

TELEVISION IN YOUR OWN HOME

WATTS

Television

and SHORT-WAVE WORLD

MARCH 1939

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1/-

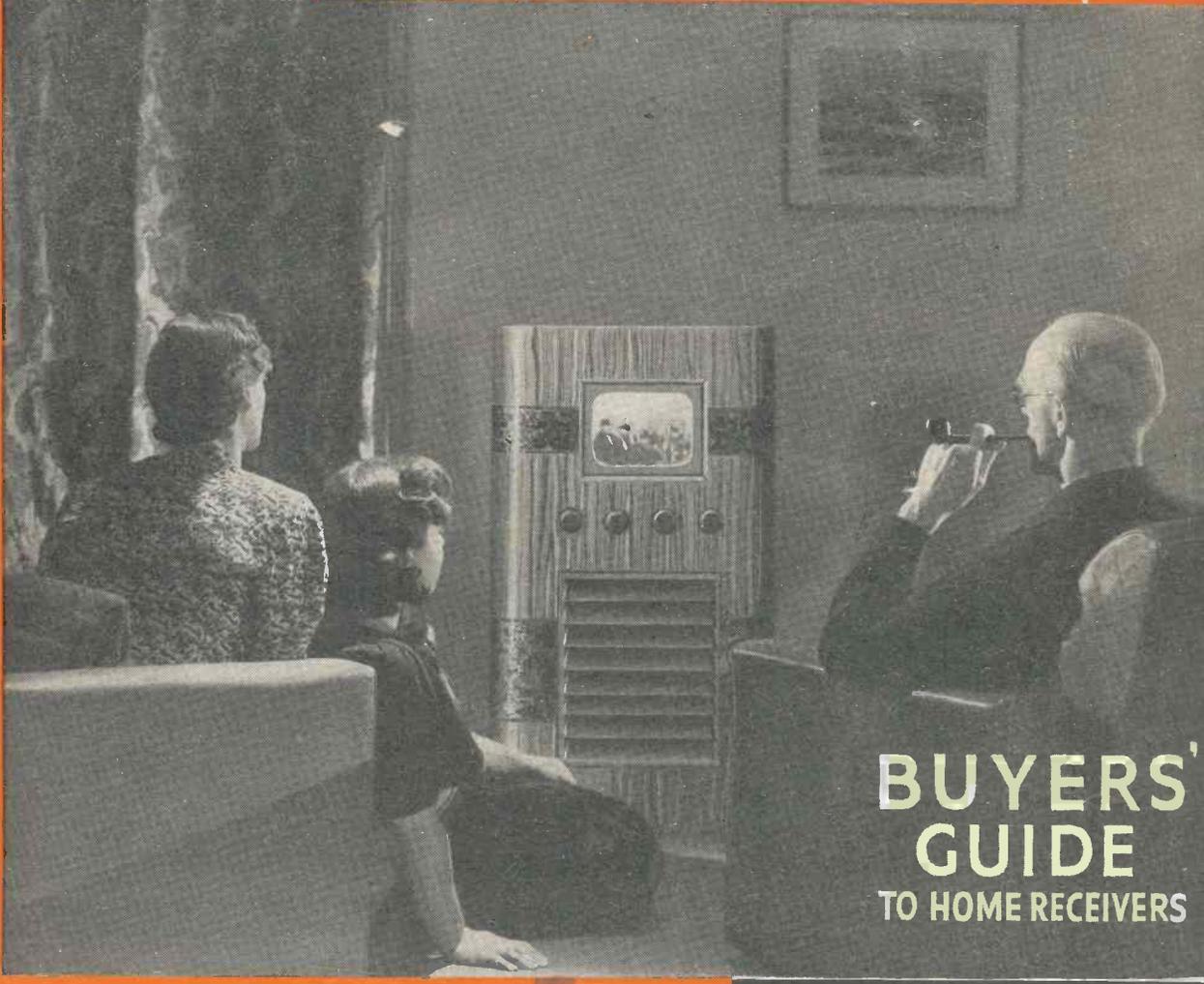
**PRACTICAL
GUIDE TO
RECEIVER
SERVICING**

**MECHANICAL
OPTICAL
TELEVISION**

**SHORT
WAVES**

**3-BAND C.W.
TRANSMITTER**

**MAKING MOST OF DUMMY ANTENNA
CRYSTAL CONTROL ON 5 METRES
6L6 FREQUENCY MULTIPLIER**



**BUYERS'
GUIDE
TO HOME RECEIVERS**



BERNARD JONES PUBLICATIONS LTD.
CHANSITOR HOUSE, CHANCERY LANE
LONDON W.C.2.

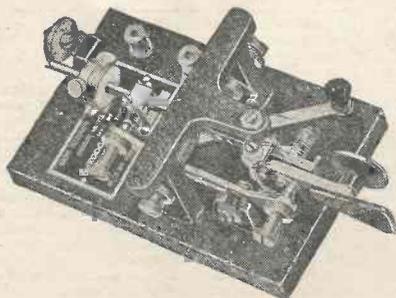
THE FIRST TELEVISION JOURNAL IN THE WORLD

RADIO TELEGRAPH APPARATUS

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TED McELROY, at the International Contest held at the "World of To-morrow Fair" in New York, on November 19th, 1938, held his title against all comers by receiving at the new record speed of 75 words per minute for a period of five minutes without error. HE should know better than anyone else in the world, just what the Telegraphist wants . . . and we believe the selection listed below meets the ideals of beginners and experts.

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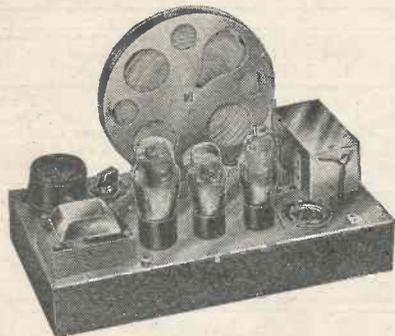


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DE LUXE MAC KEY, employs carefully selected and tested springs, which tend to relieve the strain on the operator's fingers, and make for fast and perfect sending. $\frac{3}{8}$ " heavy contacts with pigtail connections, all metal parts except base chromium plated. Shorting switch for CW or 'Phone. Very heavy one piece cast base with permanent marblite finish. 45/-

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Beautifully light in operation and design with a delightfully balanced lever action. Employing the latest MAC coiled spring.

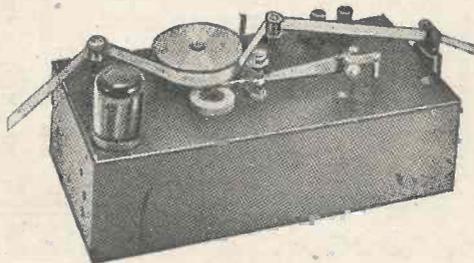
DE LUXE STREAMKEY. Excellent design and beautifully balanced lever, coupled with MAC coil spring. The action will positively thrill any operator. Case hardened steel bearing screws, heavily chromed. Carefully machined and very heavily chromium plated throughout. Heavy $\frac{3}{8}$ in. contacts . . . 15/-



COMMERCIAL HAND KEY. Same base, lever and spring that delight the operator and make excellent sending so easy. Black crackle base, chrome parts above. Case hardened steel bearing screws. Heavy $\frac{3}{8}$ in. contacts 8/6

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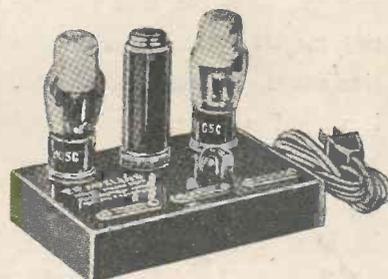
PROFESSIONAL HAND KEY. Same base and same case hardened steel bearings as all MAC Keys. Main lever designed to give everything in balance that one needs for anything from the lowest to the extreme high speeds. 12/6



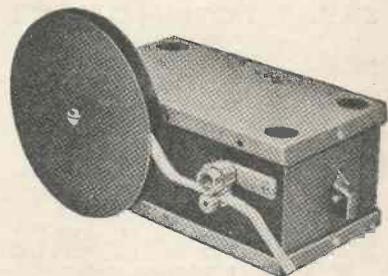
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Price £8. 0. 0.

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McElroy's Automatic Equipment can be hired by local Radio Societies, etc., at 7/6 per week. NOT hired to private individuals.

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TELEVISION

and SHORT-WAVE WORLD

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COMMENT OF THE MONTH

Making History

TWO events of great importance to the future progress of television have occurred during the past month. One was the decision of the B.B.C. to allow the Boon-Danahar fight at Harringay Arena on February 23, to be publicly televised and the other is the permission given by Sir Oswald Stoll to enable a monthly transmission to be made from the Coliseum. In the former case the B.B.C. are careful to point out that the permission to reproduce the transmission in certain places of public entertainment must not be regarded as a precedent, and that it must not be taken that any general extension of permission for the re-diffusion of B.B.C. television programmes in places of public entertainment is contemplated.

There is more in this apparent change of front on the part of the B.B.C. than is obvious for it is very probable that had it not been for the cinema relay, the B.B.C. would not have been given permission to transmit the fight at all.

It seems to us that this event provides an opportunity for making a good start in ending the opposition which exists between cinema interests and the B.B.C., and laying the foundations of a vast new industry. Quite obviously large-screen cinema television has got to come and advantage should be taken of this occasion for negotiations to place the whole scheme on a basis which will allow of the rapid development of cinema television. Up to the present progress has been entirely due to private enterprise with no immediate prospect of reward and the Baird Company are to be congratulated upon the foresight and research work which have made this public transmission possible.

The Dealers' Point of View

Resolutions put to the meeting of the Wireless Retailers' Association which found unanimous support were:—

1. Minimum picture size should be 6 in. by 5 in., and the 10-in. by 8-in. picture should be regarded as the normal standard.
2. Every chassis with a particular size of tube should be available as a sight-and-sound set only, and also combined with a normal broadcast set.
3. A standard guarantee covering a twelve months' period is desirable.

There is one of these resolutions with which we are not in agreement and this is the minimum picture size. As we have so frequently pointed out the only method of reducing the cost of a receiver is by the use of a small screen and it appears to us that with the minimum size of screen stated a large number of people will, for some considerable time at all events, be precluded from owning a television receiver. In cases where the number of viewers does not ordinarily exceed three the small screen receiver is quite capable of providing excellent entertainment.

BUYING A RECEIVER— SOME USEFUL POINTERS

IT is fairly safe to say that the first considerations a prospective buyer of a television receiver will have are price and picture size. As a matter of fact these two factors are bound up one with the other for, broadly speaking, the larger the picture, the higher is the price; there are, however, several other matters which have a bearing and merely to base the selection of a receiver on a price-picture-size basis would be wrong.

