

CONTRACTORS TO BRITISH DOMINION & FOREIGN GOVERNMENTS



Telephone:
CANONBURY 1234
(20 LINES)



A. C. COSSOR LTD

Telegrams:
AMPLIFIERS, PHONE
LONDON.

Cables:
AMPLIFIERS, LONDON.
Codes: BENTLEY

COSSOR HOUSE
HIGHBURY GROVE,
LONDON, N.5.

Branches:
BIRMINGHAM,
BRISTOL, SHEFFIELD,
GLASGOW, LEEDS,
MANCHESTER, NEWCASTLE,
LIVERPOOL, DUBLIN,
BELFAST, CARDIFF.

MANUFACTURERS OF WIRELESS VALVES & APPARATUS, ELECTRIC LAMPS & SIGNS.

Our Ref. JHT/RT/16237.

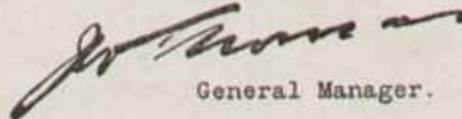
16th. February 1937.

Dear Sir,

We have pleasure in enclosing a copy of our Booklet B.32. dealing with Cossor Television. This is sent to you as a matter of general interest and to acquaint you with the developments we have made in this direction.

Copies of this booklet are available to Cossor Television Stockists in the Service Area.

Yours faithfully,
A. C. COSSOR LTD.



General Manager.

P.S. The new reduced prices will be found on page 17.

Enc. Booklet B.32.



COSSOR TELEVISION

- THE ANNIHILATION OF DISTANCE

B. 12

Radio—ITS THRILLS—ITS INTERESTS—INCREASED AN HUNDRED FOLD
by
TELEVISION

Do you remember the sugary sentimentality of "Sonny Boy"? Do you remember the bathos, the raucous crudity of "The Singing Fool"—the first all-talking picture? As you watched—and heard—its banalities unfolded did you realise that you were the witness of a revolution—a revolution which has left its mark in every corner of the globe?

To-day another—and similar—revolution is taking place. A revolution even greater—in implication and in possibilities—than the introduction of "talking pictures"

It is the coming of Television.

Since its inception, Radio has been blindfold. We have listened but we have been unable to *see*. Imagination, inspired by aural impressions, has had, perforce, to serve as sight.

To-day, imagination gives way to reality. To sound is added the priceless gift of vision. Radio is blind no longer.

Television is here!

“ LOOK! — LOOK! — THAT END WALL’S TOPPLING — IT’S
COMING DOWN — IT’S FALLING — LOOK! . . . ”



NEWS

THAT YOU CAN

See

—AND *hear* TOO!

“ . . . the third News . . . ” says the announcer, then, without emotion, he reads out the events of the day. World-shaking happenings—news of trivial importance—everything, vital or otherwise, is treated with the same air of impartiality—of detachment. For fourteen years we have *listened* to this impersonal recital of facts—even of sensational facts. Yet, with all its faults, its lack of colour—of drama, how could it have been otherwise—this presentation of *blind* news?

But the news you receive to-day need not be blind. No longer need

THE MOST VIVID PHRASEOLOGY—
THE MOST DRAMATIC DELIVERY
OF THE *spoken* WORD WILL
NOT BRING YOU A FRACTION
OF THE *thrill* OF

