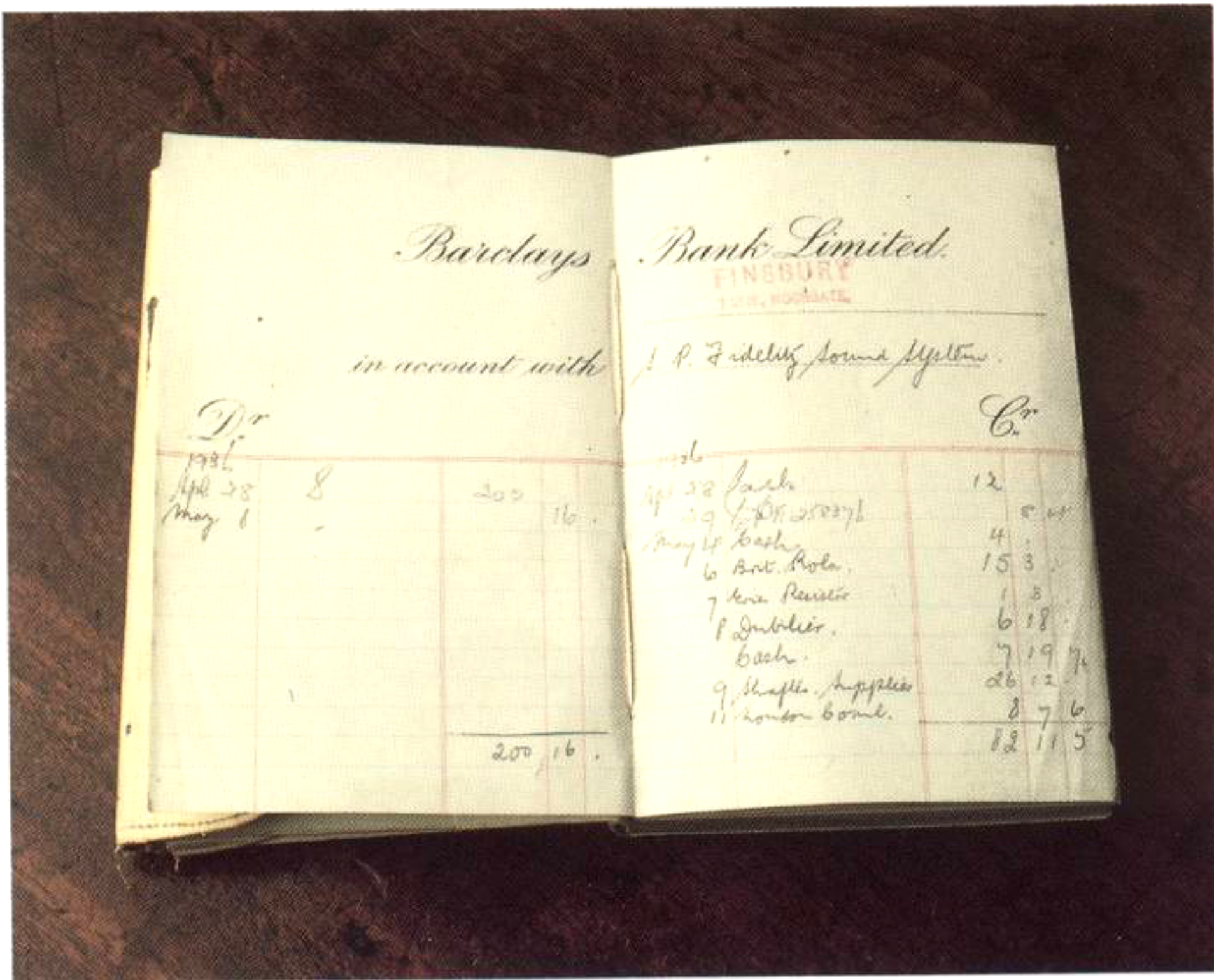


QUAD

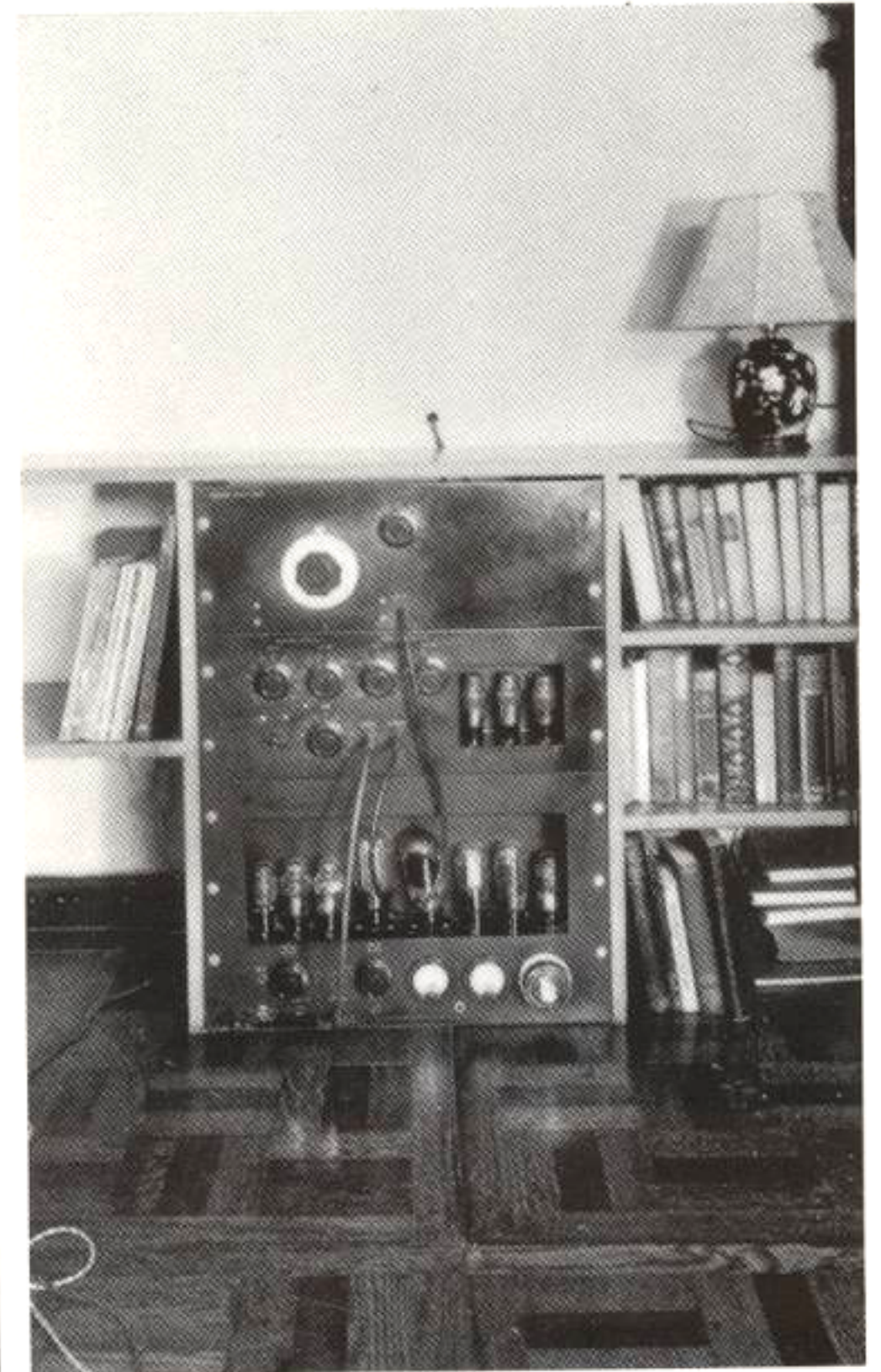
THE FIRST FIFTY YEARS

Early Days; London 1936-41

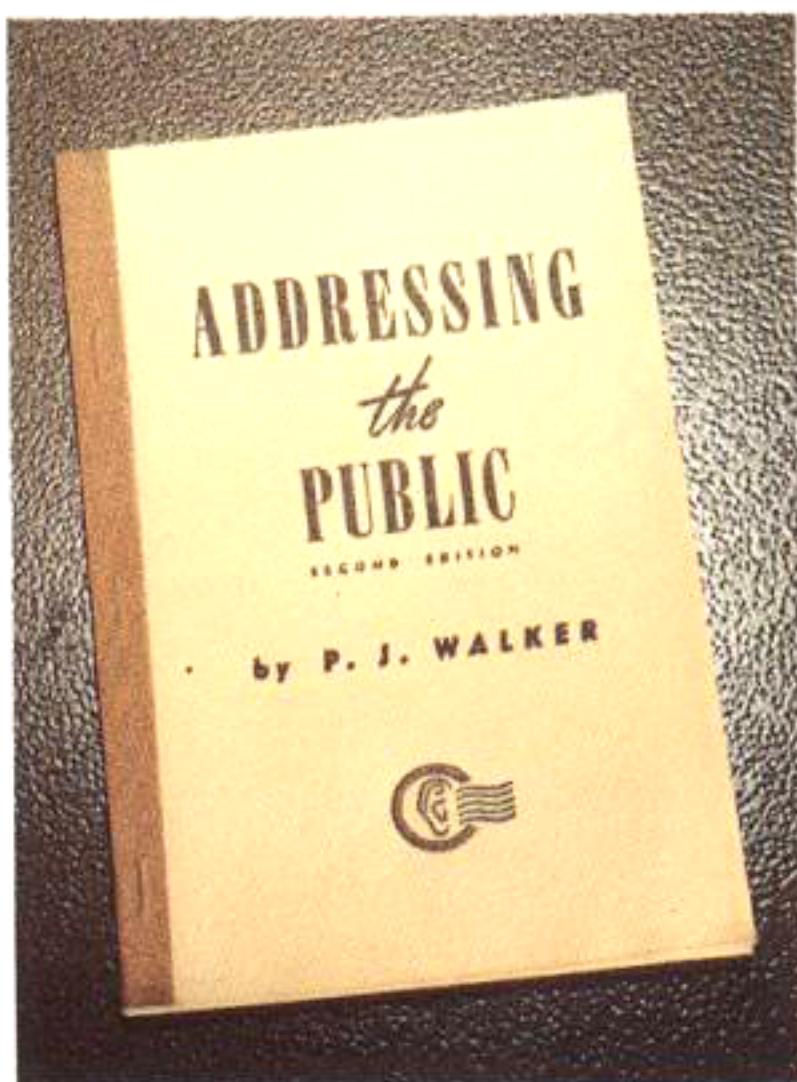


1936. Pass Go. Collect £200. S.P. Fidelity Sound Systems became The Acoustical Manufacturing Company later the same year.

1939. Direct coupled class A power amplifier with separate pre-amplifier and tuner.



The C25. Wireless World wrote: "This amplifier shows refreshing originality in design."



Reproduction of music on narrow throat horn loudspeakers is not advised unless the horns are of considerable size. Such loudspeakers, however, can be used in conjunction with flare fitted cabinet types, care being taken to distribute the frequency response over the audience as evenly as possible. It is nearly always essential to reduce the bass response delivered to horn loudspeakers.

Wind is an element which frequently ruins what would otherwise have been a good performance, and unfortunately, not always being predictable, due allowance cannot always be made. The effect of variable wind in any direction will be to cause considerable fading and this effect will increase as the distance between the listener and the loudspeaker increases. If the wind is gusty therefore, place the loudspeakers as near as possible to the public, even at the expense of even distribution.

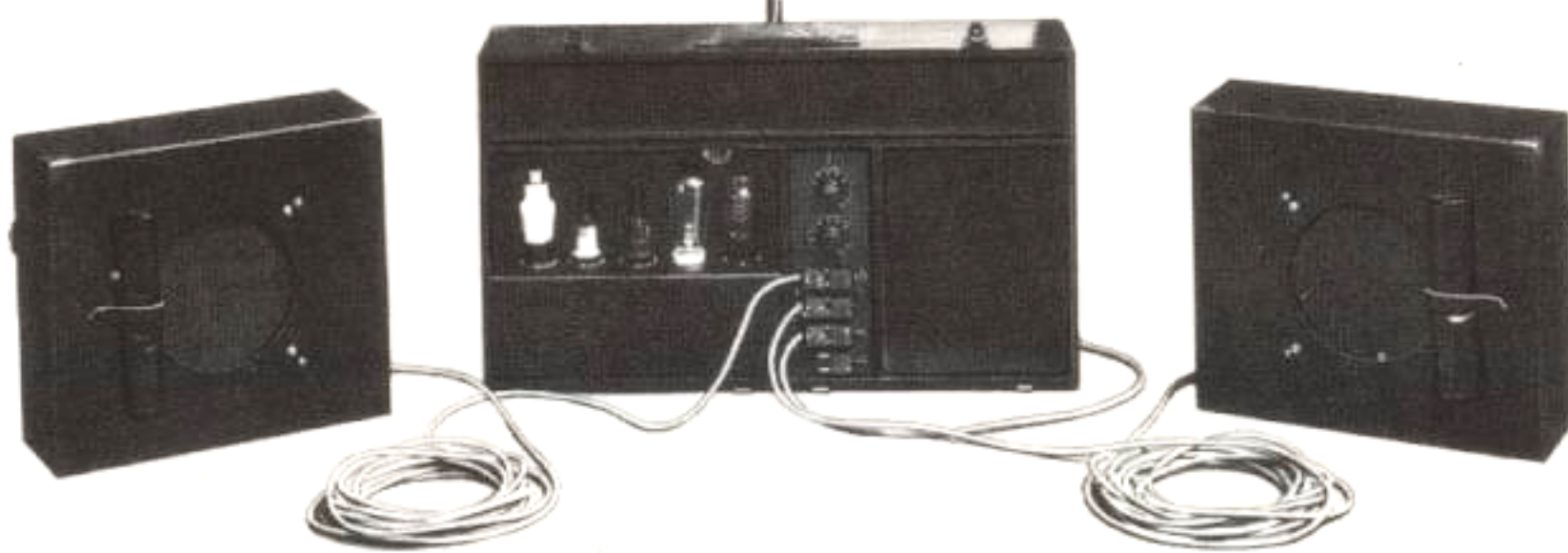
If a sound is projected downwind, the effect will be to bend the sound waves towards the ground and vice versa. With a steady wind, therefore, this may be taken into account where the tilt of the speakers is concerned.