Picture Size

For some considerable time after the present television service was introduced, the general complaint was that the pictures were too small. This was at the time when there were very few private viewers and the public had, therefore, judged by public demonstrations and in most cases had been a considerable distance away from the receiver. For public viewing the ordinary size of screen is certainly too small, but complaint of picture size is rarely, or never, heard from those who have receivers installed in their own homes. It is to be admitted that for viewing in large rooms large pictures have certain advantages as the receiver can be placed at a considerable distance away and viewed in comfort.

Picture size is closely concerned with definition; a very large picture cannot be viewed at close range without the scanning lines being visible, so where space is limited a moderate sized picture is definitely an advantage for the viewer. At a distance of approximately 6 ft., the picture detail is good and imperfections are reduced to such an extent that they are practically invisible.

Reference to the specifications on other pages in this issue will show that, excluding special projection receivers which are in a class by themselves, the average screen width is approximately $8\frac{3}{4}$ in., but that the most popular size of screen is 10 in. by 8 in., a size which enables a reasonably compact receiver to be produced at an economic price.

Now what of the really small screen receivers? Usually these give excellent pictures with remarkably good detail and considerable bright-

ness. For what may be termed "intimate" use, they leave little to be desired, but they will be found wanting in cases where the audience exceeds five persons. They certainly bear out the previous statement that price is closely related to picture size, for they cost no more than a good radiogram.

Price Reduction?

Many people are delaying buying a television receiver because of a belief that, as was the case in the early days of broadcasting, there will shortly be a considerable reduction of price. This argument needs but little refutation. In the first place the modern television receiver as regards construction, components and valves, is the equivalent of three really high-class broadcast receivers, so a little calculation will show that upon this comparison the television receiver is better value for money. Secondly, all the components used in a television receiver are wireless types. Price reduction in the case of broadcast receivers was made possible by mass production and improved methods of component manufacture, and experience of this has obviously been available for television purposes from the outset. It can be stated definitely, therefore, that little or no reduction of price is at all likely unless some revolutionary new system were to be developed and of this there is not the slightest indication. It may, therefore, be regarded as certain that there will be no appreciable price reduction in the near future, in fact, as many receivers are being produced at uneconomic prices the reverse is just as likely.

Direct or Indirect

A comparison of the types of ordinary receivers on the market will show that the larger proportion give pictures that are directly viewed as opposed to those in which the picture is viewed in a mirror placed at an angle of 45 degrees in the lid of the cabinet. From these proportions it might be assumed that the former, being the more popular, is the better. Actually, however, it is a matter for individual preference as there is

little material difference so far as the picture is concerned. The chief reason for using a mirror is that a saving of space (particularly back-to-front dimensions of the cabinet) is possible by allowing the tube to be placed vertically; but latterly there has been a tendency to produce cathode-ray tubes of shorter length and the advantage of placing the tube vertically has, therefore, been nullified to some extent, at all events in the case of receivers with moderate sized screens. As stated, the choice of one type or the other is really a matter of personal preference having regard to cabinet dimensions for pictures of equal sizes.

Range

The official range of the Alexandra Palace transmitter is 25 miles and it may be taken for granted that any receiver will be capable of giving good results up to this distance. This range, however, is conservative, and as a rule reception is possible at distances in excess of this. No manufacturer will sell you a receiver which will not operate in your particular district, and if you reside in an area outside the accepted range the makers will be prepared to advise and probably carry out tests. Fifty miles is, however, about the limit for consistent reception without special equipment. Some makers have available two models of the same type of instrument—one for use within the ordinary range and the other for distances, within limits, in excess of this. A greater number of valves are employed in the latter and the cost is naturally a little more. In addition there are pre-amplifiers available which will increase the range of any receiver, again within certain limits.

Control

Whatever make or type of receiver is selected it may be taken as a fact that the control is simple and quite within the ability of any ordinary person. Although in some cases a number of controls are provided, whereas in others there are, say, only two, operation in either case is really equally simple, for in ordinary conditions of use, it is only necessary to touch one or two.

There are a number of television
(Continued at foot of next page)

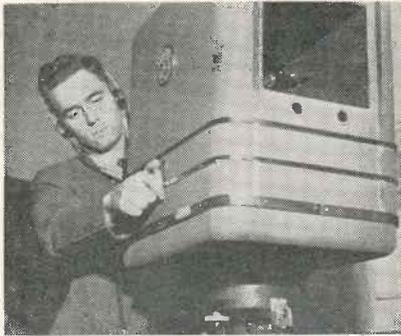
MARCH, 1939

GENERAL ELECTRIC (U.S.A.) TELEVISION

AS announced in last month's issue, the General Electric Company of New York are now erecting a television station at Indian Ladder in the Helderberg Hills, 12 miles from Schenectady, N.Y.

The site is the top of a 1,500-ft. hill with the aerial on 100-ft. towers and it is stated that it will be at least 250 ft. higher than any other television transmitter in New York. The equipment will incorporate many new features developed by General Electric engineers.

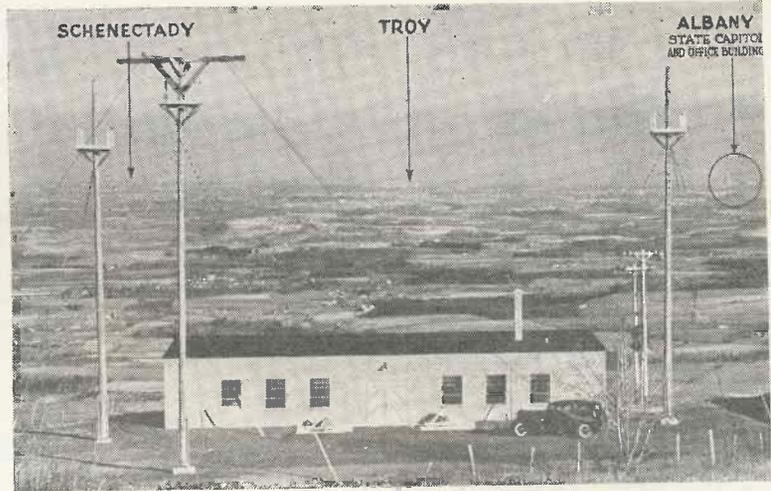
From an ultra short-wave transmitter on the studio building, the signals will be relayed over the 12-mile



General Electric's television camera. The small, circular holes contain red lights which glow, signalling the actors when the camera is in operation.

gap on a 1.4 metre band to the main transmitter in the Helderbergs, where they will be broadcast for public reception on a wavelength in the 66-72 megacycle band or approximately $4\frac{1}{2}$ metres. The sound signals accompanying the picture will also be broadcast on the same band, on a frequency close to that of the vision signals.

The General Electric Company has been conducting television research for the last 10 or 12 years, and much of the pioneer work was done in the company's laboratories by Dr. E. F. W. Alexanderson; his first transmission was made in the autumn of 1928, and a year or two later a demonstration was given in a local theatre on a 7-ft. screen, with vaude-



The New General Electric television transmitting station will cover an area comprising Schenectady, Albany, Troy, Amsterdam and Saratoga, known as the Capital District, with a combined population of more than 500,000. The tower to the left supports the receiving antenna, picking up studio signals radioed from Schenectady; the next is to broadcast the pictures, and the one to the right is the sound aerial. The small pole to the right is part of the power line, bringing electricity up the mountainside to the station.

ville actors in the laboratory studio at a distance of about one mile. The sound accompanying the picture on this occasion was broadcast by WGY on its regular wave band.

More than 250 valves are included in the complete television transmission equipment, many of which are of new design. The antenna used is a novel type resembling a cube of wires strung from the three 100-ft. poles.

Last year General Electric engineers visited Europe to investigate and study television in England, Germany, and Holland.

"Because of its ideal location and the fact that it will utilise at least 30 per cent. more power than any

existing television station in this country, this station should have greater range than the one on top of the Empire State Building," explained C. A. Priest, the engineer in charge for General Electric. "We shall not use coaxial cable between our studio and the station but an ultra high-frequency sharp directional transmitter, because in our opinion this will produce better results."

The building and the towers at Indian Ladder have been erected, a roadway constructed, a well sunk to supply the necessary water for cooling the tubes, and a start has been made with the installation of the equipment.

"Buying a Receiver"

(Continued from preceding page)

receivers on the market which have erroneously been termed add-on units and adaptors intended for use in conjunction with existing broadcast receivers, and it appears that a certain amount of misconception exists in regard to these. Actually, they comprise a complete vision receiver, but use is made of the broadcast set by means of a convertor included in the same cabinet as the vision receiver for the provision of the sound accompanying the vision signals. Actually, therefore, the broadcast set has nothing whatever to do with the reception of the picture or its reproduction. By utilising the broadcast set for sound a considerable economy in price can be effected and the instrument made more compact.

The Aerial

Then there is the matter of the aerial which must be a special type termed a di-pole. One aerial, which is a vertical type and quite compact will serve for both sound and vision signals and usually its erection is a simple matter. Some makers include the aerial and its installation in the price of the receiver, whereas others make a separate charge. Though the charge is only a few pounds it is a matter which should be taken into account of any price comparison.

All makers give twelve months' guarantee and free service within that period, and it should be remembered that if desired any receiver may be purchased on hire-purchase terms for, in some cases, a matter of a few shillings a week.

KOLORAMA TELEVISION

AN AMERICAN MECHANICAL-OPTICAL SYSTEM

Details of a mechanical-optical television system designed to operate at comparatively low frequencies.

ALTHOUGH most American television companies of late have solely concerned themselves with the development of electronic methods, the mechanical-optical side has not been neglected in the U.S.A. A company that has devoted a great deal of attention to the latter is the Kolorama Laboratories of Irvington, N.J., and very successful results have been obtained.

Adequate coverage in a country the size of America is a difficult problem, but the Kolorama Laboratories have developed a plan which they claim is sound, both technically and economically, and which would permit a nation-wide television service in the shortest possible time.

American Standards

They claim that this is not possible with the standards set by the R.M.A., which are 441 lines, 60 fields, interlaced, and 3 by 4 aspect ratio. They suggest the use of two standards: first, the present R.M.A. standard of 441 lines 60 fields for coverage of local areas as at present planned and as limited by the ultra high radio frequencies required—and

second, a standard using 225 lines, 24 fields, or in any event, a standard which permits the use of a signal frequency of not more than approximately 300,000 cycles; this second standard they state will utilise lower radio carrier frequencies, capable of covering large areas so that all of the public of America can have television without any considerable delay.

frequency is 12 per second. The highest frequency requirement is only 250,000 cycles.