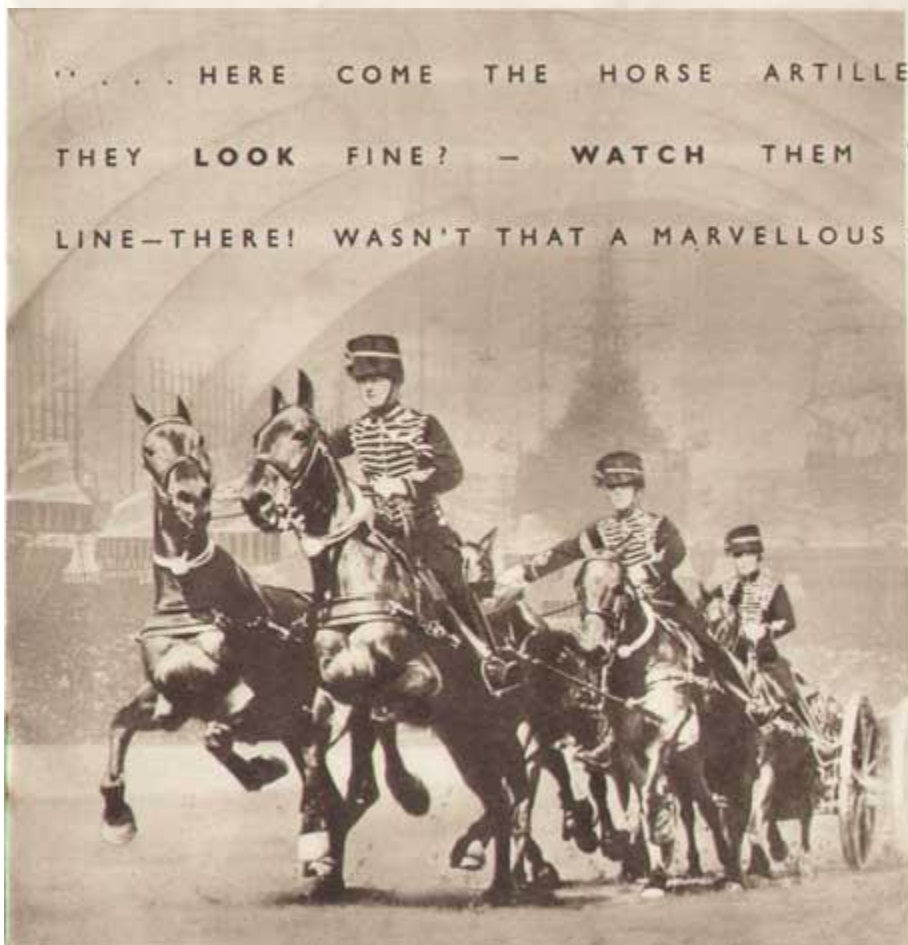
Seeing

you depend solely on the reading of carefully edited reports. No longer need you force your imagination to visualise that which you hear. With *Cossor Television* the News *lives*—it is *real*—you can see with your own eyes—the facts—*as they happened*.

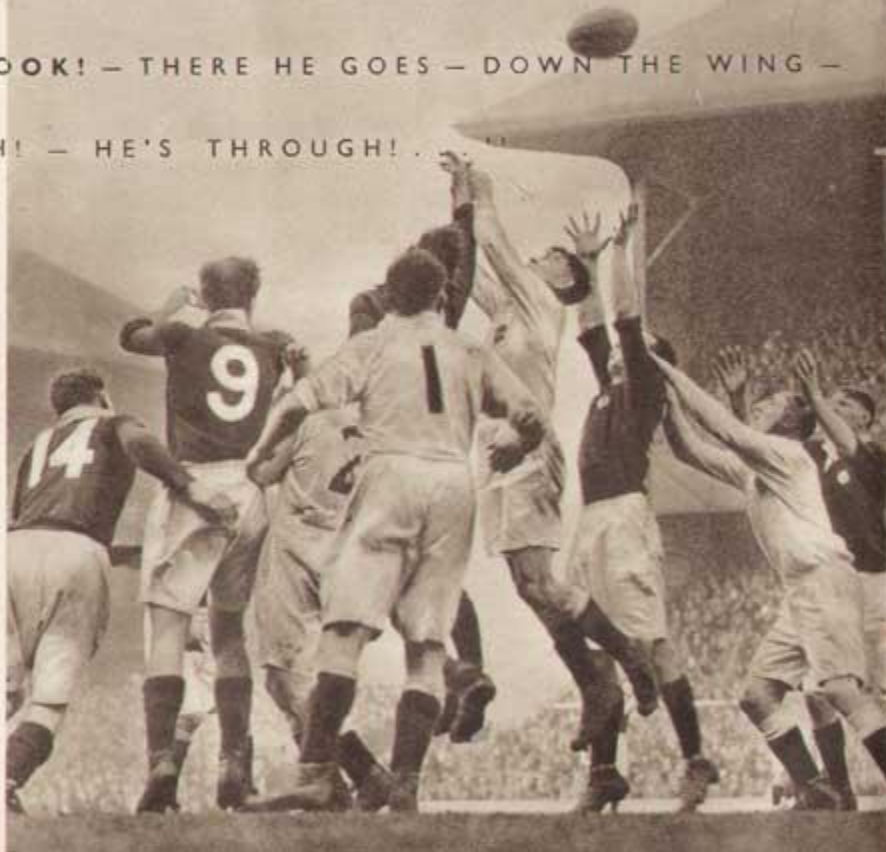
You will see not only news but spectacular events, too—events like the Trooping of the Colour—the Royal Military Tournament—the R.A.F. Display at Hendon—Naval occasions. There are no limits to the scope of Television. In the near future, your *Cossor Television Receiver* will enable you to see, in comfort, from your own arm-chair the events of the day—*living—real*.

