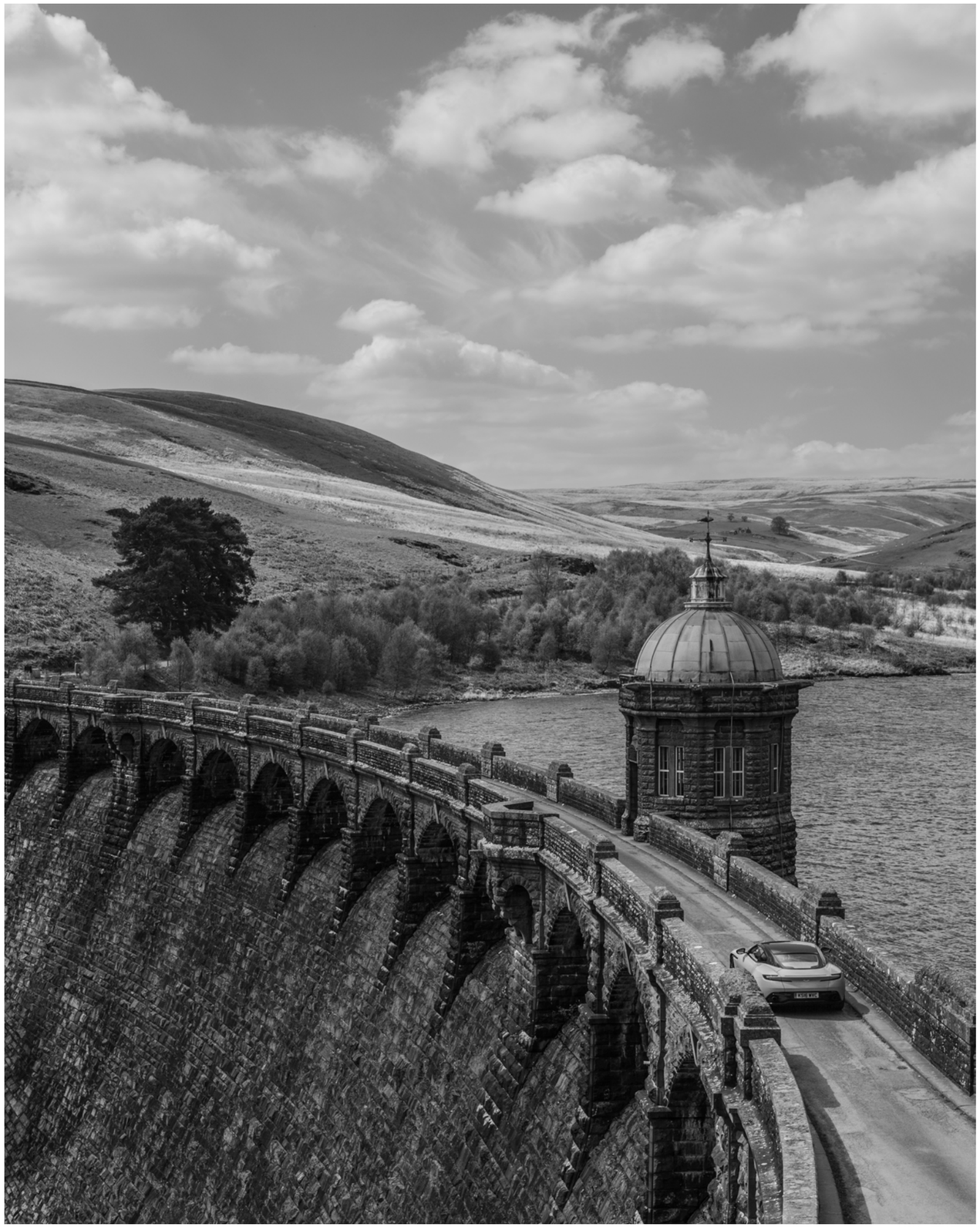

DB11

THE ART OF SOUND

Remember when you were still growing up and bought your first car? Mine was a Citroen AX GT, and once I'd fitted a stainless-steel exhaust system and air filter, re-jetted the carb and had it rolling-roaded, I turned my attention to the interior – well, the stereo!

First came a CD headunit, swiftly followed by a set of 6x9 speakers for the rear parcel shelf. I'll be honest: it was rubbish, the parcel shelf vibrated, as did everything inside and outside of the car. I had successfully managed to ruin a good car.

Nowadays, companies like Harman – whose in-car audio brands include Bang & Olufsen, Bowers & Wilkins, Harman Kardon, Infinity, Lexicon, JBL, Mark Levinson, Canton and Revel – spend time at a very early stage of a new car's design to ensure there's no real need for aftermarket in-car entertainment. Car stereos at all levels are now vastly improved; from the popular Ford Fiesta right up to the McLaren 720S, Harman works directly with manufacturers to create the perfect sound.