Mechanical-Optical System

The Kolorama system is entirely mechanical-optical and the broad principles of the receiver are shown

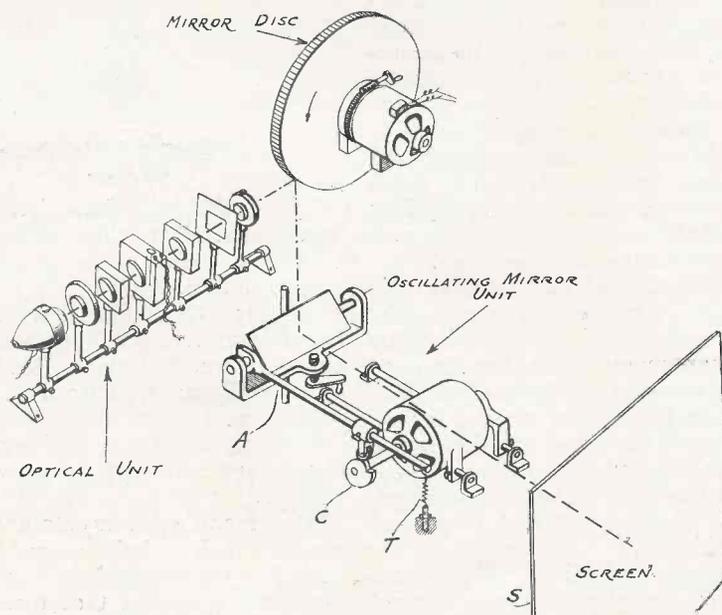


A photograph of a 5-ft. by 4-ft. picture produced by the Kolorama mechanical-optical system.

Kolorama pictures are scanned with 225 lines, interlaced. The field frequency is 24 and the frame

schematically by the drawing. As will be seen, a pencil or beam of modulated light from an optical light-modulating system is projected on the periphery of a rotatable disc which is provided with a series of mirror surfaces each of which is identical with every other and normal to the radius of the disc. The beam of light is reflected from the surfaces upon an oscillating mirror the axis of which is at right angles to the axis of the disc. An arm A is secured to the mirror and is in contact with the cam C. As the cam rotates the mirror pivots about its axis in one direction and then by reason of the shape of the cam C and the action of tension spring T is made to quickly return to the starting position.

The light beam is thus reflected from two moving mirrors and covers every portion of the screen S. The mirror disc, the oscillating mirror and the light-modulating unit are positioned with respect to one another so that a beam of light



Schematic diagram of Kolorama mechanical-optical receiving system.

emanating from the latter is reflected from the mirrored surfaces on to the oscillating mirror. The rotary movement of the disc causes the beam to be swept successively along the oscillating mirror longitudinally at a frequency depending upon the number of mirrors upon the disc and upon the speed at which the disc rotates. The oscillating mirror is, of course, sufficiently long to contain the beam reflected by the respective mirrors as each moves through the arc which it subtends.

The arcuate motion produced by means of the cam C and the contactor is a saw-tooth motion, or one which comprises a uniform slow angular motion in one direction during which scanning takes place

and a quick return motion in the opposite direction to return the mirror to its initial position. The vertical scanning is thus always performed in the same direction and sense, as for instance from bottom to top.

The cam rotates at a speed equal to the number of pictures or images desired per second. If twenty-four pictures per second are desired, the motor rotates the cam C at a speed of 1,440 r.p.m. The motors, of course, are synchronised by the signals from the transmitting station.

Demonstrations of this apparatus have been given and the accompanying photograph shows the results obtained. On this occasion the picture was projected on a screen measuring 5 ft. by 4 ft.

newal is the light source; motor wear will be negligible and the motor should be good for many thousands of hours' use.

No arrangements have as yet been made for marketing this receiver and the price at which it will be sold has not been decided upon, but it is expected that including all-wave radio it will be a figure less than £100.

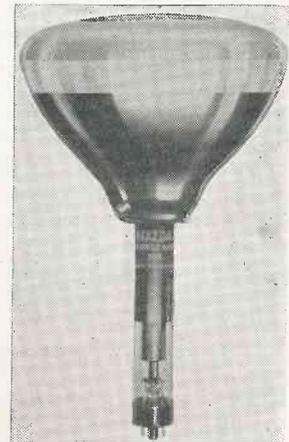
Ediswan Tubes

THE magnetically-focused tubes supplied by the Edison Swan Electric Co., Ltd., are made in three types with 7 in., 9 in., and 12 in. screens. These are known as: CRM.71, CRM.91 and CRM.121 respectively.

The largest size operates with an anode voltage of 5,500 and has a working grid bias of 30-60 volts.

The tubes are indirectly heated from a 2-volt supply and are notable for their extremely short overall length. The figures quoted by the manufacturers are:—

CRM.71	CRM.91	CRM.121
37 cms.	36 cms.	46 cms.



The Ediswan short Cathode-ray tube.

This compact dimension contributes materially to the neatness of the television receivers in which these tubes are fitted.

Among the television receiver manufacturers using Ediswan tubes are: Messrs. Burndept, E. K. Cole, Kolster Brandes, Murphy, R.G.D. and Ultra.

The focusing coils require approximately 450 ampere turns at working voltage.

The manufacturers state that at present their whole output is absorbed by the requirements of set manufacturers, but that these tubes will be available for amateur use as soon as adequate stocks are built up.

The Mihaly-Traub System

RECENT PROGRESS

FROM time to time we have reported the progress made in the development of the Mihaly-Traub system. This, as most of our readers are aware, is a mechanical system employing a stationary arc of mirrors with a centrally placed revolving polygonal mirror, the advantage gained by this arrangement being the comparatively low speed of the polygon, actually about 13,000 revs. per minute.

Originally designed for low-definition television, there has been progressive development and the problems which the introduction of high-definition television provided have all been overcome, in fact, the results which the Mihaly-Traub receiver now give on the B.B.C. transmissions are the equal of any other type of receiver, either cathode-ray or mechanical-optical. Synchronising was a great problem and until the rest of the apparatus was perfected mains synchronising was employed, but now the receiver is entirely radio synchronised and the picture remains perfectly steady both on the studio and outside broadcast transmissions.

Two scanners are employed, one for line and the other for frame, and both are actually driven by the synchronising signal after amplification. Each motor requires approximately 6 watts so the demands are not excessive, and as the motors are driven by the signals synchronism is absolutely correct unless there is some fault in the transmission.

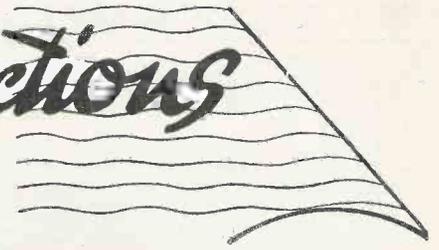
The present picture size is 24 in. by 20 in., but it is considered that in the case of home receivers, this size could with advantage be reduced as this would allow of a more compact instrument and consequently, the use of a smaller cabinet. The picture is a sepia colour and is really very bright, so bright, in fact, that it can be viewed comfortably in but slightly subdued artificial lighting.

The light source employed at present is a self-feeding arc and this is the only remaining feature with which the designers are not satisfied, because although the illumination remains perfectly even over very long periods, it is appreciated that the attention it will require, such as changing carbons, etc., precludes its use by the average person. Naturally, the high-pressure mercury lamp has been tried, but not with entire satisfaction as regards life and reliability and therefore, research is still proceeding with this final problem.

It is a point of interest with this apparatus that though the results now compare with those obtained by any other method, the fundamental system remains unaltered from the time when it was first adapted for the reception of the high-definition transmissions; the final results are almost entirely due to a painstaking elimination of trivial faults and a general "cleaning up."

Excluding switching on, the receiver is virtually one knob control and is very easy to operate. The only unit that it appears will require re-

Scannings and Reflections



TRANSMISSION FROM THE COLISEUM

THE fact that the London Coliseum is now being wired for television and that regular monthly shows are to be given, is good news for viewers. The programmes will consist of the first half of the regular show in the second house, starting at 9 o'clock and lasting for an hour. The cameras have been arranged so that they do not interfere with the normal show as in the case of "Twelfth Night," in which a considerable part of the theatre was taken up with the television apparatus. It is transmissions of this kind which will do so much to further the sales of television receivers.

TELEVISION IN THE U.S.A.

Now that television has really got going in the U.S.A. it is expected that it will advance very quickly. American engineers feel quite sure that they will rapidly overtake television developments in this country, and that before long they will have a really large number of sets in commission. While we have the only regular television service in the world with a range of about 50 miles, it is expected that this range may be exceeded in America. It is also claimed that a coast-to-coast hook-up with television in the same way as with ordinary radio will not be very long in following the inauguration of the first public television service.

SHORT WAVES IN FINLAND

British commercial short-wave equipment is being supplied to most countries of the world, and the latest to install British gear is Finland, which country has just purchased a 50-kilowatt station from the Marconi Wireless Telegraph Co., Ltd., to be installed at Pori. The station is to be completed in time for the Olympic Games which are being held in Finland in 1940.

AN IMPORTANT TELEVISION EVENT

When the French President arrives at Victoria on March 21 he will be

televised when he steps from the train to be greeted by the King. The television cameras are being mounted on a high platform inside the station while other cameras will pick up the arrival of the King, and later the departure of the procession. It is hoped that this transmission will be more successful than the previous one when King Carol of Rumania was televised as this was rather spoilt by fog.

THE BOAT RACE

Viewers this year will be able to see both the start and finish of the Oxford and Cambridge Boat Race. It will be remembered that last year only one mobile unit was in operation to televise the finish. This year, cameras on a balcony on the Surrey side of Putney will show the crews paddling to the starting point just before 10.30 a.m. It is hoped by means of tele-photo lenses to follow the crews until they round the bend at Craven Steps. From thence until the boats reach Barnes Bridge, John Snagge's running commentary on the National wavelength will keep viewers in touch, after which the cameras will show the final three or four minutes until the boats pass Mortlake Brewery on which the cameras are mounted.

USING THE TELEVISION CABLE

It is interesting to note that the transmissions from the London Coliseum will be conveyed by cable to Alexandra Palace for radiation. This shows that the cable is satisfactory as regards transference of the wide television band required even though it has still not been used for very long distances. The transmissions from the Coliseum should be technically very good for the cameras are being placed at the side of the dress circle to give comprehensive long shots and also close-ups of any portion of the stage. The transmissions from the Coliseum are scheduled for March 14, April 18, May 23, June 20, and a date in July to be announced later.