4

“ . . . HERE COME THE HORSE ARTILLERY — DON'T
THEY LOOK FINE? — WATCH THEM WHEEL INTO
LINE—THERE! WASN'T THAT A MARVELLOUS SIGHT? . . . ”



... SCOTLAND'S GOT IT!—MACDONALD, NO!—IT'S HAMISH —
HE'S AWAY — LOOK! — THERE HE GOES — DOWN THE WING —
HE'S THROUGH! — HE'S THROUGH!



SPORT—

See

— AS WELL AS *hear*

Twickenham . . . that battleground of the giants! Epsom . . .
Lord's . . . that historic muddy stretch between Putney and Mortlake
. . . the Open . . . what memories—and hopes!—those words conjure
up! Already you have heard—you have *listened* to commentaries—
often exciting ones—but imagine being able to *see* too!
Old George (gad!—how that man runs!) going down the wing for
England . . . your “shirt going west” as the field bunches into
Tottenham Corner . . . Bradman nonchalantly hitting out . . .

THE MOST EXCITING
RUNNING COMMENTARY
IS MADE IMMEASURABLY
MORE *thrilling*
WHEN YOU CAN

See TOO!

interesting, dramatic, to 'hear', but a hundred times more thrilling to *see* as well—as, indeed, you will be able to see—though sitting comfortably at home—on Cossor Television.

Remember that, in addition to direct presentation of events as they occur, Cossor Television brings with it all the resources of the film industry. Happenings which, for technical or other reasons, cannot be directly televised, will be filmed and afterwards transmitted by television.

Thus, there is opened up a new era in the presentation of sports news—an era of even greater and more thrilling possibilities than the coming of Radio—because it brings with it the priceless gift of *sight*.

8

... WATCH PENNYQUICK!—LOOK!—HE'S COMING UP ON THE
OUTSIDE—HE'S LEVEL—HE'S LEVEL—IT'S PENNYQUICK! ...



"THE PLAY'S THE THING"—

OPERA *too!*

See AND *hear*

However good the play—however well acted—however appropriate the "noises off"—there is always an air of unreality about a Radio presentation—because the players are invisible—because you cannot *see*. Imagine sitting through a theatre performance *blindfold*. Is there any difference? And opera, too. How much more interesting if one could *see*! You *can* see—on Cossor Television. Through its alliance with the resources of the cinema, Television will bring you—not merely the spoken lines—but vision too. You will *see* as well as hear the dramatic situations—the thrills—the laughs of the Theatre.

10

... IM ROSIGEN SCHEIN, VON BLÜTH UND DUFT
WONNEN NIE ERSONNEN, EIN GARTEN LUD NICH EIN
DORT UNTER EINEM WUNDERBAUM, VON . . .



PHOTO BY COURTESY OF
SADLER'S WELLS THEATRE

" . . . JOLLY GOOD SHOW, CADS - JOLLY GOOD SHOW! -
NOW - WANT TO TELL YOU ABOUT A BLOKE - AWFULLY
NICE BLOKE - SAHIB AND ALL THAT. WELL, . . . "



PHOTO BY COURTESY OF
THE WESTERN BROTHERS

" LADIES AND GENTLEMEN—

MUSIC HALL!"

—"TURNS" THAT YOU CAN

See AS WELL AS *hear*

The famous comedian is announced. The orchestra strikes up his "signature tune". And the audience bursts into laughter—at what? You, who are listening, wonder. You missed the joke—it was a silent gesture—you could not *see*—you are conscious of having missed part of the fun—because *your* entertainment is *blind*.

But, with a Cossor Television Receiver you can enjoy *all* the fun—the silent fun as well as the humour you can hear—the wagging eyebrow—that naughty look—just as if you were sitting in the audience.

The Miracle

More than thirty years ago Cossor began—unwittingly, it is true—to prepare for the coming of Television. In those (electrically speaking!) medieval days, the House of Cossor was famous for medical and scientific apparatus of the highest laboratory quality.

