

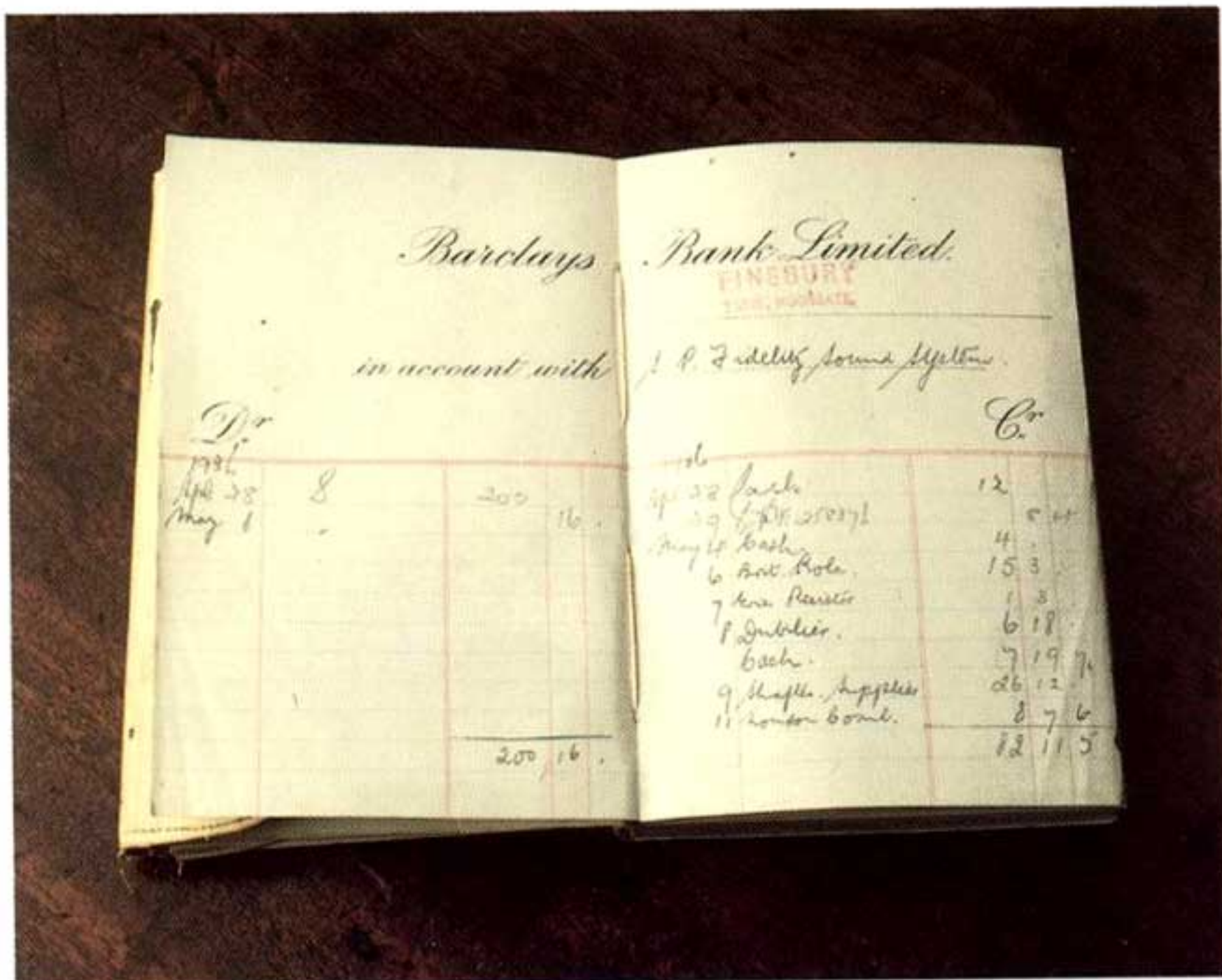
HiFi ENGINE®

For more Hi-Fi manuals and set-up information
please visit www.hifiengine.com

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,

A portable P.A. system circa 1938.

Reprinted from The Wireless World, August 1940

The C25 Acoustical Amplifier

A COMPACT UNIT SUITABLE FOR MOBILE EQUIPMENT

The main PA work components and particularly the considerations which play an important part in the choice of equipment. There must be few amplifiers of comparable specification which occupy so little space as the Type C25.

It was designed by the Acoustical Manufacturing Co., 201, 203, Lewin Street, London, E.C.1. Weighing only 18 lb., its dimensions are 14.7 x 10 x 11 in. It has a power output of 30 watts, is provided with separate channels for high and low impedance inputs 16 ohm & 160 ohm respectively (carries microphones) and may be used from either a 12-volt car battery or AC mains.

Three double-diode valves provide the push-pull output stage and the tubes of the first valve function as separate first-stage amplifiers for the high and low-impedance inputs. A pulsating potential for the latter circuit, which is

lead to the grid of the second valve in which the anodes have a common load resistance. The arrangement gives mixing of the two channels without mutual interaction. The first half of the third diode-

On the amplifier give 20 watts without any trace of distortion being revealed either by the input-output curve or the cathode-ray oscillogram. Subsequently it was discovered that the main and consequently the HT voltage were down, and there is no doubt that it is possible to give the attention to require the full rating of 30 watts will be obtained. Full power is given for an input of 50000 volt-RMS on the grid of the first valve. In the amplifier test, the high-impedance input was connected to the grid of the second stage for gramophone reproduction with normal pick-up, and in this case the input required for full power was 6075 volt-RMS.