TELEVISION IN CINEMAS

The general public in London will soon become television minded should

the Gaumont British Picture Corporation be successful in their negotiations with the British Broadcasting Corporation for permission to publicly show televised events. Both the Tatler Theatre and the Marble Arch Pavilion are wired for television with screens measuring 15 feet by 12 feet. It is not expected that this public television will counteract sales of home receivers or cause any loss of attendance when events such as boxing matches, are being televised.

AMERICAN AND BRITISH TELEVISION SALES

A friendly wager has been made between the British and American television manufacturers to see which can sell the biggest number of receivers during 1939. The wager is for a dinner, in either London or New York, to the Television Development Committees of the Radio Manufacturers' Associations of the two countries, the dinner to be paid for by the losers. Television sets are not as yet on sale in large numbers in America, so that there will have to be a very big increase to win. The weekly rate of sale, however, is increasing very rapidly.

TELEVISION ADVISORY COMMITTEE

The Postmaster-General recently announced that Lord Cadman has accepted the chairmanship of the Television Advisory Committee which became vacant through the death of Lord Selsdon. This Committee includes representatives of the Departments of Industrial and Scientific Research, the British Broadcasting Corporation and the Post Office. Its function is to advise the P.M.G. on the development of the television service. Lord Cadman was formerly the chairman of the committee of enquiry into civil aviation.

"THE UNQUIET SPIRIT"

Catherine Lacey has been booked to appear in Jean Jacques Bernard's brilliantly original play "The Unquiet Spirit," which is to be televised

MORE SCANNINGS

in the evening programme on March 3. The English translation is by J. Leslie Frith.

This is a play with an interesting idea subtly communicated to the audience less by what the characters say than what they withhold. With compelling suggestion, the author builds upon the theme that every one has one, and only one, completely sympathetic "mate"; that proximity to this twin soul, whether there be recognition or not, leads to profound emotional disturbance and, possibly, disaster.

Marceline, played by Catherine Lacey, is the supposedly happy wife who becomes the tragic figure in this play of unusual imagination.

"HARLEM IN MAYFAIR"

Harlem will come to Alexandra Palace via Mayfair on March 6 when the all-coloured cabaret from the Old Florida Club will give a half-hour television programme. Topping the bill is Adelaide Hall, the coloured vocalist who has won a great reputation on both sides of the Atlantic. With her in this lively programme will be Marko Hlubi and his Tom-Toms; Esther and Louise; Eddie Lewis; and Felix Sowande with his Negro Choir and Orchestra.

"ROPE"

Ernest Milton takes his original part of Rupert Cadell in "Rope," the thriller by Patrick Hamilton, which is to be televised in the evening programme on March 8 and repeated in the afternoon of March 13.

The story of this powerful play, which has several times been broadcast, is based on a murder of some years ago, when two undergraduates murdered a boy of fifteen. Legally, the crime was without motive, but it provides a fascinating psychological study not only of the murderers but of the man who unmasked them.

N.B.C. TELEVISION NETWORK

Danton Walker, New York columnist, has stated that a £12,000,000 network is being formed for the broadcasting of television and radio programmes. When it was first announced, it seemed rather unlikely or at any rate very premature. However, this statement has received more backing from Edward Sullivan, the Hollywood columnist, who definitely states that the National Broadcasting Company will announce

that "trans-continental television is an assured engineering accomplishment" by the beginning of March.

AMERICAN RECEIVER SALES

The interest in television in New York is apparently booming for the Allan B. DuMont Company claims to have sold over 100 receivers in that area. These receivers are similar to those sold in this country. They have 21 valves and a 14-in. tube providing a 10 by 8 in. picture. The approximate cost is £80.

The General Electric Company of America plans to produce console and table model receivers and to provide demonstrations at the New York World's Fair. There is apparently already a sale for television sets in America despite the absence of regular programmes; it is claimed that dealers are using the apparatus as "crowd catchers."

ITALY AND INTERFERENCE

It is interesting to learn that the Italian authorities have issued a decree that users of apparatus that can cause interference to radio or television are liable to heavy penalties. A large number of viewers in this country wish that this law could apply here.

SPONSORED PROGRAMMES

American newspapers are rather inclined to deprecate the value of television as an advertising medium and devote little space in their columns to the advances that are being made. The reason for the lack of enthusiasm is that newspapers look upon television as a bigger competitor for advertising revenue than radio. Advertisers claim that one picture is worth 10,000 words and although broadcast words can describe, television can and will show the goods.

TELEVISION KITS

American manufacturers are now providing small television kit receivers for home constructors. They are publicising these with full page advertisements in well-known radio constructor journals, and it is felt that a new home constructor market will be made. The prices are low and, generally speaking, the receivers are fitted with 3-in. or 5-in. tubes. A fair amount of the construction is already done for the home builder, and the nature of the work is chiefly assembly.

TELEVISION QUESTIONNAIRE

The B.B.C. want to know how viewers like the programmes, which they prefer most, and all sorts of little things about length of programmes, timing and also whether they would prefer male announcers. The B.B.C. are having a big check up to make quite sure their service is a satisfactory one to all concerned. Who knows that before long the radio side of the British Broadcasting Corporation may also take an interest in how their programmes are received.

WHAT VIEWERS SEE

B.B.C. records show that during 1938 there were no less than 957 hours of entertainment excluding 300 hours of film transmission for trade demonstration purposes. About 25 per cent. of this time was devoted to drama with 18 per cent. to films, including news reels and cartoons. The balance was taken up by light entertainment, topical programmes and a little over 6 per cent. consisted of talks.

CHEAP TELEVISION

Now that television receivers of the "add-on" type are available for a little over £20, before very long listeners will begin to realise that a television set with 15 or 16 valves and an expensive tube is very good value for money and, in fact, is cheaper than many multi-valve radios. Alternatively, they may begin to wonder why radios are not even cheaper than they are.

A LONDON EXHIBITION

A mammoth television exhibition is being held at Selfridges where over £20,000 worth of modern equipment is being displayed. A Marconi E.M.I. television transmitter has been installed, complete with a glass-fronted sound-proof studio equipped with scenery, lighting and television camera. Visitors will be able to see practically every make of television receiver on the market working simultaneously, and it will be possible to compare each receiver under identical conditions. Also viewers will be able to see some of the artists being televised and also watch them on the screen at the same time.

There are also several historical items on show such as Baird's original gear which has been loaned by the Science Museum, South Ken-

BAIRD RECEIVERS SET A PERFORMANCE STANDARD BY WHICH OTHERS ARE JUDGED

Model T.18 is a complete Television Receiver combined with a very selective and high quality All-wave Radio, yet the compact cabinet housing the complete equipment is little larger than the usual Table Radio. The most recent developments in Television design are included, yet the price is below that of many modern Radio-gramophones. The set is easy to operate—and without any technical knowledge you can be confident of good results.

TELEVISION CONTROLS : These have been reduced to one which operates the Picture Contrast, and this will only need very occasional adjustment.

TELEVISION SOUND AND RADIO : The sound receiver is a super-heterodyne covering the Television sound waveband, and three bands for Radio programmes (Short : 16.5—51 metres ; Medium : 198—550 metres ; and Long : 850—2,000 metres). It is possible to receive the sound on the Television waveband either with or without the Picture by means of a switch integral with the Picture Contrast control. For Radio, stations are calibrated by name, and each waveband is individually illuminated. The reproduction is exceptionally fine since the set is capable of delivering an 8 watt quality output.

PICTURE SIZE : 10 in. wide by 8 in. high. Viewed direct.

POWER CONSUMPTION : 150 watts.

CABINET : The cabinet measures approximately 25 in. high, 18 in. wide and 16 in. from back to front. It is attractively designed as illustrated and is standard in walnut.



PRICE 44 GNS.

DEMONSTRATIONS ARRANGED



PRICE 35 GNS.

Model T.20 proves that Television for home installation need be neither a complicated nor a costly business, for here is a complete receiver no larger than a Radio set, yet capable of giving an excellent picture with all that wealth of detail for which Baird receivers are known, together with quality sound reproduction. Controls have been reduced to a minimum and no skilled technical knowledge is needed to operate the set and get the best out of it.

The very attractive price should make this model the means of bringing Television into many homes where the interest of this most modern source of entertainment has as yet not been enjoyed.

CONTROLS : The T.20 has two main controls on the front of the cabinet. Picture Contrast and Sound Volume.

POWER CONSUMPTION : 150 watts.

SOUND : A superhet radio receiver is fitted and this is pre-set to receive Television sound.

PICTURE SIZE : 7½ in. wide by 6¼ in. high. Viewed direct.

CABINET : The Walnut Cabinet measures approximately 22 in. high, 18 in. wide and 13 in. from back to front. It is beautifully made and well finished.

*Send for full descriptive literature.
Post Free.*

NAME AND ADDRESS OF YOUR NEAREST DEALER
FURNISHED ON REQUEST.

BAIRD TELEVISION LTD.

Lower Sydenham, London, S.E.26

Telephone: HITHER GREEN 4600.

Telegrams: TELEVISOR, FOREST, LONDON.

TELEVISION PICTURE FAULTS AND THEIR REMEDIES—IV

By S. West

The fourth article of a short series dealing with faults in television receivers, the effect of which on the pictures is illustrated by actual photographs.

LAST month we considered the requirements of synchronism for the horizontal circuits. In the case of synchronism for the vertical scanning circuits the effects are somewhat different, though the causes are the same. With pulses of insufficient amplitude, the frame hold is insecure, the picture will then travel upwards across the screen or may even assume



Fig. 1.—In this photograph the displacement of the top part of the picture is clearly rendered. This is due to incorrect line synchronising pulse application networks.

the form shown in the photograph reproduced in the January article (Fig. 4). If the frame pulse has too great an amplitude or if this pulse is poorly filtered the picture will tend to blink, or even assume permanently the form of the photograph also reproduced in the above article (Fig. 5).

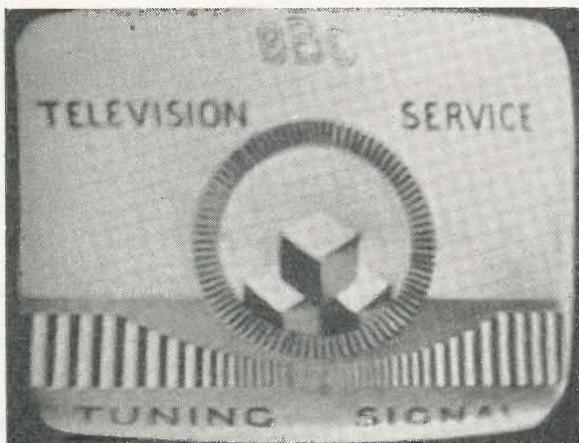


Fig. 2.—Here the effect of poor line synchronism during the framing period is revealed. Note the instability present at the top of the picture.