The loudspeakers should always face downwind if there is a choice. Sound projected upwind will be bent upwards and will be lost. If the power is increased to overcome this, then the public near the loudspeaker will receive far too much volume.

Wind has a very bad effect on certain types of microphones, mainly Ribbon and Moving coil types. This can be largely overcome by fitting a cage over the microphone covered with a suitable material such as silk. A spherical cage is more efficient than a cube. Two layers of material,



Wind... frequently ruins performance



A portable P.A. system circa 1938.

HUNTINGDON GIRLS AIDED UNDERGROUND MOVEMENT

Turned Homes Into Workshops

RADIO sets dropped by parachute by R.A.F. planes to European underground resistance contained components manufactured in Huntingdon. Thirty-four local girls in one of Britain's most important war industries rose nobly to the occasion in Europe's darkest days. They volunteered to work double shifts to produce radio components for the apparatus which enabled the underground movements to keep in touch with the resistance.

The war years.

Reprinted from THE WIRELESS WORLD, August, 1940.

The C25 Acoustical Amplifier

A COMPACT UNIT SUITABLE FOR MOBILE EQUIPMENT

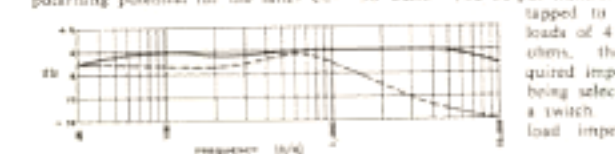
IN most PA work compactness and portability are considerations which play an important part in the choice of equipment. There must be few amplifiers of comparable specification which occupy as little space as the Type C25.