The measured frequency characteristic showed a loss of less than 3 db at 30 and 10000 c/s with the tone control turned fully clockwise. The curve obtained at the other extreme, and with the maximum tone cut showed a steady fall of about 15 db between 100 and 10000 c/s.

On a 12-volt car battery the amplifier took 80 amp and its performance was in every way comparable with that on AC mains. The circuit and was quite both electrically and mechanically. A switch is provided to break the HT circuit and economise current during intervals between announcements, while keeping the valve heaters ready for instant use.

The C25 ACOUSTICAL AMPLIFIER

Here is the answer to your P.A. problem... a complete acoustic amplifier designed to run DIRECTLY either from your 6-volt car battery or from A.C. mains. This remarkable amplifier delivers 30 watts undistorted output, enough to address a crowd of 15,000 in the open air. Lightweight, small dimensions, simplicity of operation and high quality output make this amplifier the equipment for every occasion.

In public address work, there, briefly, are the outstanding features of the C25 acoustical amplifier, an entirely new design, in P.A. equipment in which every detail of construction contributes to high performance and reliability under all conditions. The C25 amplifier is an investment which pays for itself in reduced costs and unending performance.

GARDEN FETES! RACE MEETINGS! CONCERT HALLS! ETC.

HUNTINGDON GIRLS AIDED UNDERGROUND MOVEMENT

Turned Homes Into Workshops

RADIO was 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

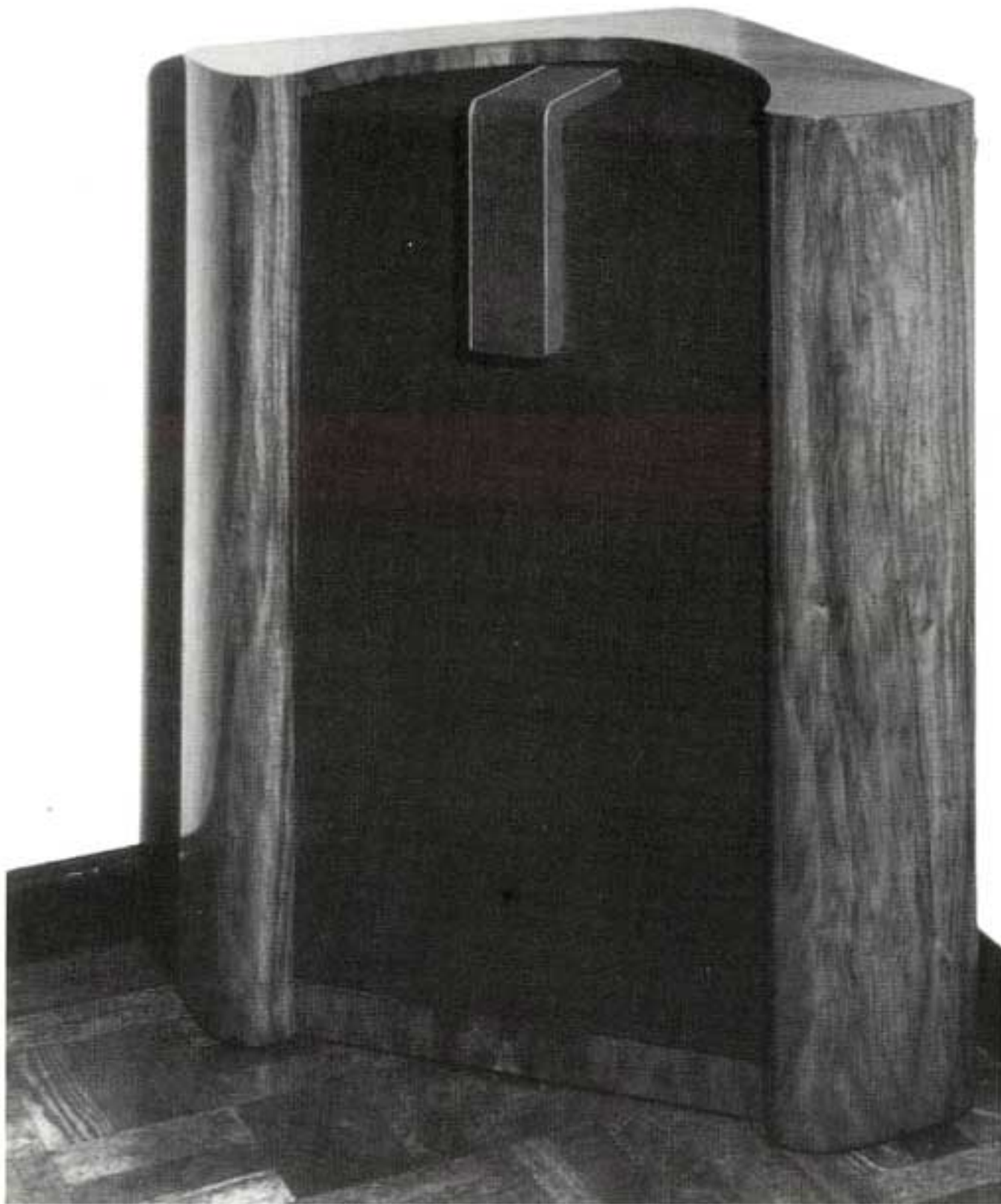
tank radio sets, and at peak production they were making over 2,000 per week at Huntingdon. All the components had to be adjusted to a very fine accuracy for they were an integral part of the light and heavy tanks which went roaring into the mechanical battle fronts from El Alamein to the blood-soaked battlefields of Italy, France and Germany.