If there is a substantial hum content in the sync. pulse output and if there is an appreciable phase difference between the mains supply of the receiving station and that of the transmitter, as is highly probable in districts remote from the transmitter, the picture will tend to lock at some intermediate position on the screen, thereby providing two equivalent fractions of the picture. It is of cardinal importance that there be no A.C. ripple present in the sync. filter output. Attainment of correct interlace under such conditions is impossible, but this will be more fully dealt with when considering the subject of interlacing.

It is now necessary to deal with a fault peculiar to the line time base only.

Reference was made earlier to the half-line pulses maintained during the vertical synchronising. It is to these we can attribute a very common trouble in television receivers. Namely, the tendency for the top part of the picture to be horizontally displaced, the subject matter therein appearing to lean sideways (see Fig. 1). In some cases this horizontal displacement will not be maintained stably, the top edge of the picture fluttering in an irritating manner.

This effect is a little difficult adequately to convey with photographs but careful study of Figs. 2 and 3 will give some idea of the effect. Note in Fig. 2 the "B.B.C." is fuzzy, showing that this portion of the picture has moved during the exposure. The "Television Service" suffers in like manner though here the effect is not so marked. The lower half of the picture has remained perfectly steady. Comparison with the same parts in Fig. 3 shows the latter to have remained steady throughout the exposure.

To appreciate the reason for this it should be remem-



Fig. 3. In this photograph the line synchronism is well maintained during the framing period as is revealed by the steadiness of the upper portion of the caption. The slight-off vertical inclination of the lettering is due to bulb curvature.

Telegossip

A Causerie of Fact, Comment and Criticism

By L. Marsland Gander

I SHOULD find the reports of successful results in the "television drive" more convincing if the organisers substantiated them with sales figures. Concealment is serving no purpose save to foster in the public mind the false impression that sales are so negligible as to be not worth mentioning.

As a fact the sales continue to be encouraging but there is nothing like a boom. Mr. H. G. Selfridge, junior, who is helping to crack the whip in this drive with his enterprising exhibition in Oxford Street, told me the other day that just over ten per cent. of his firm's radio sales in the London area were television purchases. Incidentally, I tackled him about a report that he had offered a large sum of money to sponsor a series of television programmes.

This story, it seems, is entirely without foundation. It probably arose because he is both a television "fan" himself and a believer in sponsored programmes. But Mr. Selfridge is of opinion that there is no possibility of programmes financed by advertising here. Even financial difficulties will not drive the Government and the B.B.C. into it. Yet the decision to allow reproduction of the Boon-Danahar fight on Baird big screens to paying cinema audiences is most significant as a move towards commercialisation of a kind.

Public Cinema Television

There have been long negotiations and discussions behind the scenes over this question. The B.B.C. is making no payment for the privilege of televising the fight, but the promoter was authorised to make his own terms with the Gaumont British Picture Corporation which wanted to show the contest on the same night at two of its West End cinemas. There has been a long struggle behind the scenes of the B.B.C. over this question.

A powerful faction wanted to keep television exclusively as a home entertainment and argued that the big screen was at present an indifferent advertisement for television. Others pointed out, however, that boxing promoters had already set their faces against televising except on prohibitive terms and that the big screen,

with its possibilities for commercialisation, offered a solution of the difficulty. Eventually the Television Advisory Committee debated the matter and the "progressives" won—for the time being.

But even then the B.B.C. had some misgivings. When the National Sporting Club was talking of raising £35,000 by means of cinema television in order to persuade Joe Louis to fight over here, the B.B.C. issued a special announcement pointing out that the arrangement for the "Boon-Danahar fight" must not be regarded as a precedent.

But one thing is certain, that it would be wanton obstructionism to stop the forward march of the big screen on which so much ingenuity, time and money have been expended. On the face of it the arrangement made by the B.B.C. in this case seems an excellent way out of an impasse. Personally I do not see any reason to fear that this is the thin end of the wedge towards a sponsored system alien to the normal practice of the B.B.C. The principle involved is entirely new, without any precedents in sponsored broadcasting.

The Questionnaire

Postcards and letters at the rate of about 1,000 a day have been pouring into Alexandra Palace in response to the B.B.C. invitation to viewers to take a hand in constructive criticism of the programmes. At the time of writing the grand total of names for entry into this television "Doomsday Book" is about 4,000. This response is decidedly more encouraging than that when the B.B.C. made a similar request a few months after the service started. At that time they had about seventy replies!

What a pampered person the televisioner is by comparison with his brother restricted to sound programmes! The B.B.C. does everything to encourage and court him, short of presenting him with a pound of tea. Every viewer has had about £150 worth of entertainment in exchange for ten shillings, a pretty fair profit!

"Do you prefer men or women announcers?" is one of the questions in this "quiz." The majority have answered that they are more con-

cerned with personality than sex. There is a big demand for a Children's Hour, and Mr. Gerald Cock hopes to provide one shortly on Saturday afternoons.

Other televisioners, myself among them, would like an earlier start in the evening.

Test Transmissions

There is a revolt among dealers and manufacturers just now against the morning film which gives snippets from ancient programmes transmitted at the start of the service. Protests have been made to Alexandra Palace, but so far without result. It is futile for the B.B.C. to contend that this film is simply intended to help the trade with installations.

Whatever the purpose the fact is that demonstrations are being given daily, and on it the public will form an entirely wrong impression of the programmes of 1939. I myself saw crowds round the sets at the Selfridge's exhibition, watching with that "so this is television," expression. There must be innumerable old films which the B.B.C. could use without recourse to this worn-out relic. A different film every day ought to place no great strain on the A.P. film library.

A great hunt is now in progress for the ideal "outside commentator" for television. Applicants have been on parade at Alexandra Palace like the girls in a "Miss California" competition, except that they were not obliged to wear bathing costumes. Finally Robin Duff, one of the Empire announcers, was chosen to broadcast the auto-gyro demonstration at Hanworth. He has the round face and well proportioned features, to say nothing of the Adonis profile, which the B.B.C. considers the best masculine televising material.

The mobile units now have six super-Emitrons at their disposal, but lately camera improvement has been offset by an unfortunate crop of technical hitches. I give full marks to producer Dorté for his Sunday programme ideas and wish him better luck with his transmissions.

I hear that pressure of rearmament work on some of the firms concerned is tending to hold up B.B.C. plans for converting the old Theatre.

Television in Your Home

THE RECEIVERS YOU CAN BUY —A COMPLETE GUIDE

In presenting this Buyer's Guide to our readers, we believe that it is complete and represents the latest information regarding all television receivers that are on the market. Upon request, we shall be pleased to amplify or provide special information in cases where prospective buyers desire more detailed particulars than it has been possible to give in this review.

PICTURE SIZE:—18 INCHES TO 24 INCHES WIDE

Maker.	Type.	Cabinet.	Price.	System.
Philips.	Television sound, all-wave radio.	Console.	£126 0 0	Cathode-ray projection.
Scophony.	Sound and vision.	Console.	£231 0 0	Mechanical.

TELEVISION receivers that produce pictures of sizes larger than approximately 14 in. by 11 in., are of necessity special types. This is because it is a difficult matter to make cathode-ray tubes in large sizes owing to the enormous atmospheric pressure, which on the screen end alone may amount to more than half-a-ton. There are two solutions to the problem of the large picture—one is by the use of a special cathode-ray tube upon the screen of which an intensely bright, though small, picture is produced which is then projected on to an external screen by means of a special lens system and the other is by mechanical-optical methods in which a beam of ordinary light is caused to traverse the screen, its intensity being varied in accordance with the received vision signals. The results obtained with either system may be said to be equal and both have certain advantages.

The design of the cathode-ray projection receiver follows ordinary cathode-ray receiver practice except that in order to obtain a picture sufficiently bright for projection, comparatively high voltages are used. In the mechanical-optical receiver quite low voltages are employed, but there are mechanical moving parts. Both systems are entirely satisfactory, though there is necessarily a little more elaboration than there is in the case of the ordinary type of cathode-ray receiver such as is used in receivers providing pictures of sizes less than those mentioned above.

Philips Projection

The projection screen of the Philips receiver automatically rises into its correct position when the lid of the cabinet is lifted. A slow motion device prevents damage to the glass screen and mirror by too rapid closing of the lid. The picture size is 18 in. by 14½ in., and the brilliance and definition are such that it can be viewed in comfort and under normal conditions. A Mullard 4-in. diameter projection type cathode-ray tube is employed and operates from a 25,000-volt supply.

Focusing and deflection are entirely magnetic. The

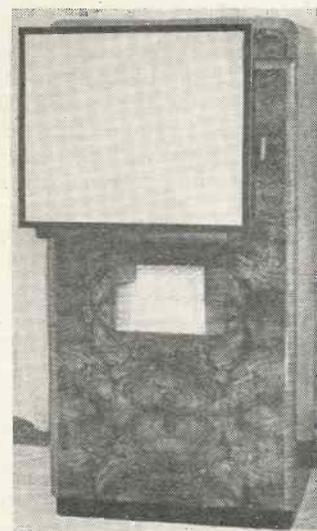
tube is mounted with the projection lens in a metal case provided with gimbals to facilitate optical centring of the picture on the projection screen. The 25,000-volt supply for the operation of the cathode-ray tube is obtained from a voltage doubling rectifier unit using two Mullard 1878 H.T. rectifiers. The whole extra high tension equipment is contained in an earthed steel case with interlocked switches and an earthing device on the door. Opening the door breaks the supply to the rectifier and automatically earths the extra high tension terminals, thus making the equipment completely shock proof.

The television and broadcast equipment consists of five units:—

1. Vision and sound receiver with synchronising separator.



The Philips projection receiver giving a picture size 18 ins. by 14½ ins.



Scophony mechanical-optical receiver. The screen measures 24 ins. by 20 ins.

MARCH, 1939

2. Frame and line time bases and H.T. supply.
3. E.H.T. equipment.
4. Projection assembly containing the cathode-ray tube.
5. Broadcast chassis type 753A.

In addition to reception of the television programmes, normal broadcast reception is afforded by a high-fidelity all-wave receiving unit.

Scophony Mechanical-optical

The Scophony mechanical-optical receiver gives a picture 24 in. by 20 in. The colour is bluish-black and white on a flat screen. Operating voltages are low, in fact not much in excess of those in an ordinary broadcast receiver. The light source is a super-pressure mercury lamp. The receiver incorporates (1) the Scophony supersonic light relay which makes it possible to employ, in this type of receiver, nearly

200 elements of the picture simultaneously, and (2) the special optical invention of focusing in two distinct focal planes (split focus) which makes it possible to reduce the size of moving parts whilst retaining the fullest amount of light.

