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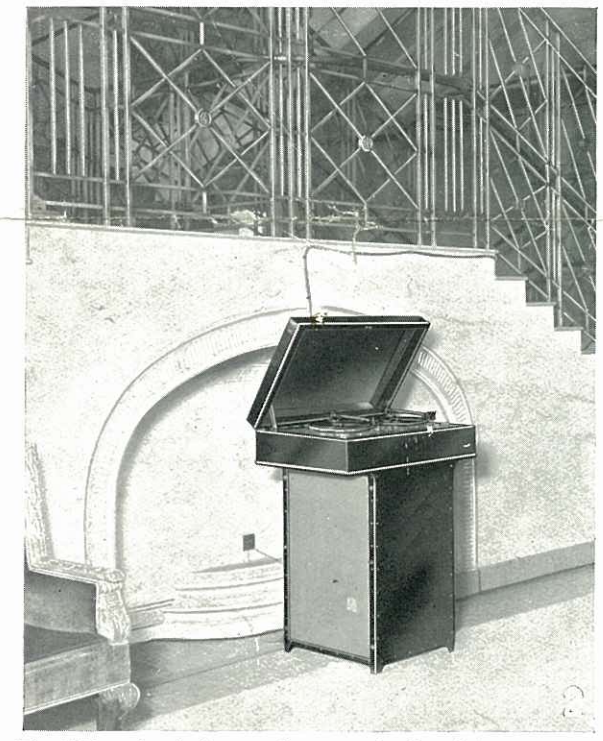
Audio-Frequency Amplification

Securing Great Volume without Distortion
An Outstanding British Engineering Triumph

By GERALD WHARTON

There has been no more important development in the history of sound recording and reproduction than the perfection of electrical methods in both branches. The introduction of electric recording was the first big step forward ; electrical reproduction followed as the natural corollary. But while electrical reproduction was universally admitted to be immeasurably better than the old, direct, mechanical method, there are, even to-day, many experts who uphold the merits of straightforward acoustic reproduction with a diaphragm soundbox and a long, external logarithmic horn.

Such apparatus, however suited it may be to the domestic gramophone (and it does, undoubtedly, give amazingly faithful results), is quite unsuited to the public and entertainment uses of the gramophone and its developments. In both theatres and cinemas, the use of records for musical interludes, effects, and so on is now general, the music being amplified through the usual valve circuit and loud speakers. For non-sync. installations in cinemas, the talking-picture equipment is usually utilised.



The " Pamphonic " reproducer at the Dominion Theatre.

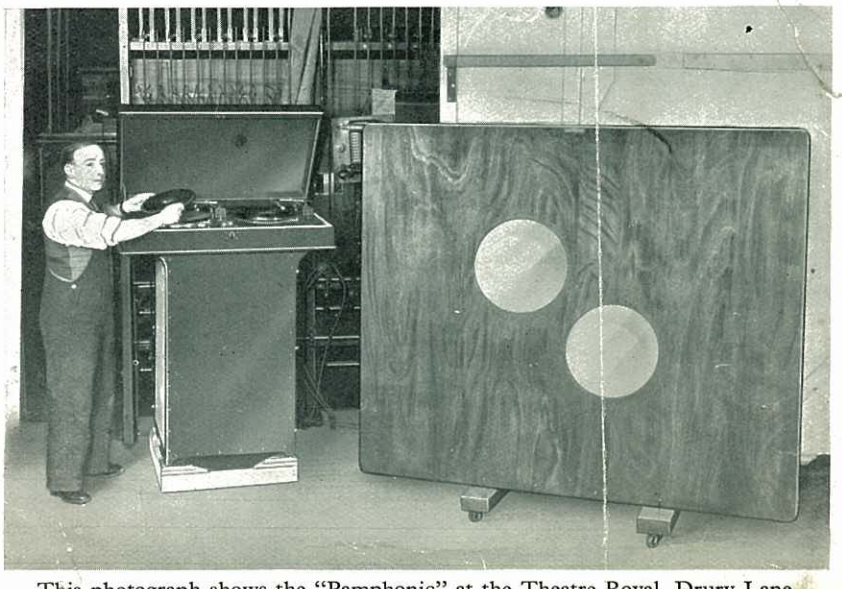
The quality of such electrical reproduction, improved though it has been during the past few years, admittedly leaves much to be desired. Most electrical reproduction is " bottom heavy " ; that is to say, the bass register is somewhat distorted and overpowering, while the extreme upper register is slightly deficient. It is a remarkable fact that even apparatus showing, on laboratory test, a straight-line response curve has this effect on the trained and susceptible musical ear.