At one time improvements in motor torpedo boats and other craft were restricted due to the limitation of knowledge in the laboratory properties of rubber. Tur-

The war years.

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.

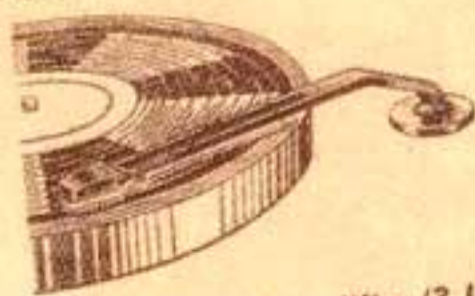
The proceedings were enlivened by the personal appearance of three world-known British Concert Artists whose brilliant performance on a Steinway Pianoforte, a Harpsichord and the Festival Hall Organ were matched by reproductions of identical Works previously recorded by themselves.

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.

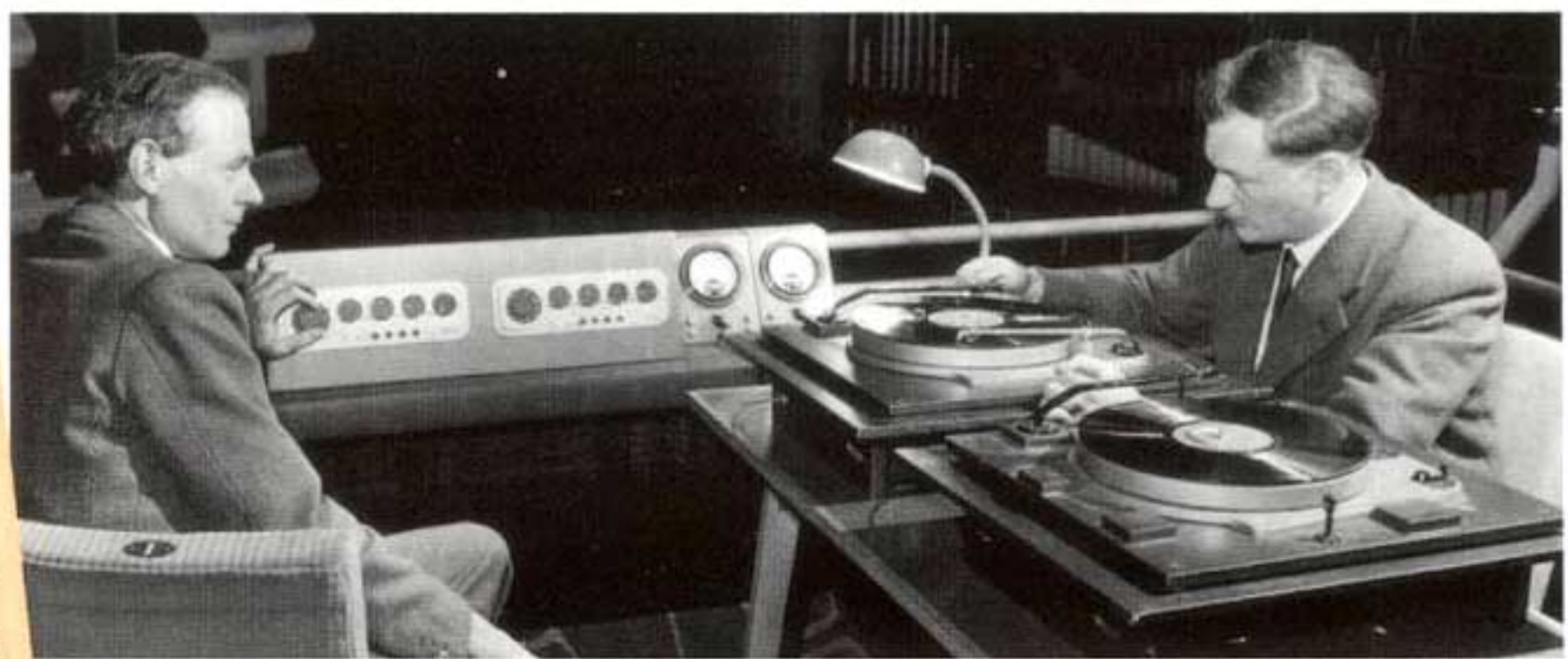
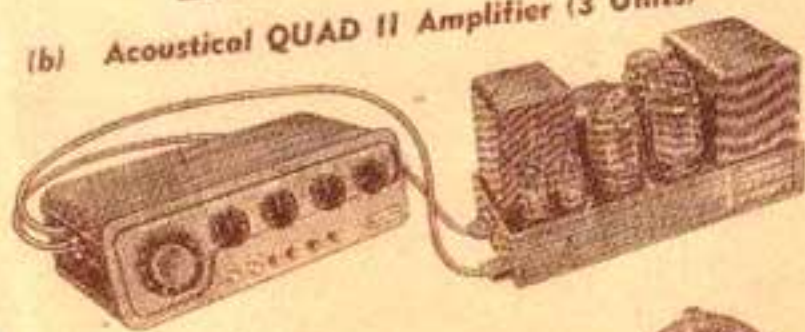
Excerpts from a number of commercial records were played and received with great enthusiasm by an audience whose consensus of opinion was that a new level had been set in the standard of reproduced music.