The total number of valves used is 39 including all rectifiers, and the mercury-lamp power supply. The total consumption of the receiver when working is 1,000 watts.

The controls are quite simple. Starting is by means of a delayed push-button switch. This switches on all filaments, power supplies and mercury lamp. There is one control for sound volume and one control for vision gain; this knob controls the contrast. Another control is provided for picture brightness.

On the scanners there is one speed control with synchronising locking switch and one for frame adjustment. A focus control knob is also provided, but this has to be seldom used.

PICTURE SIZE—12 INCHES TO 14 INCHES WIDE

Maker.	Type.	Cabinet.	Price.	System.
Baird.	Television sound, all-wave radio.	Auto-radiogram.	£126 0 0	Cathode-ray indirectly viewed.
Baird.	Television sound.	Console.	£63 0 0	Cathode-ray directly viewed.
Cossor.	Television sound, all-wave radio.	Console.	£50 8 0	Cathode-ray directly viewed.

Baird

The Baird Console model T23 has been designed primarily for installation in hotels and clubs, for the size of the picture (13½ in. by 10¾ in.) enables a large number of people to view simultaneously. The T23, of course, is suitable for installation in the home where a large picture is desired. There are three main controls only, mounted on the front of the cabinet: picture contrast, brightness and sound volume. The power consumption is 200 watts.

A high-fidelity sound receiver is fitted and this is preset to receive television sound. The walnut cabinet measures approximately 43½ in. high (with lid closed), 25 in. wide, and 20 in. from back to front.

The "Cathovisor" cathode-ray tube is 15 in. in diameter and is mounted vertically and protected with a window of safety glass. The vision, sound and time-base generator chassis are mounted on a removable shelf above the H.T. and power units which are fitted at the base of the cabinet.

One power pack supplies current to the vision, sound and time-base generator. The other power pack feeds the anode voltage to the "Cathovisor" cathode-ray tube and five special resistor tapings supply variable bias for controlling picture brightness.

Baird Radiogram T14. An elaborate instrument designed to receive the television and also the radio broadcast programmes, and to act when required as a luxurious radiogramophone. This receiver provides a picture 13½ in. by 11 in., which is viewed in a hinged, part-mirrored lid. The gramophone is fitted with an auto-record changer which plays records of any size in any order. The superhet radio receiver covers the television waveband, and on the operation of a single switch three broadcast bands, as follows: short, 16.5 to 51 metres; medium 198 to 550 metres; long 850 to 2,000 metres.

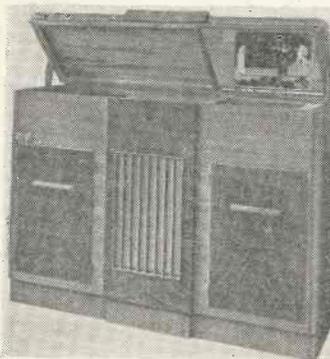
The power consumption is 250 watts and the cabinet measures 58 in. wide; 42 in. high and 20 in. back to front.

Cossor

This instrument, Model 1210, incorporates the latest type of Cossor giant tube (glass protected) giving a direct-vision black and white picture 12 in. by 9½ in. approximately. It is simple to use, there being only three television controls. Also included

Below: The Baird combined television receiver, radiogram and broadcast receiver. Picture size is 13½ ins. by 11 ins.

Right: The Cossor large picture (12½ ins. by 9½ ins.) console combined television and broadcast receiver.



in the cabinet (which is 48½ in. high, 20½ in. wide and 24½ in. deep) is a high-fidelity superhet radio receiver covering three wavebands, viz., 16-52 metres, 195-560 metres and 810-2,085 metres. This model has 21 valves and gives television reproduction up to approximately 20 miles from Alexandra Palace. The price is 48 gns.

Another model, 1210A, of the same type but with 24 valves, to give the extra power necessary for ranges over 20 miles and for exceptional conditions, is available for 51 gns.

10 1/4 INCHES BY 8 1/4 INCHES

Maker.	Type.	Cabinet.	Price.	System.
Ultra	Sound, and vision.	Console.	£39 18 0	Cathode-ray directly viewed

Ultra

The Ultra model T24 is a console instrument for sound and vision only and considering the picture size, is a remarkably compact instrument. The picture is directly viewed. A patented circuit reduces the number of valves required. Eight valves in a superheterodyne circuit receive both sound and vision signals. Double couplings give freedom from distortion and "cross modulation" troubles. The couplings in the sound amplifier are designed to give a total band width of some 40 kilocycles, resulting in high standard of fidelity.

The power unit comprises two Mazda full-wave rectifiers, transformers, chokes and smoothing condensers. High tension for the cathode-ray tube is derived from a special transformer feeding a Mazda U21 slow-heating mercury rectifier, an arrangement which prevents surges and reduces breakdown possibilities. The cabinet is of particularly neat design.

10 INCHES BY 8 INCHES

Maker.	Type.	Cabinet.	Price.	System.
Baird.	Television sound, all-wave radio.	Radiogram.	£75 12 0	Cathode-ray indirectly viewed.
Baird.	Television sound, all-wave radio.	Console.	£49 7 0	Cathode-ray directly viewed.
Baird.	Television sound, all-wave radio.	Table.	£46 4 0	Cathode-ray directly viewed.
Burndept.	Sound and vision.	Console.	£47 5 0	Cathode-ray directly viewed.
Cossor.	Television sound, medium and long.	Auto-radiogram.	£94 10 0	Cathode-ray directly viewed.
Cossor.	Television sound, medium and long.	Console.	£73 10 0	Cathode-ray directly viewed.
Dynatron.	Television sound, all-wave radio.	Auto-radiogram.	£173 5 0	Cathode-ray directly viewed.
Ekco.	Sound and vision.	Console.	£51 9 0	Cathode-ray directly viewed.
Ferranti.	Television sound, all-wave radio.	Console.	£63 0 0	Cathode-ray directly viewed.
Ferranti.	Sound and vision.	Console.	£52 10 0	Cathode-ray directly viewed.
G.E.C.	Sound and vision.	Console.	£38 17 0	Cathode-ray directly viewed.
H.M.V.	Television sound, all-wave radio.	Auto-radiogram.	£126 0 0	Cathode-ray directly viewed.
H.M.V.	Television sound, all-wave radio.	Console.	£84 0 0	Cathode-ray indirectly viewed.
H.M.V.	Television sound, all-wave radio.	Console.	£63 0 0	Cathode-ray indirectly viewed.
Marconiphone.	Television sound, all-wave radio.	Console.	£84 0 0	Cathode-ray indirectly viewed.
Pilot.	Television sound, medium and long.	Radiogram.	£68 5 0	T.65.
R.G.D.	Television sound, all-wave radio.	Auto-radiogram.	£136 10 0	Cathode-ray indirectly viewed.
R.G.D.	Television sound, all-wave radio.	Console.	£94 10 0	Cathode-ray indirectly viewed.
R.G.D.	Sound and vision.	Console.	£78 15 0	Cathode-ray indirectly viewed.
Tannoy.	Sound and vision.	Auto-radiogram.	£89 5 0	Cathode-ray directly viewed.
Vidor.	Sound and vision.	Console.	£42 0 0	Cathode-ray directly viewed.

Baird

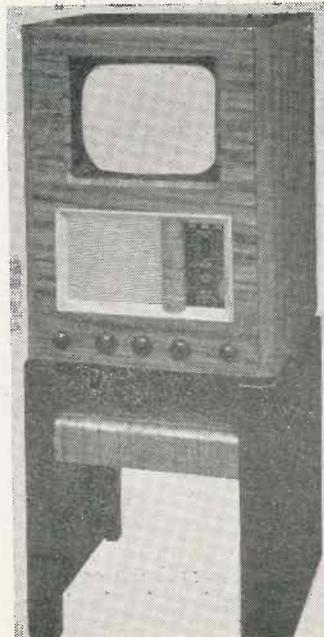
The Baird Radiogram T21 has, in addition to television and all-wave radio, the added attraction of a high-fidelity radiogramophone. A four waveband superhet receiver is fitted, covering the ultra-short television waveband and three additional bands for radio programmes: short, 16.5 to 51 metres; medium, 198 to 550 metres and long, 850 to 2,000 metres. The television sound may be received either with or without the picture by operating a switch incorporated with the picture contrast control. The picture (size 10 in. by 8 in.) is viewed in a hinged portion of the mirrored lid. The power consumption is 200 watts and the approximate dimensions of the cabinet are 33 in. high, 39 in. wide and 20 in. back to front.

Baird Table Model T18. This is a complete table television receiver combined with a very selective and high quality all-wave radio, yet the compact cabinet housing the complete equipment is little larger than the usual table radio. The sound receiver is a superheterodyne covering the television sound waveband and three bands for radio programmes (short: 16.5 to 51 metres; medium, 198 to 550 metres and long, 850 to 2,000 metres). It is possible to receive the sound on the television waveband either with or without the picture by means of a switch integral with the picture contrast control. The picture size is 10 in. by 8 in., viewed direct, and the power consumption 150 watts.

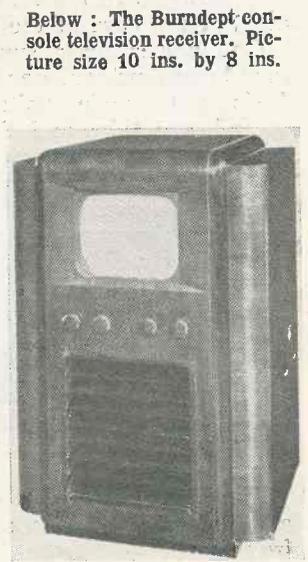
The cabinet measures approximately 25 in. high by 18 in. wide by 16 in. from back to front. It is attractively designed as illustrated, and is standard in walnut. The receiver is heavier than a radio set, and

it may be found convenient to have a suitable stool to support and raise it to a comfortable height for viewing. For this purpose a special stool can be supplied at an additional cost.

Baird Console Model. The general specification of this console is similar to that of table model T18, described above. The cabinet is strongly made and attractively designed in walnut. It is made available



Left: Baird table model T20 giving a picture 10 ins. by 8 ins.



Below: The Burndept console television receiver. Picture size 10 ins. by 8 ins.

in this form for those who prefer to have one complete cabinet rather than a smaller cabinet with or without a stool to support it. The size of the console cabinet as illustrated is approximately 44 in. high, 20 in. wide and 16 in. from back to front.