The Type C25, made by the Acoustical Manufacturing Co., 201-205, Lever Street, London, E.C.1. Weighing only 18 lb., its dimensions are 14 x 7 x 7 1/2 in., yet it has a power output of 30 watts, is provided with separate channels for high and low impedance inputs (for carbon microphones) and may be run from either a 12-volt car battery or AC mains.

Three double-triode valves provide the push-pull output stage and the circuit is briefly as follows. The two halves of the first valve function as separate first-stage amplifiers for the high- and low-impedance inputs. A polarizing potential for the latter circuit, which is provided by the second triode valve functions as a further stage of straight AF amplification, with a resistance-capacity tone control across its grid circuit. The second half effects phase reversal for the input to the KT66 push-pull output valves. When worked under class AB1 conditions with 400 volts in the plate there have a rated output of over 30 watts. The output transformer is tapped to match loads of 4 or 15 ohms, the required impedance being selected by a switch. Other load impedances



Acoustical Manufacturing Co.'s Type C25 amplifier.



(Above) Frequency response curves of Acoustical Type C25 amplifier. The dotted curve shows effect of full use of the tone control. (Right) Input-output curve of Acoustical Type C25 amplifier. With direct connection to the grid cap of the first stage 30 watts is obtained for an input of 0.0055 volt.

cut, which is provided.

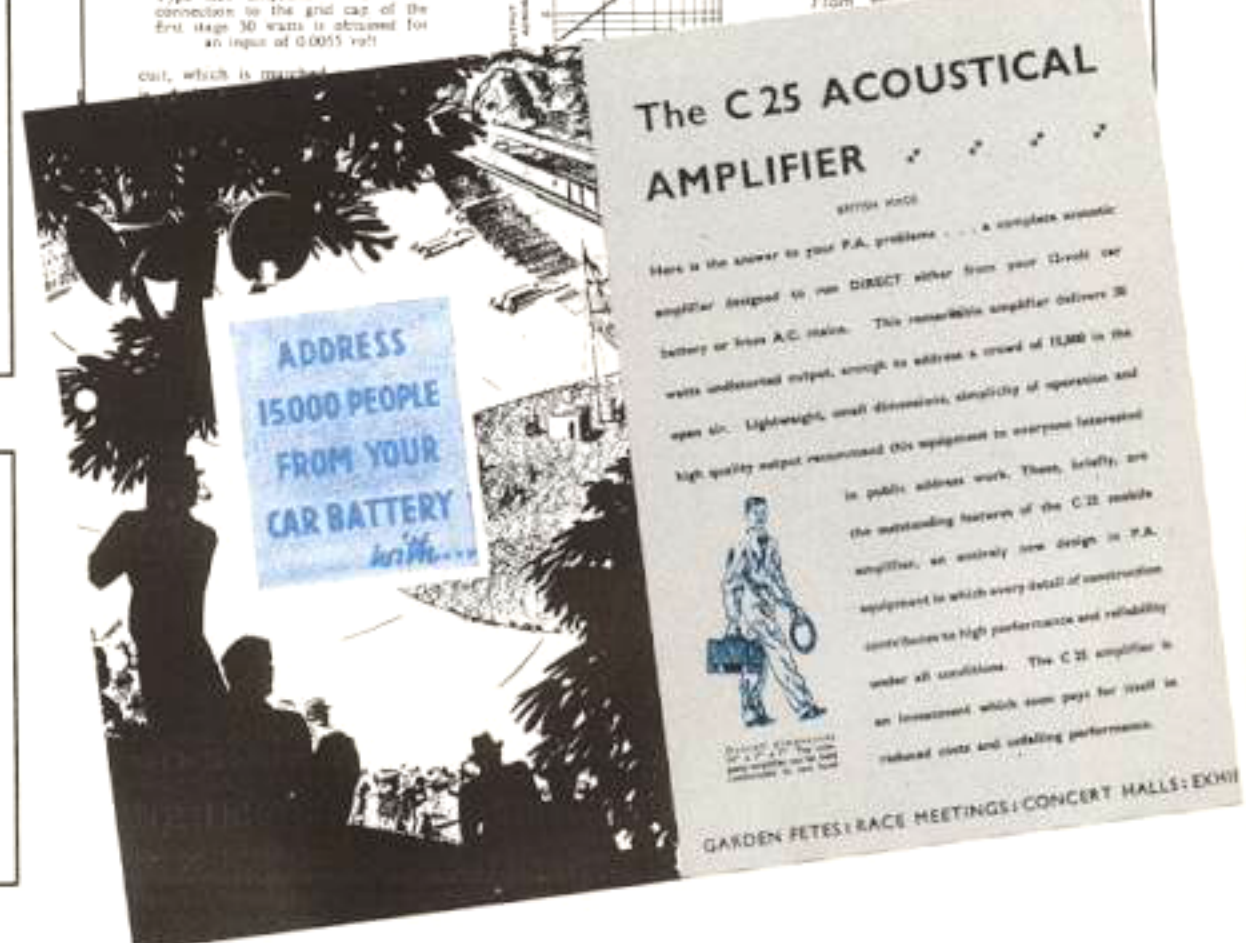
vided in the main transformer for AC mains or the vibrator input. The vibrator is not of the synchronous type and its output is rectified and smoothed by the mains equipment. The circuit connections for mains or battery operation are changed by means of a six-pin plug fitting into either of two sockets. No damage will result if the plug position does not happen to accord with the type of supply when the amplifier is switched on.

On test the amplifier gave 20 watts without any trace of distortion being revealed either by the input-output curve or the cathode-ray oscilloscope. Subsequently it was discovered that the mains and consequently the HT voltage were down, and there is no doubt that if this point is given the attention it requires the full rating of 30 watts will be obtained. Full power is given for an input of 0.0055 volt RMS in the grid of the first valve. In the amplifier tested, the high-impedance input was connected to the grid of the second stage for gramophone reproduction with normal pick-ups, and in this case the input required for full power was 0.072 volt RMS.

The measured frequency characteristic showed a loss of less than 3 db at 30 and 10,000 c/s with the tone control turned fully clockwise. The curve obtained at the other extremity, and with the maximum top cut, showed a steady fall of about 15 db between 600 and 10,000 c/s.