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.

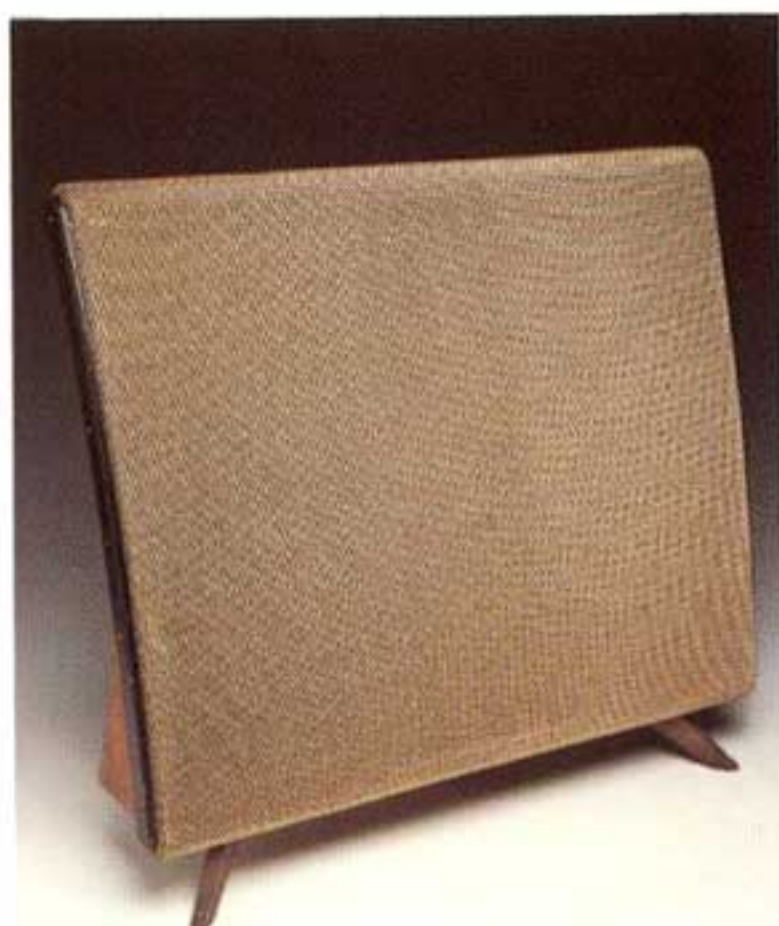


The Quad II (Quality Unit Amplifier Domestic) control unit and Quad II power amplifier.



1957-1966 – Stereo and the first Electrostatic Loudspeakers

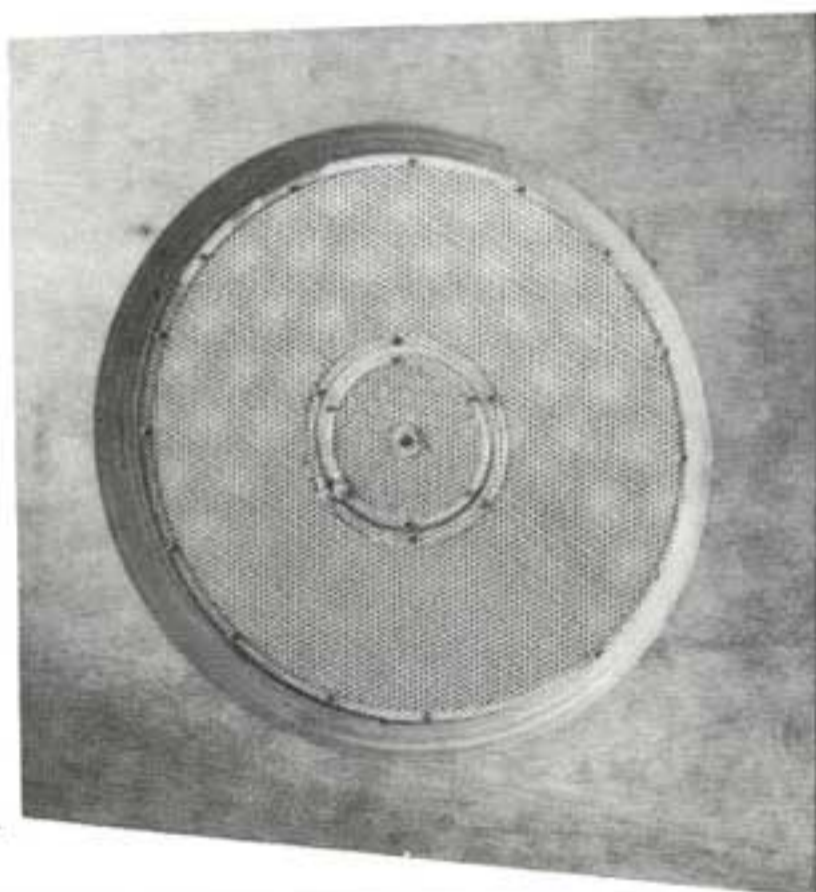
The world's first full range electrostatic loudspeaker. "Walker's Little Wonder."