Burndept

Burndept Limited have concentrated on one model of the console type providing vision and the accompanying sound. The brilliant black and white picture, size 10 in. by 8 in. is viewed directly. There are four controls in all, three for television and one for volume control of sound. A high fidelity speaker is incorporated, with undistorted output of 5 watts. It is housed in a handsome walnut cabinet of the console type, size 40 in. high, 26 in. wide, 22 in. deep.

Twenty-two valves are employed in the complete receiver. D.C. restoration is incorporated, ensuring that the general picture illumination follows faithfully that transmitted. A 12-in. cathode-ray tube with all-magnetic focusing and scanning is used, giving excellent definition. The vision receiver is of the superheterodyne type embodying H.F., mixer, and oscillator stages, which are common to both sound and vision. Two vision I.F. stages are used, diode detector and video amplifier which are connected to the cathode-ray tube. On the sound side there is an I.F. amplifier (100 Kc. band width) followed by a double diode triode with pentode output to the speaker (5 watts output).

Cossor

The Cossor model 137T is a combined television and high-fidelity radio receiver with a 13½ in. diameter cathode-ray tube. The radio is for use on two wavebands: 200 to 550 metres and 800 to 1,980 metres. The viewing screen—which gives a picture 10 in. by 8 in.—and controls are protected by doors when not in use. The cabinet is 44½ in. long, 20½ in. high and 24 in. wide. Twenty-one valves are used.

Another model is the 237T, as described above, but with an additional upper section incorporating an electric gramophone of the latest type with record changer. The size of the cabinet is 51 in. high, 20½ in. wide and 24 in. deep. The price is 90 gns.

Ferranti

Two Ferranti receivers providing a picture 10 in. by 8 in. are available. One, the model T3, is designed for television and accompanying sound, and the other incorporates a sound broadcast receiver for all-wave reception in addition to the usual television circuit. This is known as Model T4. The prices of these receivers are 50 gns. and 60 gns. respectively. Use has been made of the new secondary emission type R.F. pentode for vision amplification. Scanning and synchronising has been achieved its simplest form, one valve being used for each deflection circuit and one valve only for synchronising.

The all-wave radio section in the T4 model is a sensitive superheterodyne receiver employing the same I.F. valve as the television sound receiver. This is effected by having 465 kC. I.F. coils for radio and 7 Mc. I.F. coils for television sound in series in each coil section.

The sound receiver audio-frequency amplification has negative feedback for high fidelity. The frequency

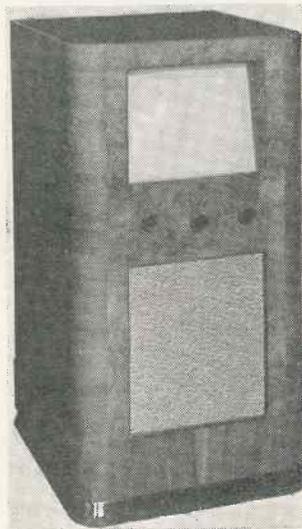
response is almost constant from 40 to 10,000 cycles.

The picture characteristics, television sound and vision circuits in both models T3 and T4 are identical. The brilliant black and white picture is viewed directly on a 12-in. Emiscope tube which employs magnetic scanning and electrostatic focusing.

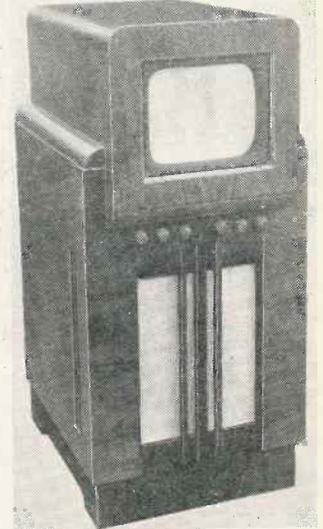
There are six controls, of which four require only very occasional adjustment, making the operation of the set very simple. An extra control is provided on the all-wave model T4. The cabinet in walnut finish is built so as to permit viewers to see the picture in comfort and from a wide angle.

G.E.C.

For the present and pending the development of a new range of models the General Electric Co., Ltd., are concentrating on what may be described as a real utility instrument for television and the accompanying



The G.E.C. console television receiver. A fine instrument giving a 10 ins. by 8 ins. picture.



The Ferranti 10 in. by 8 in. console television receiver.

sound. This receiver, a console, gives a 10-in. by 8-in. picture at the remarkably low price of 37 gns.

It is a direct-viewing model providing a true black and white picture with perfect focus and a remarkable degree of brightness, with every gradation of half-tone. Only three normal operating controls are required and the instrument is contained in a hand-polished figured walnut cabinet. The dimensions are, height 38 in., width, 20 in., depth 21 in., and the consumption is 200 watts.

H.M.V.

An H.M.V. model 901, giving a picture 10 in. by 8 in., is a console television receiver suitable for those who already possess a modern radio or radiogram and require a television sight and sound receiver only.

The picture is reflected from the end of the tube on to a mirror set at an angle of 45 degrees in the lid. Simplicity of operation is an outstanding feature of this model. The price is 60 gns.

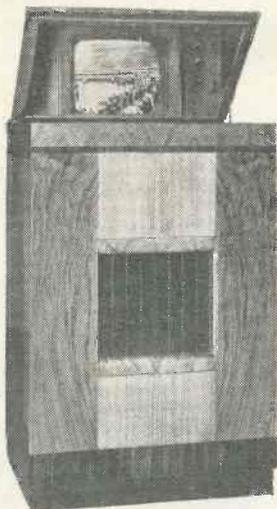
Marconiphone

Model 902 is a complete home entertainer. Contained in a single cabinet of figured walnut is a tele-

vision sight and sound receiver, an all-world radio receiver and an automatic record-changing electrical gramophone.

The black and white picture is viewed through an optically corrected lens and 45-degree mirror. The 6-valve superhet radio receiver has four wavebands (16.7 to 53 metres, 46 to 141 metres, 185 to 560 metres and 750 to 2,250 metres) with an extra waveband for television sound reception. The electrically-reprodu-

Left: H.M.V. model 901 indirect 10 ins. by 8 ins. television receiver.
Below: The R.G.D. television receiver, model 382.



cing gramophone will play through eight records automatically without attention. The price is 120 gns.

Model 900 is a combined television and all-world radio receiver. It has a 6-valve superhet sound circuit with four wavebands (16.7 to 53 metres, 46 to 141 metres, 185 to 560 metres, 750 to 2,250 metres) and an energised moving-coil speaker. A separate waveband provides for television sound reception. The black and white picture, 10 in. by 8 in., is reflected into a special mirror in the lid, thus enabling a number of viewers at wide angles from the instrument to watch the programme comfortably and without distortion. Simple control for television and radio, sharply defined pictures, true-to-life tone, and a beautifully-figured walnut cabinet are features.

9 INCHES BY 7 INCHES

Maker.	Type.	Cabinet.	Price.	System.
McMichael.	Sound and vision.	Console.	£63 0 0	Cathode-ray indirectly viewed.
Murphy.	Sound and vision.	Console.	£65 0 0	Cathode-ray indirectly viewed.

Murphy

Among the three Murphy models is the A42V for television programmes only, which has certain refinements which it is not possible to include in a cheaper model. The picture is indirectly viewed. The top of the cabinet inside the lid is covered with dull leather to prevent any stray reflections which might inter-

8 1/4 INCHES BY 6 1/2 INCHES

Maker.	Type.	Cabinet.	Price.	System.
Cossor.	Sound and vision.	Table.	£47 5 0	Cathode-ray directly viewed.

Cossor

Cossor Table Model 437T. This is another table instrument which has been produced for those who already have a satisfactory receiver for broadcast radio reception. It is designed for receiving television

Marconiphone Model 705. This instrument consists of a television receiver with the sound accompaniment and a four-waveband radio receiver covering the following wavelength ranges: 16.7 to 53 metres, 46 to 140 metres, 185 to 560 metres and 750 to 2,200 metres. The vision equipment comprises the Emiscope tube unit which converts the electrical signal into a picture on the face of the tube. The vision receiver unit consists of a 6-valve T.R.F. receiver fixed-tuned to 45 megacycles (6.67 metres). A mirror supported in the cabinet lid, which, for television is held open at 45 degrees, reflects the picture. To facilitate tuning the lid may be raised into the higher position of 70 degrees.

The television controls are grouped to the left of the top board which masks the end of the Emiscope cathode-ray tube. The picture size is 10 in. by 8 in., and the mains consumption is 260 watts. The sound receiver unit is a normal broadcast chassis adapted to deal with the television sound broadcasting on 41.5 megacycles (7.23 metres) as well as the normal long-wave, medium-wave and two short-wave bands.

R.G.D.

Three entirely different models producing a 10 in. by 8 in. picture are made by Radio Gramophone Development Co., Ltd. These comprise a television receiver (with sound) only, Model 382, a television receiver all-wave radio receiver and auto-radiogramophone, Model 382 R.G., and a combined television and all-wave radio receiver, Model 382 R. The television features of these instruments are as follows: A 14-valve superhet circuit with H.F. stage, triode hexode frequency changer, two-channel I.F. amplifier, one having a band width of 4.5 megacycles for vision, the other having a band width of 20 K/c. for high fidelity reproduction of sound. Pre-set tuning of sound and vision. Triode portion of double diode triode valve as first audio stage, feeding output valve having an undistorted output of 3 1/2 watts.

An Ediswan type 12H cathode-ray tube, having a diameter of 12 in., and giving a clear picture 10 in. by 8 in. with electrostatic scanning of both frame and line is employed.

Forty valves are used in the autoradiogram and press-button tuning is incorporated for the radio receiver.

ferre with the picture on the screen. The picture size is larger than on the other Murphy models, being 9 in. by 7 in., giving a wider angle of vision, which enables more people to view the programme comfortably. Opening and closing of the lid automatically switches the set on and off. The dimensions are 34 1/2 in. high by 31 1/2 in. wide by 18 in. deep.

and its accompanying sound only. The picture (8 1/4 in. by 6 1/2 in.) is of ample size for home entertainment. The walnut-finished cabinet is 22 1/2 in. high, 14 1/2 in. wide and 25 in. deep. 20 valves in all are used and the price is 45 gns.

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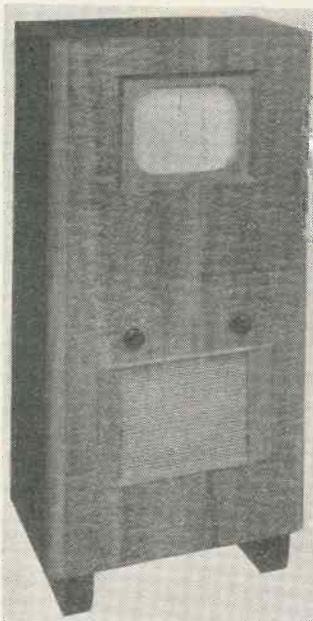
7½ INCHES BY 6¼ INCHES

Maker.	Type.
Baird.	Sound and vision.
Baird.	Sound and vision.
Ultra.	Sound and vision.
Beethoven.	Television sound, all-wave radio.