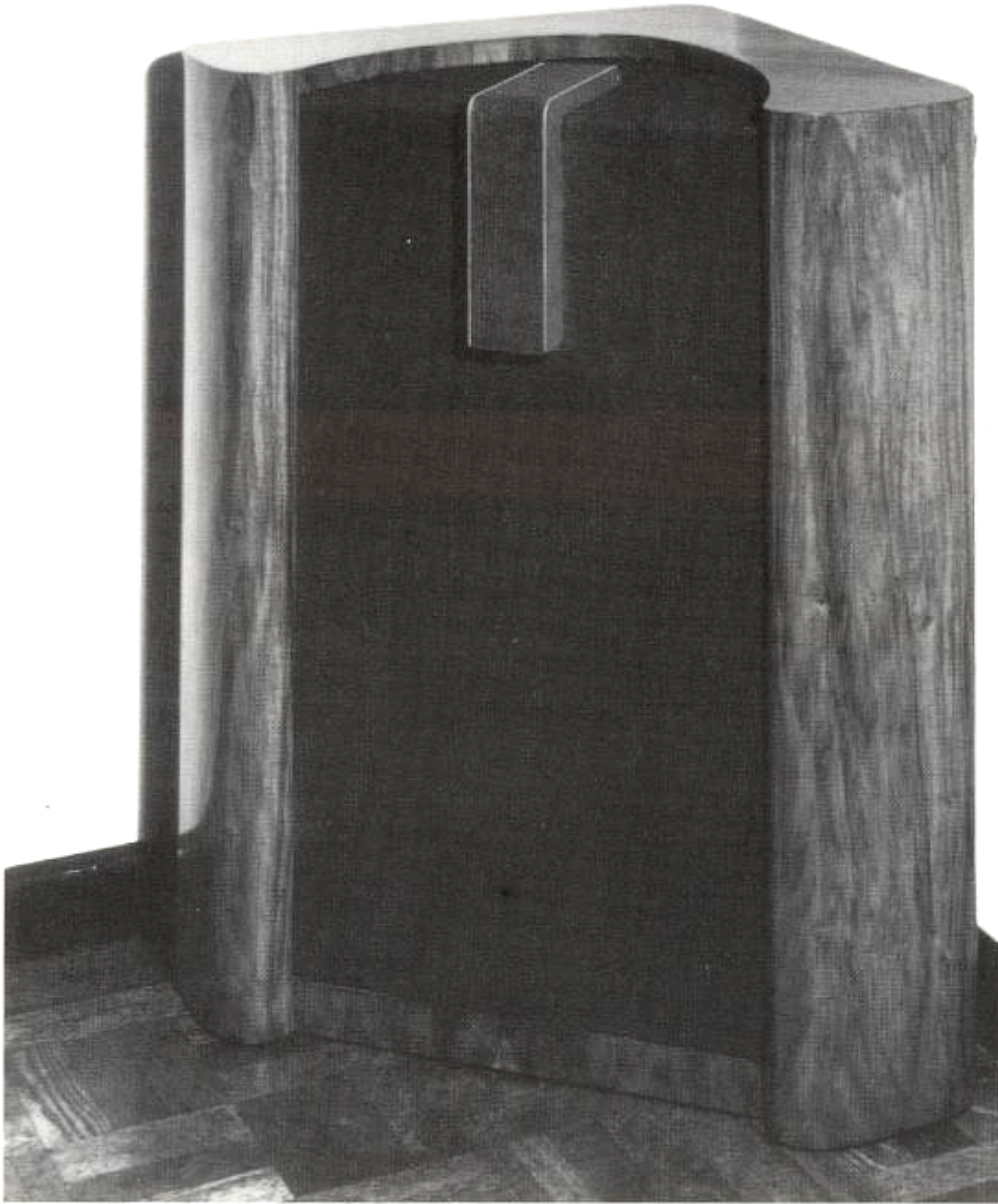
On a 12-volt car battery the amplifier took 8 1/2 amp and its performance was in every way comparable with that in AC mains. The vibrator unit was quiet both electrically and mechanically. A switch is provided to break the HT circuit and economize current during intervals between announcements, while keeping the valve heaters ready for instant use.

From...



Huntingdon 1941-1956

The Corner Ribbon Loudspeaker 1949. "Outstanding performance" wrote Wireless World. The horn loaded ribbon tweeter reproduced higher frequencies than any other loudspeaker of its day.



1949, QA12/P, the father of Quad.



"We do like to be beside the seaside." The work force on a day trip to Great Yarmouth.

*10—Saturday, June 11, 1955.

Triumph at Royal Festival Hall

A capacity audience of 3,000 filled The Royal Festival Hall on the afternoon of 21st May to hear Mr G. A. Briggs, author of "Loudspeakers" & "Sound Reproduction", and designer of "Wharfedale" loudspeakers, give a lecture-demonstration on sound reproduction with comparisons between "live" and recorded performances of music.

The proceedings were enlivened by the personal appearance of three world-known British Concert Artists whose brilliant performance on a Steinway Pianoforte, a Harpsichord and the Festival Hall Organ were matched by reproductions of identical Works previously recorded by themselves.

During the performance several change-overs were made from "live" to reproduced sound and vice versa but it was generally agreed that it was difficult, if not impossible, to detect any change in the take-over.

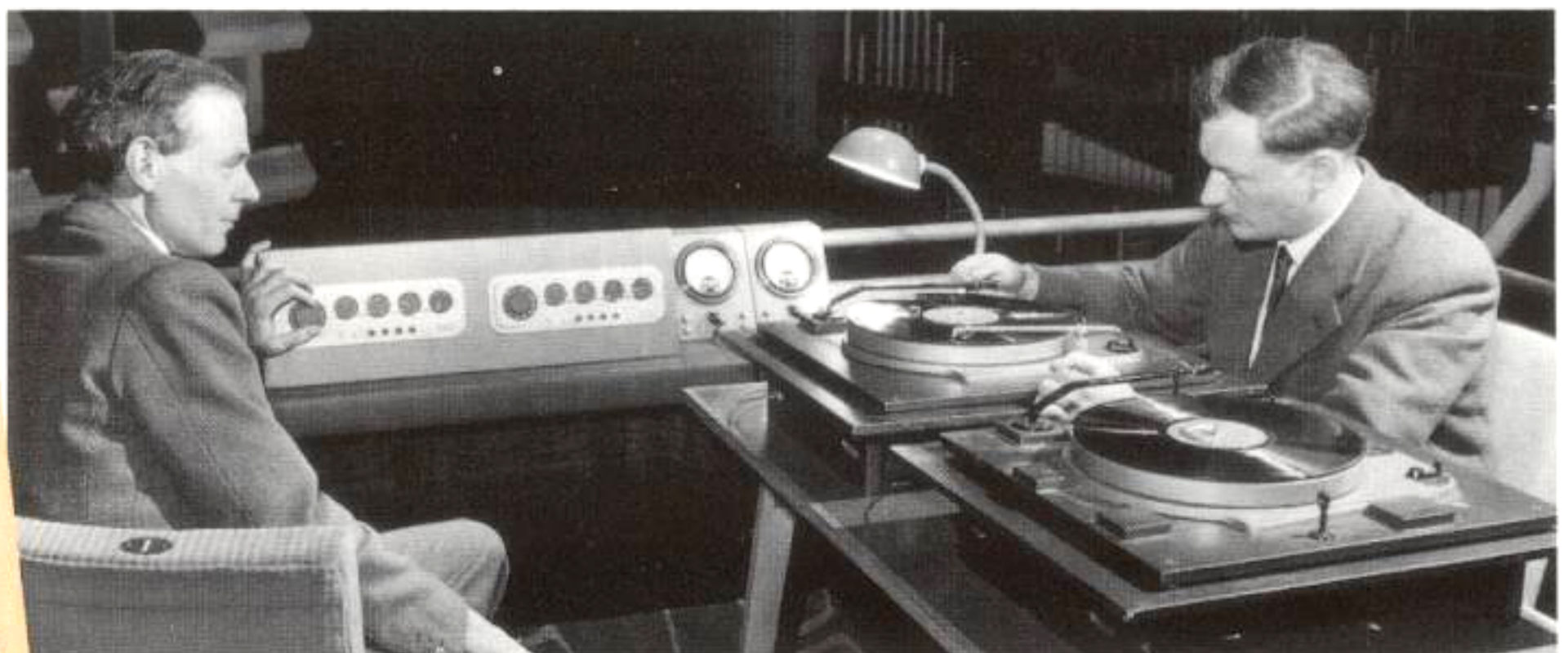
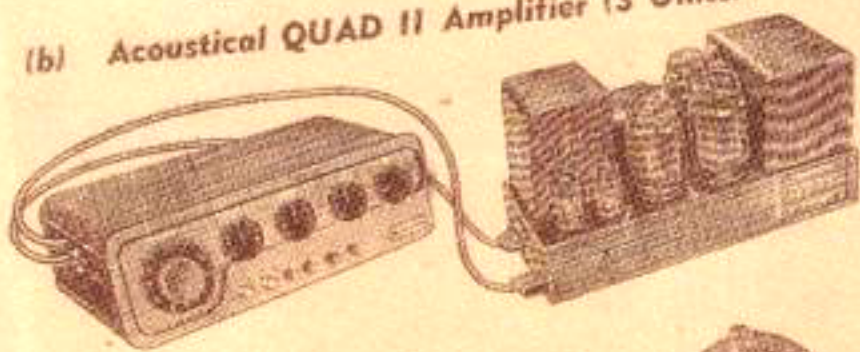
Excerpts from a number of commercial records were played and received with great enthusiasm by an audience whose consensus of opinion was that a new level had been set in the standard of reproduced music.