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



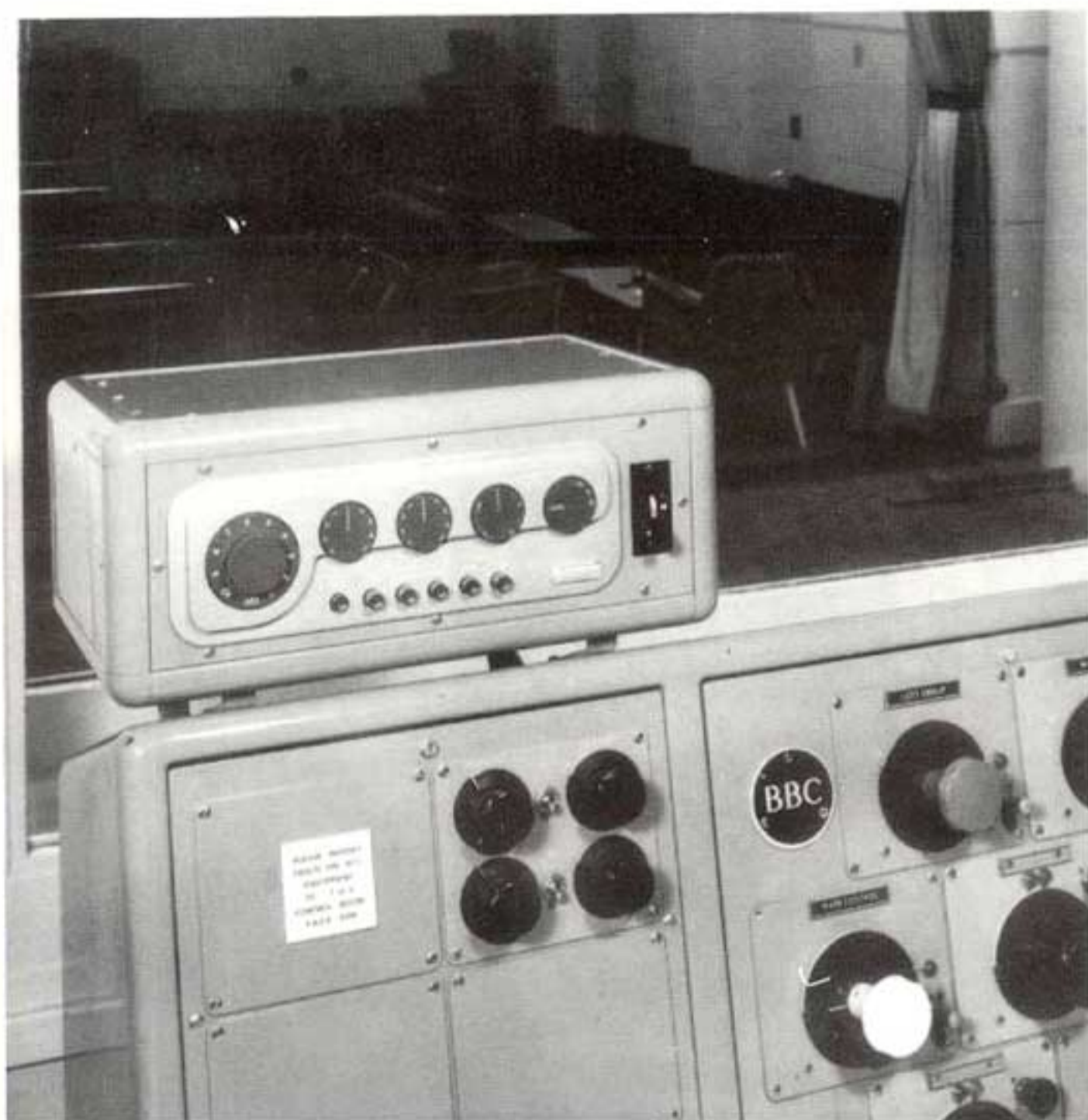
Early experiments in electrostatic loudspeakers.



Stereo. The Quad 22 and FM stereo tuner.