Not long ago, a young British engineer commenced an exhaustive analysis of the problems of electrical amplification of audio frequencies. He freed his mind of all accepted conventions, and virtually started *de novo*. The aim was to produce an apparatus that would give perfection in all kinds of musical and speech reproduction. Problems of price and commercial development were definitely excluded until the basic design and principles had been fixed.

At the Strand Theatre the " Pamphonic " reproducer has satisfactorily replaced the orchestra.

The result is the " Pamphonic " reproducer, which has met with an enthusiastic reception from expert technicians, the entertainment industry, and the music-loving public alike. This apparatus has quite remarkable characteristics, and, for the first time, gives electrical reproduction absolute reality. By ingenious design, the bugbear of the acoustic designer in the past—the need for compromising between amplitude distortion and frequency distortion—has been avoided, and the circuit is so compensated that it gives absolutely undistorted reproduction at any volume, from a whisper to the equivalent of four large orchestras. Not the least noteworthy technical achievement is the way in which transients are caught and reproduced ; this is one of the major reasons for the actuality of " Pamphonic " reproduction.

Demonstrated at an early stage to many of the leading men in the entertainment world, and accorded a great deal of



This photograph shows the "Pamphonic" at the Theatre Royal, Drury Lane. In Noel Coward's " Cavalcade " all sound effects are reproduced from specially made gramophone records and amplified by this electrical reproducer.

praise, the "Pamphonic" has completely justified the claims made for it by its performance in the Cochran production of Noel Coward's spectacular *Cavalcade*. It is probable that very few of those who have witnessed this play realise that the crowd scenes, the passing of Queen Victoria's cortege, and other "noises off," are reproduced from specially made gramophone records. Even one of the most critical of writers on the gramophone has been forced to admit that, even when he knew records were being used in *Cavalcade*, he was unable to detect them by ear alone. "....I doubt," he adds, "whether I have ever been deceived by an electrical reproducer in any other theatre." (*The Gramophone*, December, 1931.) Major Christopher Stone, the well-known critic, writing in the *Daily Mirror* in October, 1931, said: "....I have never heard such clean reproduction at such enormous volume."

The success gained here and at the London Coliseum in *White Horse Inn*, where the problems to be solved were even greater, was an incentive to other theatre managements, and "Pamphonic" reproducers are now installed in some dozen of the leading West End theatres, where they are used to replace the orchestras with the most satisfactory results.

A model for household use.

That this apparatus represents a magnificent achievement in the intricate science of electro-acoustics is unquestioned. What is hardly less remarkable is the fact that the "Pamphonic" has been marketed at so strikingly small a price. There are two models, the Senior and the Standard, and each gives the same perfection of reproduction, the only difference being that the smaller type has only one turntable and half the power and is suitable for household use. Details may be had from the manufacturers, Messrs "Pamphonic" Reproducers Ltd., of 36 Albert Road, Regents Park, N.W.8, or from the sole concessionaires, Messrs. Keith Prowse and Co. Ltd., of 159 Bond Street, London, W.1, where demonstrations can be arranged. As a technical triumph and as an aid to better entertainment, this reproducer deserves the closest investigation by theatre managements, sound engineers, and all whose work demands a close knowledge of advance sound amplification.

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