Amongst the equipment used in this searching and courageous experiment were—

(a) The Ferranti Ribbon Pickup



(b) Acoustical QUAD II Amplifier (3 Units)



A series of live versus recorded music concerts, given by Gilbert Briggs of Wharfedale using Quad amplifiers, filled the Royal Festival Hall in London and the Carnegie Hall in New York. Peter Walker (left) at the controls and John Collinson also of Quad at the turntable.

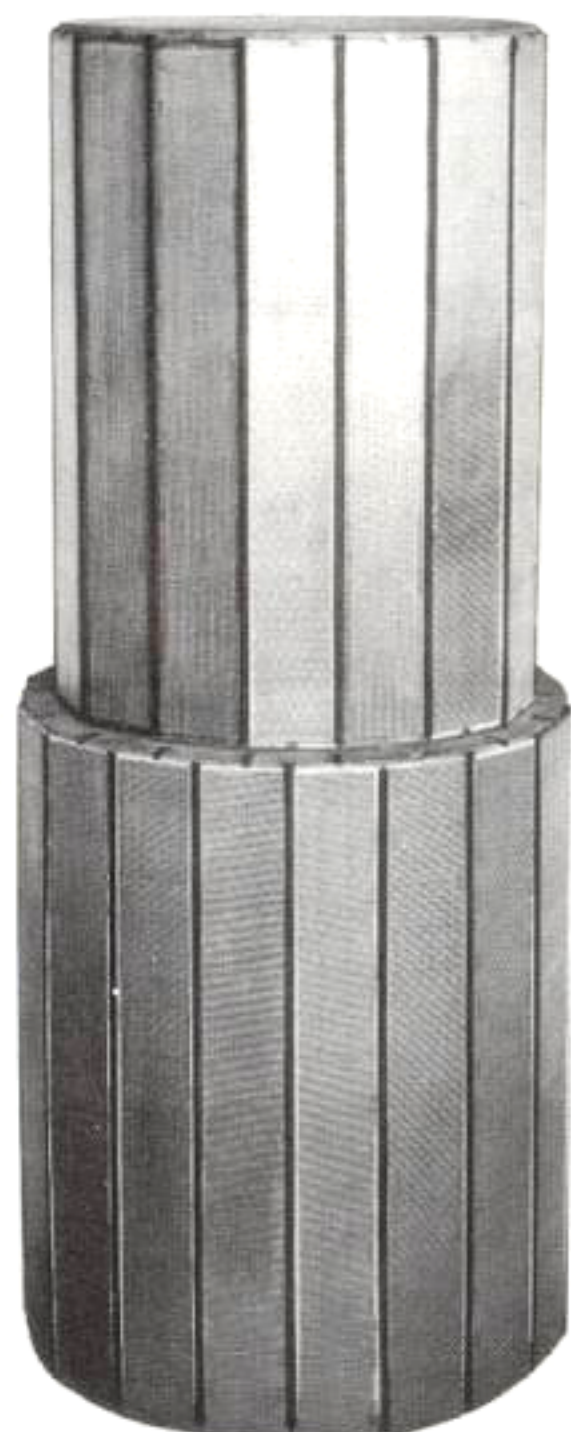


The Quad II (Quality Unit Amplifier Domestic) control unit and Quad II power amplifier.

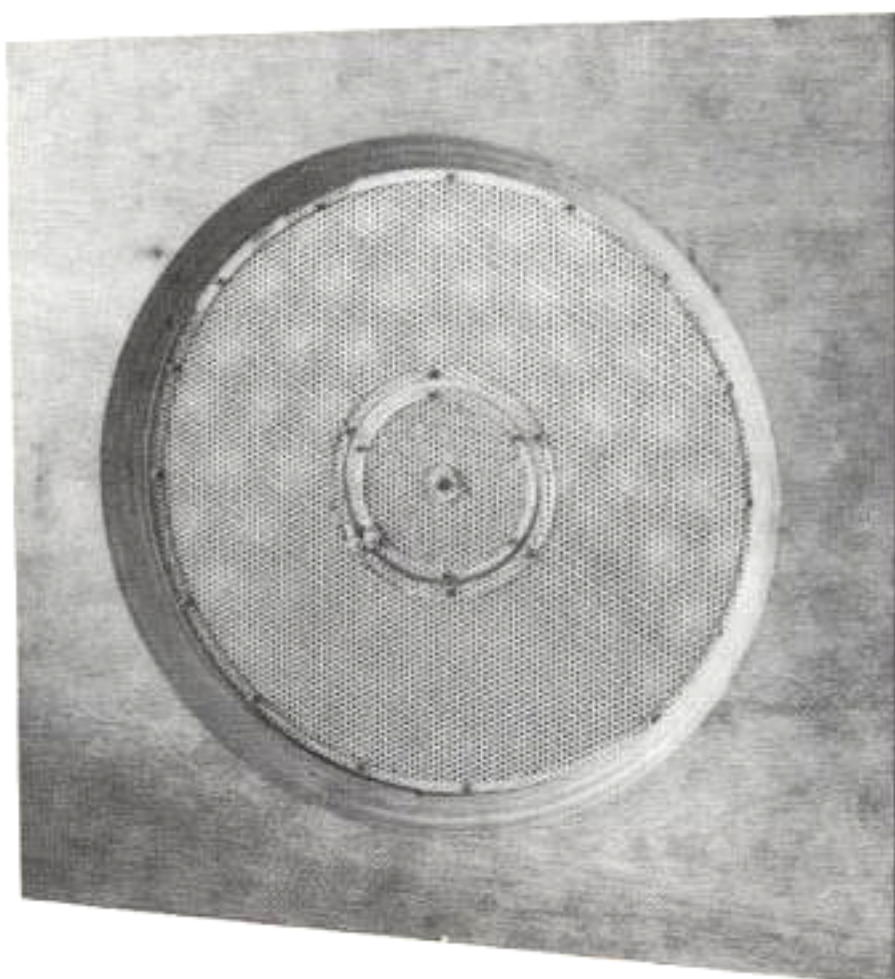
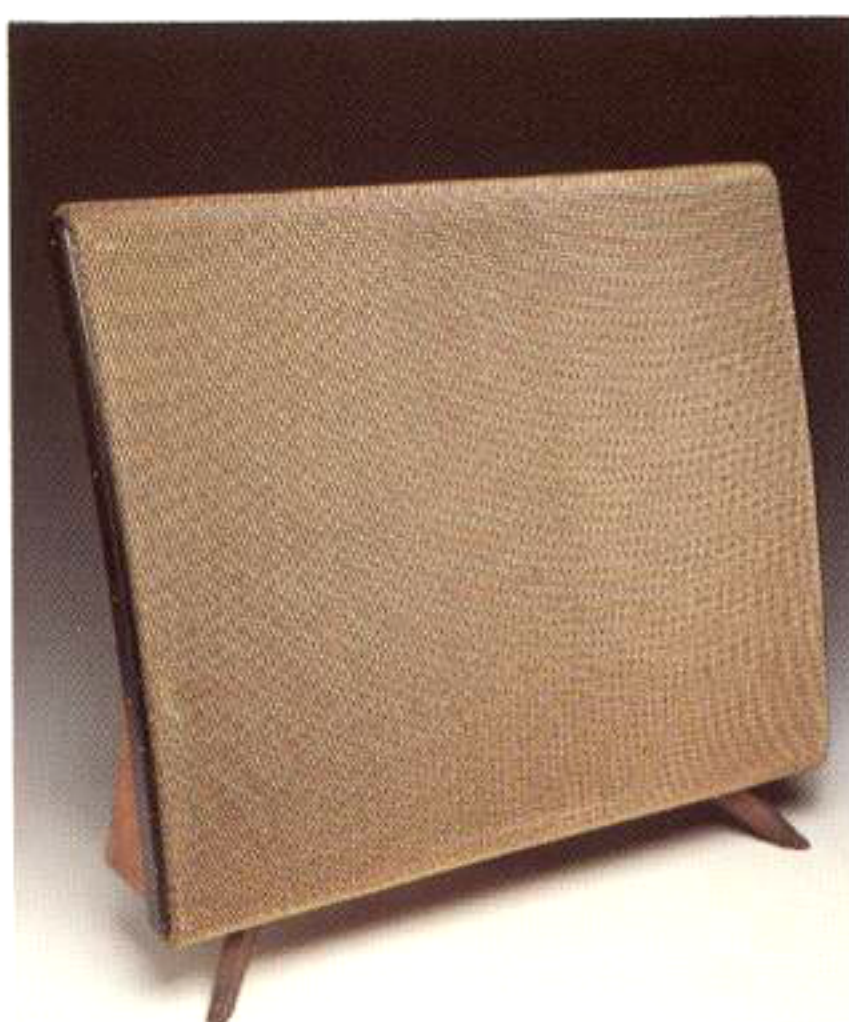