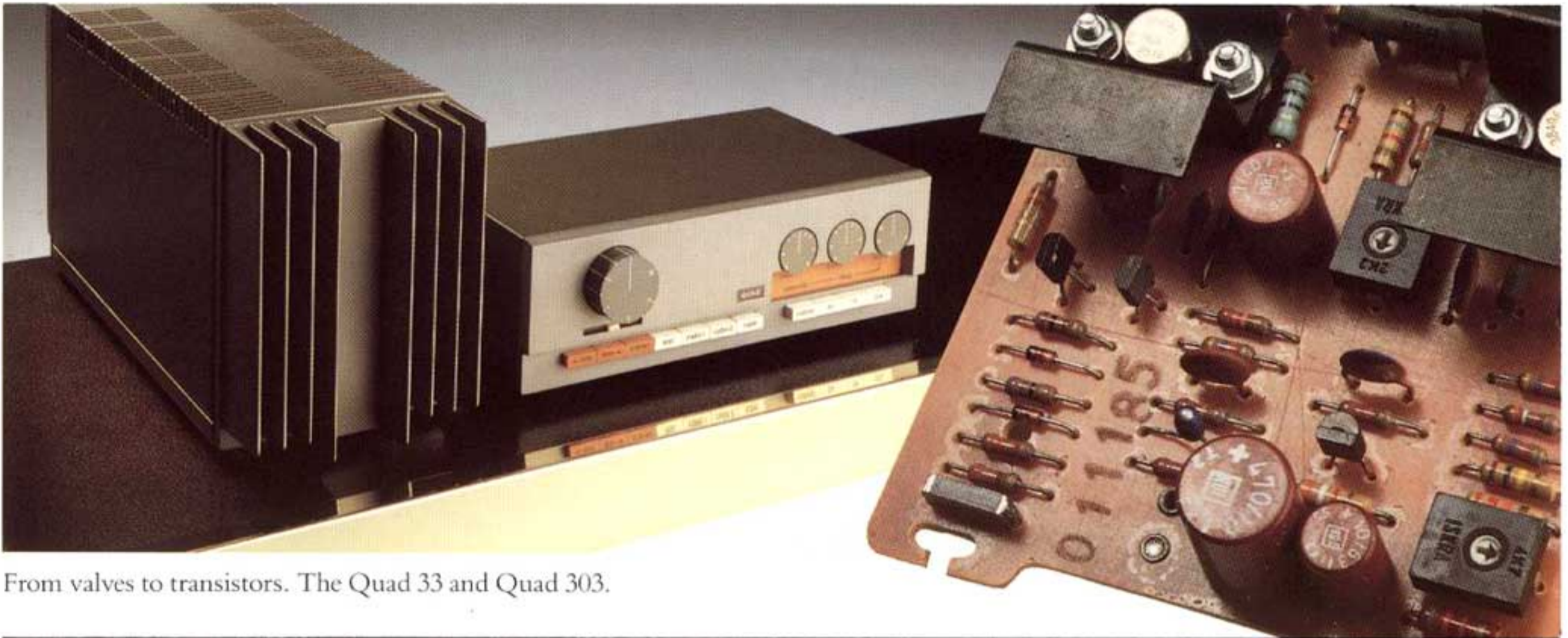
The staff about to take off for a day trip to Amsterdam.



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：

輸出力 (無負載時)	0.50% 任何電平
700 赫	28.16 歐姆
10 千赫	45.3 歐姆

標準電壓：8 歐姆於 30 赫至 20 千赫 - 1 分貝；高於 1 千赫；
16 歐姆於 20 赫至 20 千赫 - 1 分貝；高於 1 千赫；
輸出內阻：0.3 歐姆；通於 200 歐姆至 5 歐姆；
輸入電平：0.5 伏特均方根值；輸入於 16 歐姆；
輸入阻抗：22 千歐姆；通於 60 歐姆；
頻率響應：-100 分貝 (滿電平下)；
穩定度：無條件穩定 (任何電平)

配用 QUAD 33 前置放大器最為理想

橫二十年代理 QUAD 之經驗
愛羣無線電有限公司
九龍漆咸道 25 號地下 香港皇后大道中陳佑行 301 室
電話 K 663241-2 電話 H 223638

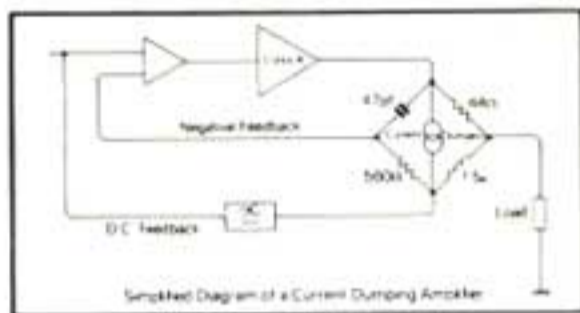
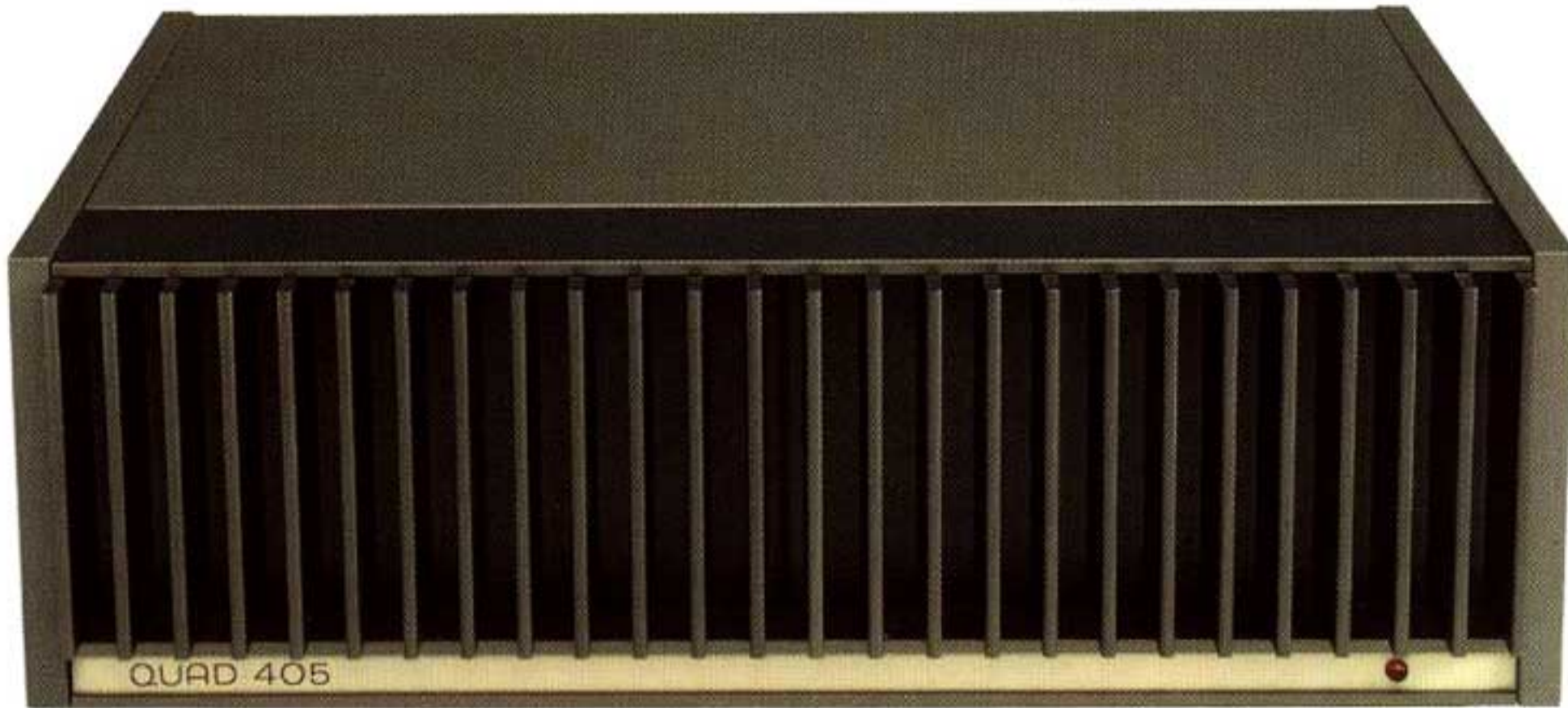
Quad products are sold throughout the world and exports account for more than 60% of total sales.