With the coming of Radio, attention was turned to this new field. Here, the long-established tradition of scientific accuracy found new application and expression. The making of wireless valves and, later, Radio receivers developed logically from the earlier scientific experience. The measure of success enjoyed in this enterprise can be judged from the fact that in the homes of Britain there are more Cossor Receivers in use than any other make.

When the possibilities of practical Television began first to be discussed, a Cossor Television laboratory was established and

THE PART



Cossor Television Receiver Model 117-T

of TELEVISION

research energetically commenced. After a short time, it became obvious to Cossor engineers that the development of high-definition Television was closely identified with the Cathode Ray Tube.

To Cossor, the Cathode Ray Tube was already long familiar. So long ago as 1902

PLAYED BY COSSOR

were made the first Cossor Cathode Ray Tubes. Their development, in fact, so far as this country is concerned, has largely been due to the pioneer work of Cossor Research. Here again, as in Radio, earlier Cossor experience proved invaluable.

It is important to remember that, from the start, the entire effort of the Cossor organisation has been directed to one single end—the making of a combined Television and Radio Receiver. Here, once again, previous enterprise has played no small part. As the largest self-contained Radio manufacturers

in the British Empire, the Cossor organisation possessed a vast wealth of experience accumulated in the making of Wireless Receivers. Added to this experience is a wide foreknowledge of Cathode Ray Tube technique. And finally, permeating the whole enterprise is the tradition of laboratory accuracy handed down from those valuable early years.

Small wonder is it, therefore, that the Cossor Television Receiver of to-day is the most highly developed instrument yet produced. When its "background" is considered—how could it be otherwise? If genius is the "quality of taking infinite pains," then is the Cossor Television Receiver a product of genius—of over thirty years of "taking infinite pains." As you will read overleaf these Cossor instruments possess many important and unique advantages. Independent critics have said that the Cossor instrument is not only the best made in this country but, indeed, in the world.

COSSOR

TELEVISION RECEIVERS



The Cossor Television Receiver is a handsome instrument fashioned in solid walnut, 44½ in. high, 20½ in. wide and 24 in. deep. The viewing screen and Radio and Television controls are protected by doors when not in use. Two distinct services are provided: (a) Television reception on both systems radiated by the BBC together with simultaneous reception of the accompanying Television sound programme; and (b) superb high-fidelity broadcast reception of all the leading European Radio programmes and also of sound (without vision) on the Television wavelength (41.5 megacycles). You will see, therefore, that this instrument provides *complete* home entertainment; combined Television and Sound programme; normal Radio programmes; and, in the case of Model 237T, electrical reproduction of gramophone records. Throughout the day it will afford, in one form or another, continuous entertainment or interest.

16



This is Model 137T with the protective doors closed.

★ SUPERLATIVE *Radio* TOO!

For the faithful reproduction of television pictures, special receiving circuits are absolutely essential. These circuits must be capable of truthfully amplifying the minute television signals without the slightest trace of distortion. Since the Radio part of this Cossor Receiver uses the same highly developed circuits, the performance—especially quality of reproduction—is superlative, incomparably superior to anything previously available.

—possess many IMPORTANT ADVANTAGES including—

Direct Vision

In the Cossor Television Receiver the picture is viewed direct without the aid of mirror, lens or other device. This important advantage ensures extreme clarity and brilliance with the widest possible angle—both vertical and horizontal—of vision.

Rock-steady Picture

Clearly defined, brilliant black and white pictures with great wealth of detail, large enough for a number of people to enjoy at one time and sufficiently bright to obviate extreme measures of room darkening are an outstanding feature of this magnificent Cossor instrument.

Simple Operation

The Cossor Television Receiver has only two controls in addition to those usual for radio reception. One is to regulate the "brightness" of the picture, the other determines the degree of "contrast." These controls can be mastered in a few minutes and, once set, require no further adjustment during the period of the transmission.

★ High-fidelity Radio Reception

For the reasons outlined above, the Cossor Television Receiver will also bring you the normal BBC and Continental radio programmes with a fidelity of tone and diction never before equalled.

17

TWO MAGNIFICENT MODELS

Model 137T

Cossor Television and High-fidelity Medium and Long Wave Radio Receiver as illustrated and described herein, price

70 Gns.

Model 237T

As Model 137T but with additional upper section incorporating electric gramophone of the latest type, with record changer and every up-to-date development, price

90 Gns.

See Purchase Terms Available.