1957-1966 – Stereo and the first Electrostatic Loudspeakers

The world's first full range electrostatic loudspeaker. "Walker's Little Wonder."



Early experiments in electrostatic loudspeakers.

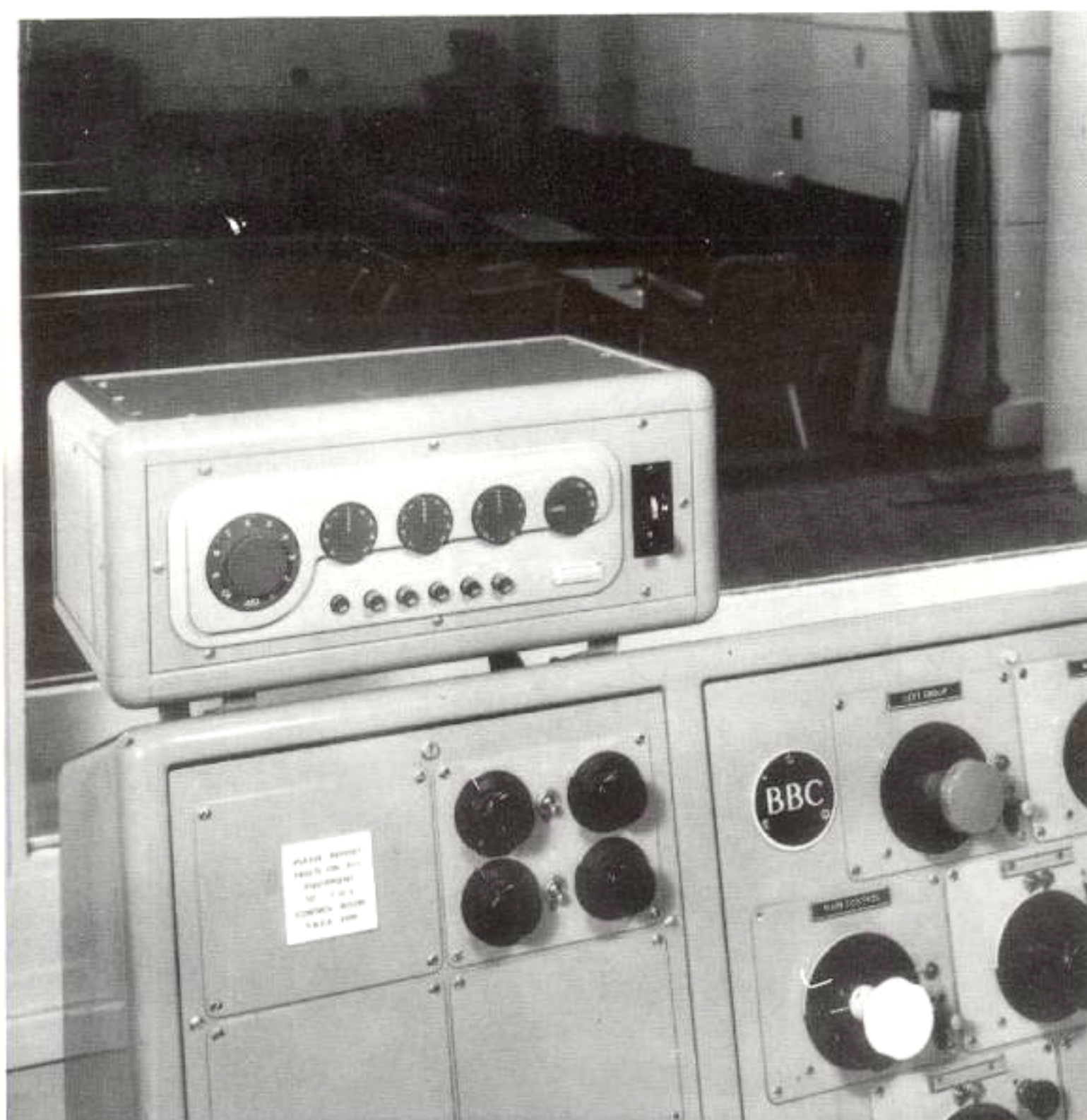


A 'typical' British living room 1957. Heals designed the furniture and curtains.

Stereo. The Quad 22 and FM stereo tuner.



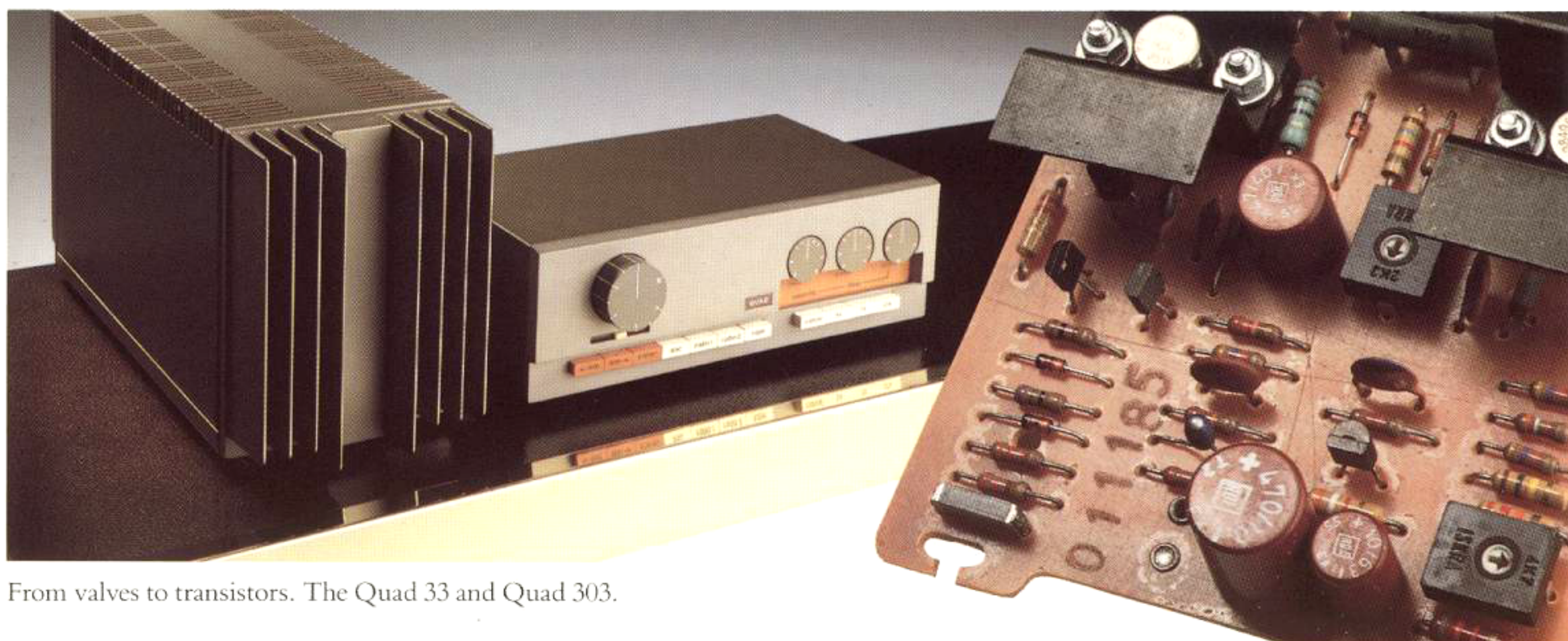
The staff about to take off for a day trip to Amsterdam.