Cold design awards 1969

The certificate is presented to
The Acoustical Manufacturing Company Limited
in full recognition of the
DESIGN 33 POWER AMPLIFIER
DESIGN 303 CONTROL UNIT AND
DESIGN FM STEREO TUNER
awarded by the Royal Design Society
in the field of Consumer Design
Design Award 1969

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.



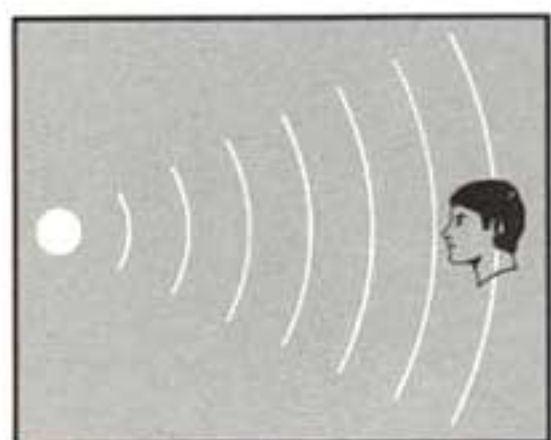
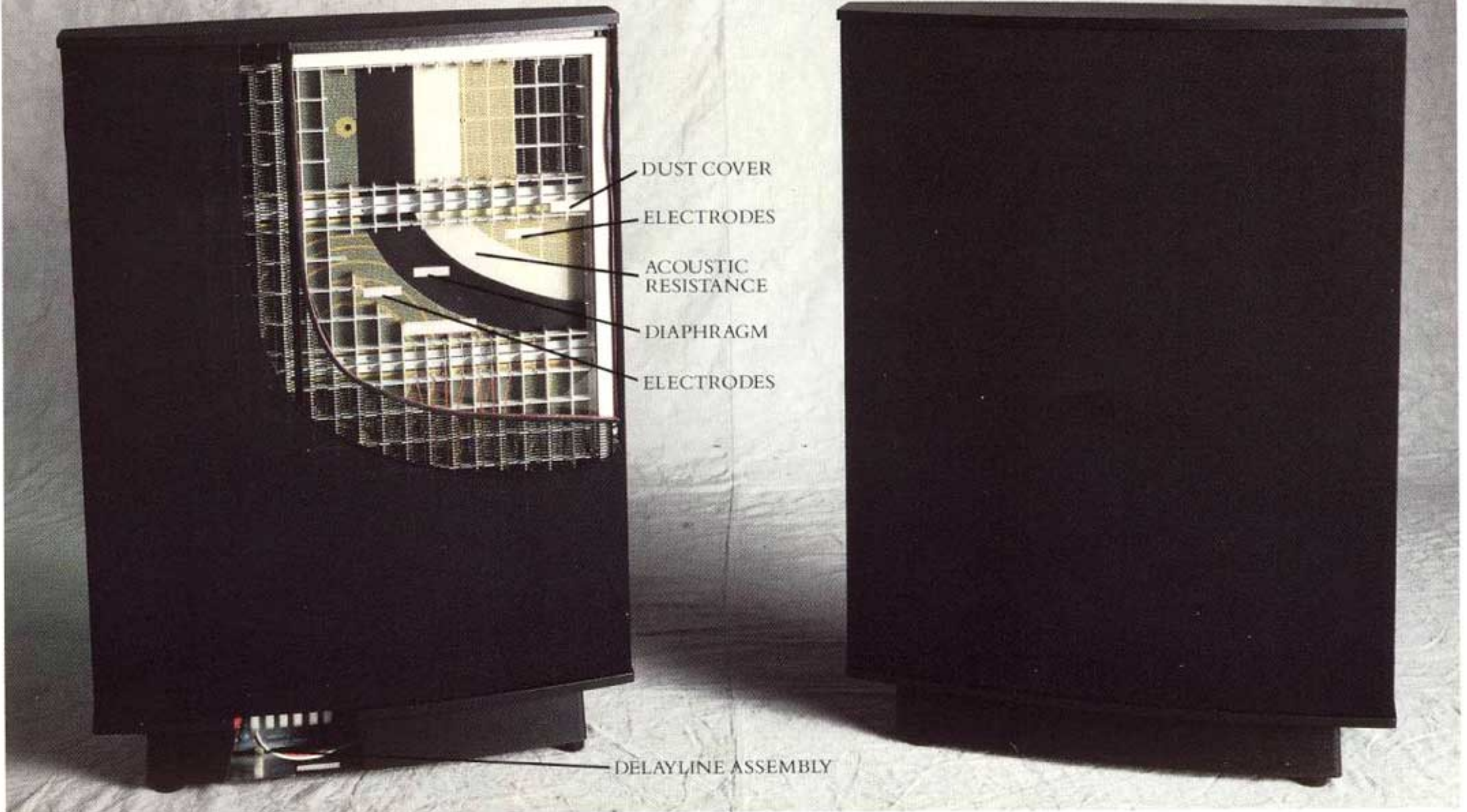
Current Dumping, a Quad patented invention gains a Queen's Award for Technological Innovation.