How it is Done

IN SIMPLE LANGUAGE — THE PRINCIPLE
OF COSSOR TELEVISION . . .



After your first thrill of television, you will want to know how it is done. It is impossible, of course, within the limited space of this booklet to give more than the barest outline of television principles.

Firstly a little general information as a background. If you examine under a magnifying glass a photograph reproduced in your morning newspaper, you will see that it consists of a large number of dots. Dark portions of the illustration consist of large dots—light portions of small pin-points. But when viewed at arm's length, the illustration becomes quite pleasing because the dot formation disappears. Even slight variations of light and shade appear in their correct values.

The television picture is built up in a somewhat similar manner. Instead of dots, however, it consists of horizontal lines closely spaced. The light and dark portions of the picture are obtained by varying the brightness along each line—or portion of a line. Before describing how a subject to be televised can be broken down into a line formation, it is necessary to say something about what is known as "persistence of vision".

When we see a person walking across the screen at the cinema, we actually see a sequence of "still" photographs following each other at the rate of 25 pictures per second. Persistence of vision bridges the interval,

HOW A PRINTER "SEES" THE PICTURE

On the left, greatly enlarged, is a printed illustration. Note that it is composed of dots of varying sizes to produce the impression of light and shade.



HOW TELEVISION PICTURES ARE "BUILT UP"

The centre illustration gives an impression of a Television picture. Examined closely it will be seen to consist of a large number of horizontal lines. On the right is an enlargement of the same picture which clearly shows the line construction.



so to speak, between the still pictures, and in this way the illusion of movement is created. A lighted torch fastened at the end of a length of string and twirled round the head will appear as an unbroken ring of light. Again, an illusion due to persistence of vision.

The picture in a television receiver is not really made up of lines at all. Actually it is produced by a single spot of light travelling at an incredibly high speed. Just like our analogy of the lighted torch, the single spot of light can be made to travel so quickly across the end of a cathode ray tube that it is visible only as a line. By suitable electrical control, this spot of light can be

caused to move in a vertical direction. Therefore, starting at the top left-hand corner of the picture, it will sweep across in a series of closely-spaced parallel lines repeated over and over again in sequence.

So much, therefore, for general principles. Now come with us to the BBC studio at Alexandra Palace. The announcer is being televised. He stands in the field of a spotlight not unlike those used at the theatre. But if you were to examine it closely you would see that immediately in front of the lens there is a rotating disc perforated spiral-fashion with a number of small holes. This causes the beam to sweep across the announcer in a series of close parallel lines. Standing immediately



THE COSSOR THREE "DECK" TELEVISION CHASSIS—Above the upper deck is the Cossor Cathode Ray Tube. The middle section houses the radio receiver, while below is the power pack and moving-coil speaker.

20

behind the spotlight you would notice a bank of photo-electric cells. These cells are extremely responsive to light fluctuations. They are able to record, therefore, all the changes in reflected light created when the beam of light, for example, sweeps across the announcer's face. The light and shade of his features—his eyes, nose, mouth, etc.—all these vary in tone values and cause minute voltage fluctuations in the photo-electric cells. These in turn are very greatly amplified and are passed ultimately to the transmitting aerial.

For the purpose of our explanation we have merely outlined one method of transmitting. There are, however, many others—including the Iconoscope Camera which uses entirely different principles and which is capable of recording scenes out of doors.

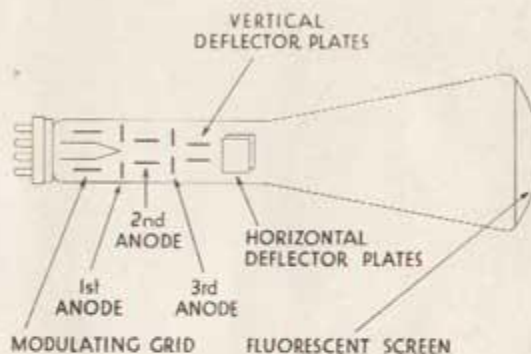
And now for a brief explanation of a Cossor television receiver. The picture is seen on a screen at the end of a cathode ray tube. The accompanying sound is heard simultaneously in a moving-coil loudspeaker.

The Cossor cathode ray tube—the basis of modern television reception—is a large onion-shaped affair almost flat at one end and internally coated with a fluorescent material on which the picture appears. The bulb is of glass but the internal elements—although on a much larger scale—are not unlike those in a wireless valve.