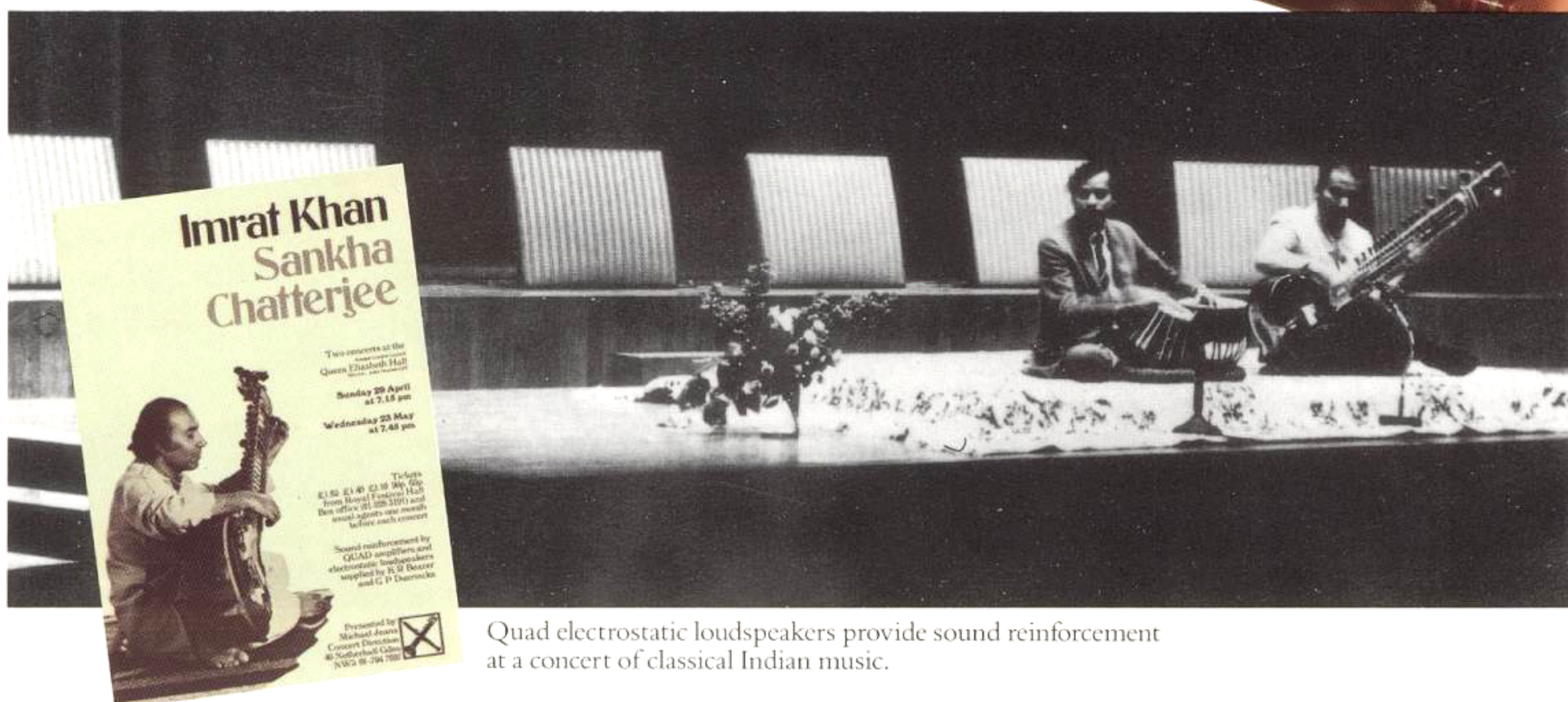
Quad has been involved with recording and broadcasting studios from the beginning. The equipment has changed but the pursuit of excellence has not.



1967-74. Transistors and a Design Award



From valves to transistors. The Quad 33 and Quad 303.



Quad electrostatic loudspeakers provide sound reinforcement at a concert of classical Indian music.

QUAD

擴音機中的標準

303 功率放大器規格：

輸出功率 (無負載) 70 瓦 < 0.05% 失真率
 700 瓦 < 0.05% 失真率
 10 千赫 < 0.1% 失真率

頻率響應：8 赫至 20 千赫 (±3 分貝) 至 1 千赫
 16 赫至 20 千赫 (±3 分貝) 至 1 千赫
 輸出內阻：0.3 歐至 2000 歐 (±3 分貝) 至 1 千赫
 輸入電平：0.5 伏有效值 (輸出 30 瓦至 16 歐負載)
 輸入阻抗：22 千歐至 60 千歐
 響應及穩定性：100 分貝 (滿輸出)
 穩定度：無條件穩定 (任何負載)

配用 QUAD 33 前置放大器最為理想

積二十年代理 QUAD 之經驗

愛羣無線電有限公司

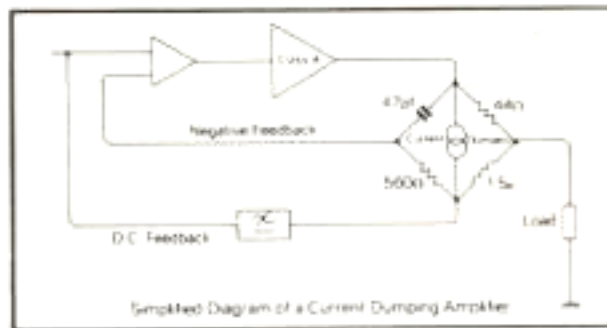
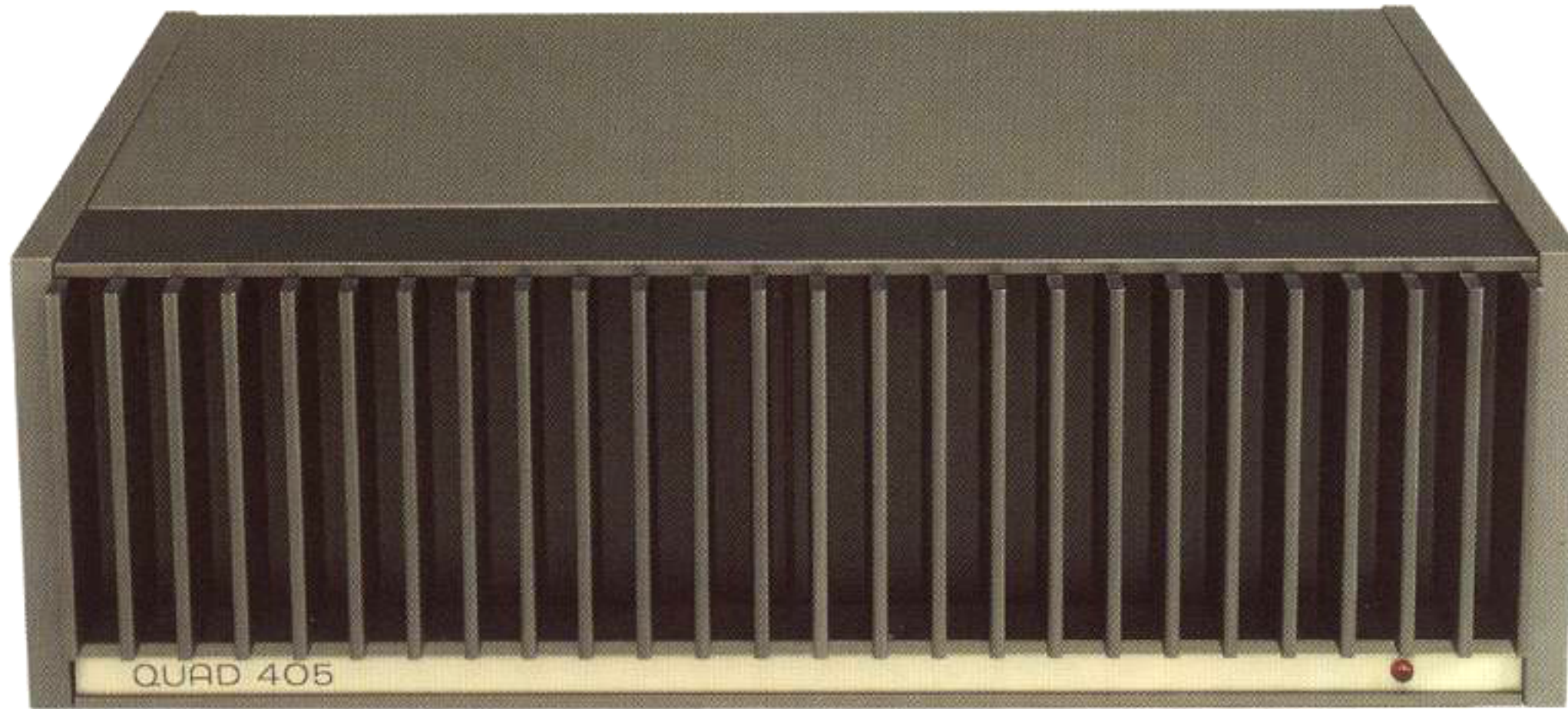
九龍漆咸道 25 號地下 香港皇后大道中陳佐行 301 室
 電話 K 663241-2 電話 H 223638