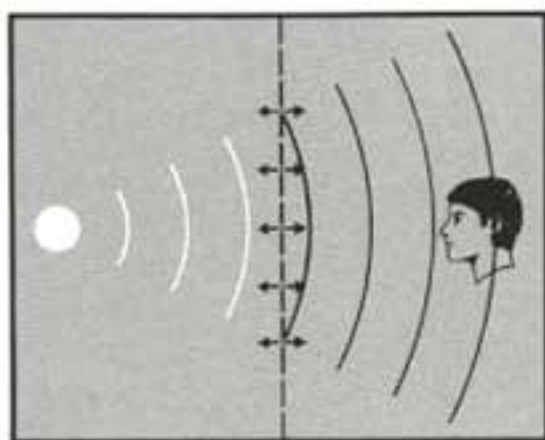
The Quad 44. The modular inputs allow the customer to tailor the pre-amplifier to his requirements now, and in the future. "Thank God it's British" wrote Angus McKenzie.

1981-85. Enter FRED, the new ESL 63

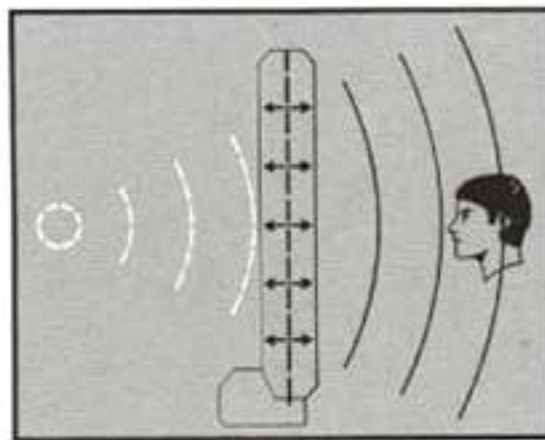
The new Quad electrostatic ESL 63 was rumoured for years before it appeared in 1981. The '63 in its name gives a clue to the time it took to develop FRED (Full Range Electrostatic Doublet). The first year's production was sold out within two months of its introduction.



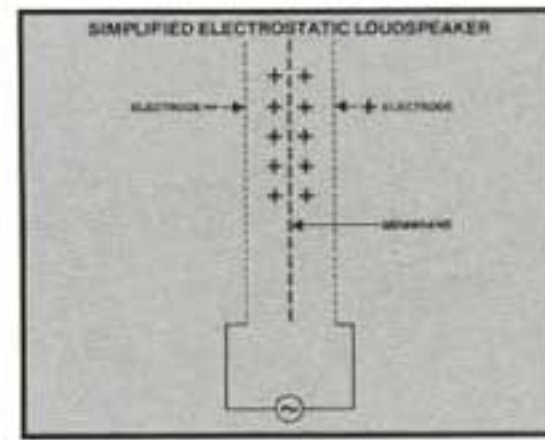
A point source loudspeaker.



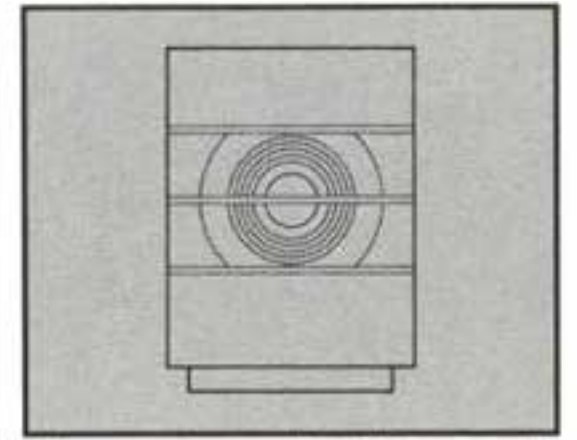
Air particle motion at a plane some distance from the source.



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!

QUAD ELECTROACOUSTICS LTD., HUNTINGDON, CAMBS. PE18 7DB. TELEPHONE NO.: HUNTINGDON (0480) 52561. TELEX: 32348 QUAD G. QUAD IS A REGISTERED TRADE MARK.