The fundamental principles of the cathode ray tube are not difficult to understand. When a filament is heated, a stream of electrons is given off in every direction. In the cathode ray tube this electron stream—by means of two pairs of deflector plates—can be directed and controlled in much the same way as a nozzle on the end of a hose-pipe will direct a stream of water. By applying suitable voltages to the pairs of deflector plates, the beam of electrons can be made to move in vertical and horizontal directions. They become visible on striking the fluorescent screen. By exercising suitable electrical control, therefore, the beam—in other words a single spot of light—can be made to travel at an incredibly high speed and caused to assume a formation of closely spaced horizontal lines.

When the signals received from the transmitter at Alexandra Palace are amplified and passed to the modulating grid of the cathode ray tube, the formation of lines instantly becomes a living picture. The scene being "scanned" by the spotlight at the transmitter is re-created line by line on the fluorescent screen in your television set.

Obviously this explanation has been stripped of its technicalities. There are many other problems such as synchronisation. In the early days of television, it was necessary for each television receiver to be synchronised



This simplified diagram will help you to understand the working of the Cossor Cathode Ray Tube.

with the transmitter by the user. Today, synchronisation is automatically controlled by the transmitter. It is impossible, therefore, for the picture in the receiver to be out of step with the transmitter. This is done by means of special synchronising signals transmitted at the end of each line and at the end of each "frame." The operation of a Cossor television receiver is extremely simple—no technical knowledge of any kind is required once the instrument has been correctly installed. Apart from the normal controls of a wireless receiver, there are two others. One can be conveniently described as

21

a "brightness control." By its use the mean brightness level of the picture is adjusted. If the picture is too bright it can be dimmed—and vice versa. The other control adjusts the degree of contrast in the picture; if, for example, it is too contrasty and thereby suffers from lack of middle tones, a slight adjustment of the contrast control knob will correct it.

The instrument itself is divided into three "decks"—

the upper deck carrying the cathode ray tube and the associated vision circuits; the middle deck is the radio receiver covering not only Alexandra Palace transmissions but also giving a superlative reproduction from all the worth-while European radio broadcasting stations. The lower deck embodies the large moving-coil loudspeaker and the power equipment necessary for supplying the high voltages required for vision and sound.

THE STUDIO "END" OF TELEVISION

In one of the BBC Television Studios at Alexandra Palace. Note the microphone suspended on the long arm, just over the violinist. (Photo—courtesy BBC)



COSSOR TELEVISION

—IN THE MAKING

Above: The operator is welding the internal anodes of a Cossor Cathode Ray Tube.

Top right: A batch of Cathode Ray Tubes ready for the coating line.

Right: Assembling television chassis and, in the background, inserting the completed chassis in their cabinets.





THE EMPIRE'S LARGEST SELF-CONTAINED RADIO ORGANISATION *An impressive view of an assembly bay—one of many—in the six huge Cossor factories at Highbury, London, which comprise the largest self-contained radio organisation in the British Empire.*

Prices herein do not apply in U.S. and are subject to alteration without notice

We reserve the right to vary specifications if necessary

A. C. COSSOR, LTD.

HEAD OFFICE:

Cossor House, Highbury Grove, London, N.5

Telephone:
Canonbury 1234 (30 lines)

Telegrams:
Amplifiers Phone London

B.32 L. 8137

DEPOTS AT:

BIRMINGHAM 14-16 Carrs Lane (K).....Tel. Midland 5791-2-3	MANCHESTER 6, 8 & 10 Cannon St. (3).....Tel. Stockbriars 9777-8-9
BRISTOL 14 Bath Street (1).....Tel. Bristol 20271-2	NEWCASTLE 3 St. Nicholas Buildings (1).....Tel. Newcastle 23154-5
GLASGOW 21 Waterloo Street (C.2).....Tel. Central 4446-7	SHEFFIELD 5 Parson St., Moorhead (1).....Tel. Sheffield 23103-4
LEEDS 17 Wellington Street (3).....Tel. Leeds 21581-2	CARDIFF 4 Park Lane.....Tel. Cardiff 172-3
LIVERPOOL 42 Paradise Street (1).....Tel. Central 1877-8	DUBLIN 185 Pearse Street.....Tel. Dublin 4606
	BELFAST 47 Queen Street.....Tel. Belfast 2808

GD. 124