Quad products are sold throughout the world and exports account for more than 60% of total sales.



Peter Walker collects a Design Award for the Quad 33, Quad 303 and Quad FM3.

1975-1981. Current Dumping and a Queen's Award



The Quad 405 (1975) featured a clear advance in amplifier design christened Current Dumping. A bridge circuit detects the difference between input and output signals (distortion) and corrects it.



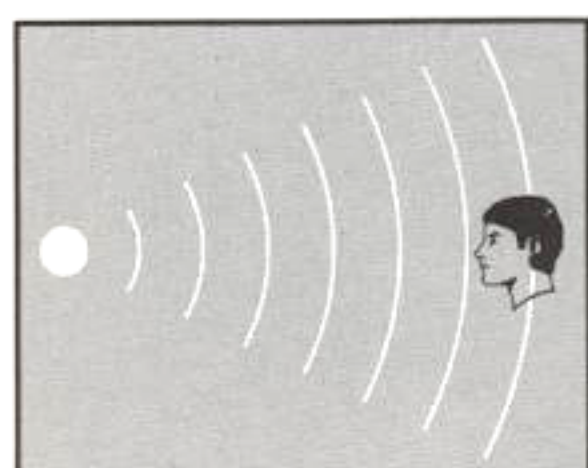
Current Dumping, a Quad patented invention gains a Queen's Award for Technological Innovation.



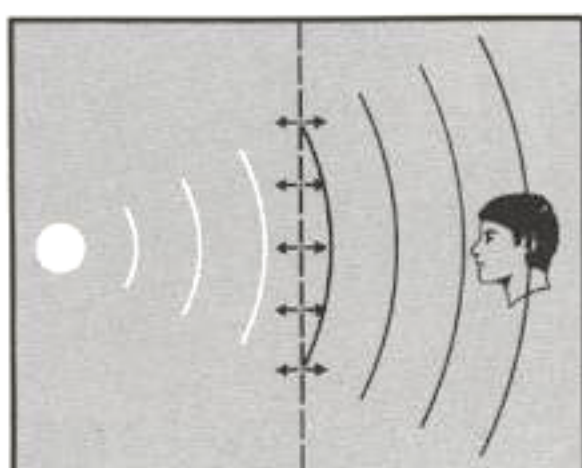
The Quad 44. The modular inputs allow the customer to tailor the pre-amplifier to his requirements now, and in the future. "Thank God it's British" wrote Angus McKenzie.

1981-85. Enter FRED, the new ESL 63

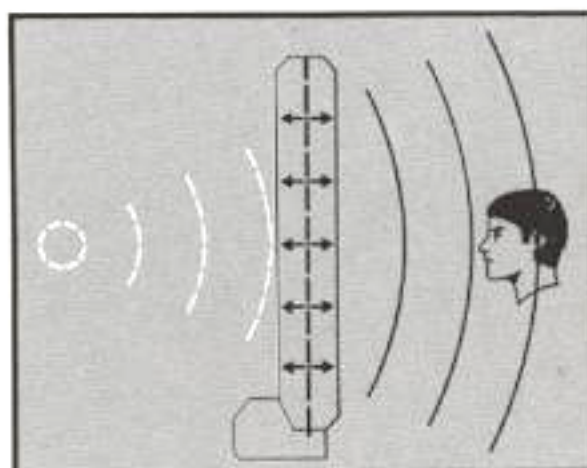
The new Quad electrostatic ESL 63 was rumoured for years before it appeared in 1981. The '63 in its name gives a clue to the time it took to develop FRED (Full Range Electrostatic Doublet). The first year's production was sold out within two months of its introduction.



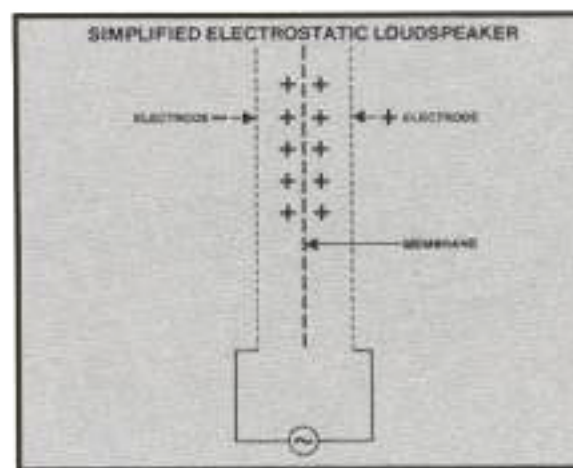
A point source loudspeaker.



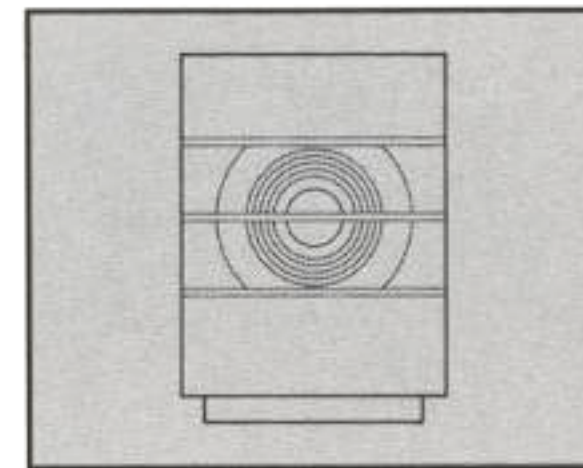
Air particle motion at a plane some distance from the source.



The identical motion of the membrane in the Quad ESL-63 produces identical results for the listener.



Membrane carries a constant charge. Electrodes carry the alternating music signal.



The music signal is fed first to the centre section and then to each ring in turn.



The introduction of compact disc places increasing demands upon the recording engineer. The virtues of the ESL 63 are appreciated by both engineers and artists pursuing excellence in recording quality.



FIFTY YEARS OF
QUAD
And still the closest approach!

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