"The car is one of the most challenging environments for achieving great audio," says Arndt Hensgens, Harman's chief engineer for acoustics. "There's a huge range of materials to consider – plastic, cloth, leather and glass – that all reflect sound waves at different rates. Then you have the shape of the cabin to take into account."

WORDS AND PHOTOGRAPHY TIM HUTTON

"THE CAR IS ONE OF THE MOST CHALLENGING ENVIRONMENTS FOR ACHIEVING GREAT AUDIO"

ARNDT HENSGENS
CHIEF ENGINEER OF ACOUSTICS, HARMAN

Private Motor Club decided to take up the kind offer of an Aston Martin DB11 for the day to understand just how good a stereo can be. Foolishly, I expected maybe a subwoofer, two rear speakers and two front speakers, but in actual fact the DB11 has 13 loudspeakers as part of its Bang & Olufsen BeoSound system:

- **2x** / 19 mm tweeters – moving acoustic lenses *(front)*
- **1x** / 100 mm centre midrange *(front centre)*
- **1x** / 19 mm centre tweeter *(front centre)*
- **2x** / 100 mm midranges *(front door)*
- **2x** / 165 mm woofers *(front door)*
- **2x** / 19 mm tweeters *(rear door)*
- **2x** / 100 mm midranges *(rear door)*
- **1x** / 200 mm subwoofers *(rear)*

Each speaker is mounted in a closed cabinet to optimise the sound performance, while a 1000-watt BeoCore amplifier provides the power – but it's so much more than a power war. So, how long did it take to develop this new system? Greg Sikora, senior manager of acoustic systems engineering within Harman's car audio division, explains:

"We've been working with Aston Martin for the last three years to define the new Bang & Olufsen system for the Aston Martin DB11. Many different configurations and designs have been proposed and discussed before we came to the current setup, which we believe is a new benchmark in the market.

"During development, we talked a lot about speaker placement, size of speakers and the cabinets behind, as well as the visual elements. The design process is a compromise between following the design language of the car and being a true Bang & Olufsen system design.

"For testing, Harman has created a system called AuraVox, which helps to rapidly and efficiently complete the first 80% of the testing task. It was developed in-house over five years and is extremely effective. It uses 24 microphones to measure the sound inside the car, sending this information to the AuraVox software that automatically evaluates hundreds of parameters and independently generates the appropriate filters, corrects speaker delay differences and sets optimum volume levels of individual channels.

"The final part of the development is the sound tuning, where our acoustic engineers spend around seven weeks fine-tuning the system. The first four weeks are spent on static tuning in our facilities, then we begin the dynamic tuning, which we do in Germany on the Autobahn; this lasts around three weeks. It's not necessary to drive fast, but to test the system effectively we need to drive slowly, accelerate and then brake again, so we need to find areas where we won't disturb the traffic. This is all to ensure that all aspects of sound quality are perfect, no matter what your driving style is."

Sat inside, the interior of the DB11 is a visual treat: the speaker grilles have been milled and turned out of a solid block of aluminium, and they perfectly compliment the luxurious trim in the Aston. Behind the front seats and nestled between the two rear seats is the subwoofer. The new location looks great, but also helps to deliver a balanced sound (previous systems had the subwoofer under the seat).

Driving across the border into Wales and on to some of the UK's best driving roads, what really impresses is that the sound characteristics are preserved. The system compensates for acceleration and movement, providing an uninterrupted audio experience. It's very effective as we start to push the car harder.

This could all easily sound like marketing blurb, but back in March at the Geneva Motor Show, we spent time with Greg Sikora as he talked us around the interior of the DB11, explaining how each speaker was positioned after months of research. Each car interior presents a new challenge and the sleek, curvaceous DB11 cabin had around 15 engineers working on it during the design process. These included system architects, as well as mechanical, software, hardware, acoustics, quality and production engineers. That's around 14 more than I had when modifying my Citroen AX GT – and the results show!

"Each engineer has their favourite playlists focusing on different aspects of sound reproduction, such as dynamics, tonal balance, tactile impact, stage width and depth, low-frequency extension, brilliance and voice intelligibility," says Sikora. "Very often we use Hotel California by the Eagles or Bird On The Wire by Jennifer Warnes, mixed by George Massenburg. During the dynamic tuning stages, we use similar tracks as static tuning and some additional ones featuring a wide dynamic range. The ultimate goal of dynamic tuning is to maintain the same sound experience whether driving slowly in the city or at high speed on the race track."

Funnily enough, we also listened to Hotel California during our trip to Wales, as well as some electronic music with a heavy bass, Miles Davis' Kind Of Blue and some of Chopin's Nocturnes. Across all genres of music, the system responds really well – so it's disappointing when I have to bring the car back to Gaydon and get back into my BMW, which has no stereo at all!