Cabinet.	Price.	System.
Console.	£39 18 0	Cathode-ray directly viewed.
Table.	£36 15 0	Cathode-ray directly viewed.
Table.	£29 8 0	Cathode-ray directly viewed.
Console.	£50 8 0	Cathode-ray directly viewed.

Baird

The table and console models T20, have the same general specification and each consist of two main units: (1) the 9-in. diameter "Cathovisor" cathode-ray tube, time base generator and vision unit; (2)



Left: Baird T20 console model television receiver. A fine example of a simple and low-priced instrument.

Below: R.G.D. television receiver and auto-radio-gramophone. Model 382.



for both main units, including the high tension voltage to the "Cathovisor" cathode-ray tube, are fed from the power supply unit. The cabinet of the table model measures approximately 22 in. high, 18 in. wide and 13 in. from back to front. The size of the console cabinet is approximately 48 in. high, 18 in. wide and 13 in. from back to front.

Ultra

The Ultra model T22 is a table receiver for sound and vision only. The black and white picture, which is directly viewed, measures 7½ in. by 6¼ in. The price is £29 8s.

Beethoven

The Beethoven receiver is a combined television sight and sound plus an all-wave radio receiver. The cabinet size is 38 in. high by 22¼ in. wide by 16 in. deep. The picture is provided on a slight incline for ease of viewing. There are only three controls for the television, which includes the on/off switch and these need only a very occasional adjustment.

The latest type Ediswan magnetic short cathode-ray tube is used and a total of 16 valves is employed in the television section. Positive synchronising is employed controlling both line and frame time bases. Each time base comprises a gas discharge relay followed by a single stage of amplification. The All-World Radio receiver incorporated is a Beethoven type A.C. 740 with certain switch modifications to meet the television requirements.

There are three wave ranges; short 16-50 metres, medium 200-500 metres and long 900-2,000 metres. The model TR20 is suitable for A.C. mains, 200-250 volts (adjustable) and the consumption is 250 watts.

power pack and sound unit. The first unit forms a single compact chassis assembly which is easily accessible and is fitted in the top section of the cabinet. As in the case of the radio receiver, the vision is pre-set and requires no further adjustment. Current supplies

7½ INCHES BY 6 INCHES

Maker.	Type.
H.M.V.	Television sound, all-wave radio.
Marconiphone.	Television sound, all-wave radio.
Murphy.	Television sound, all-wave radio.
Murphy.	Sound and vision.

Cabinet.	Price.	System.
Console.	£47 5 0	Cathode-ray directly viewed.
Console.	£47 5 0	Cathode-ray directly viewed.
Console.	£45 0 0	Cathode-ray directly viewed.
Console.	£30 0 0	Cathode-ray directly viewed.

H.M.V.

Model 907 is a combined television receiver and all-world radio receiver. Operation for both television and radio reception is extremely simple. A special super-het circuit is employed for the reception of television and sound, and a separate high-sensitivity chassis is incorporated for the reception of sound broadcasts between 13.5 to 50, 195 to 580 and 950 to 2,000 metres. The black and white picture size is 7½ in. by 6 in., and is viewed directly. The price is 45 gns.

The H.M.V. 903 is a console model for television sight and sound only housed in a figured walnut cabinet. The picture size is 7½ in. by 6 in., clearly defined in black and white and viewed directly on the end of the cathode-ray tube. The controls are grouped together on the front of the cabinet; the price of this model is £47 5s.

Marconiphone

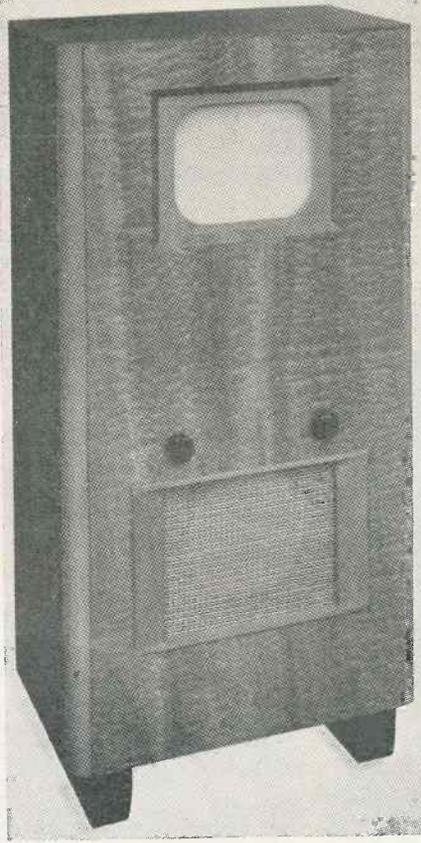
Model 709 is a combined television and all-wave broadcast receiver. It incorporates an all-wave world broadcast receiver of the most up-to-date design and the picture is visible over a wide angle. The cabinet is attractively finished in light-coloured Australian walnut and is fitted with concealed easy-running castors. The picture size is 7½ in. by 6 in.

Murphy

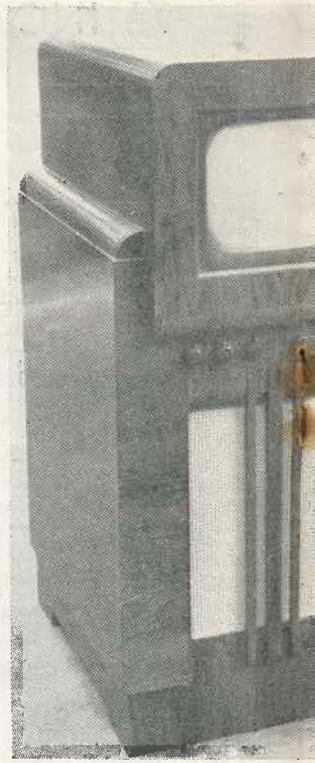
The Murphy A56V for television programmes only is a very neat and compact receiver. The cabinet is of walnut with a sloping control panel of opaque plate glass to avoid reflections. The slope of the panel is designed to give comfortable viewing from a chair or when standing, and a wide angle of vision. The four controls grouped on this panel are volume control for



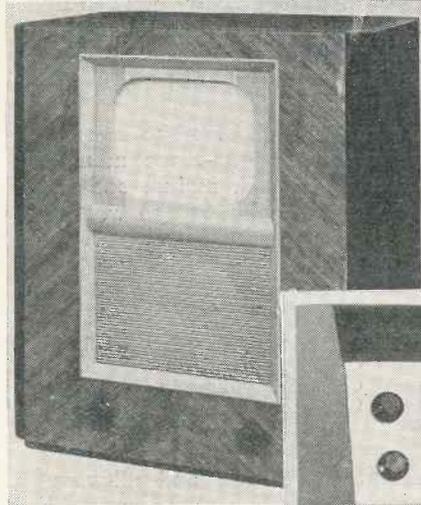
The H.M.V. Model 907 in the Home.



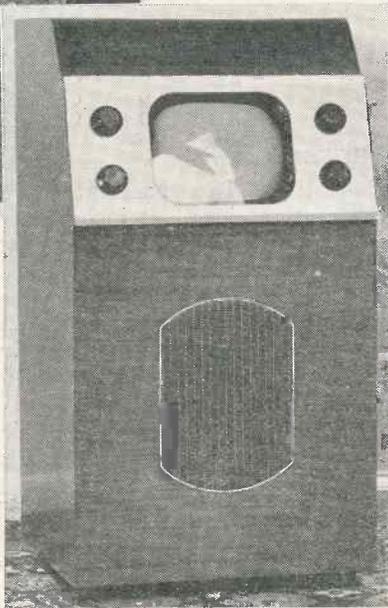
Baird Console Model T20.



Ferranti Console Model T...



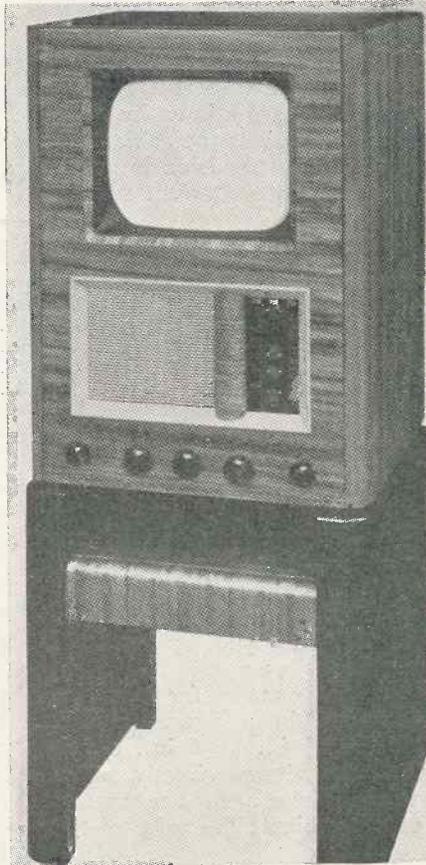
Three examples of directly viewed receivers by different makers. The Baird shown on the right also includes a normal broadcast receiver.



Murphy Console Model A56V.

(Above) Baird Table Model T20.

One of the largest receivers as regards picture size and at the same time one of the most compact is this table model Baird.

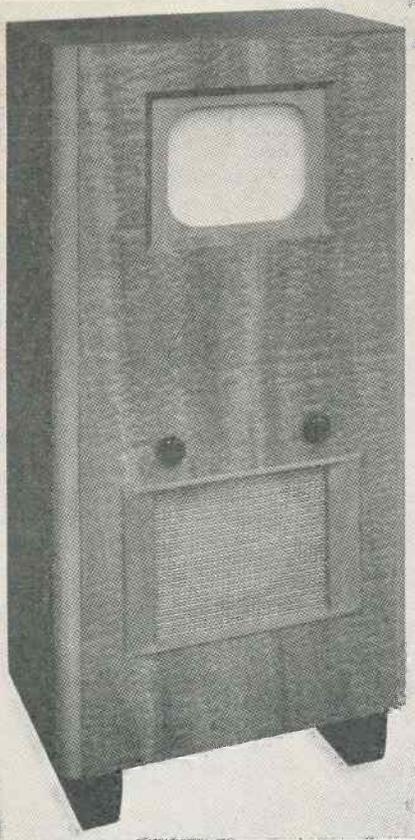


Baird Table Model T18.



G.E.C. Console Model BT91

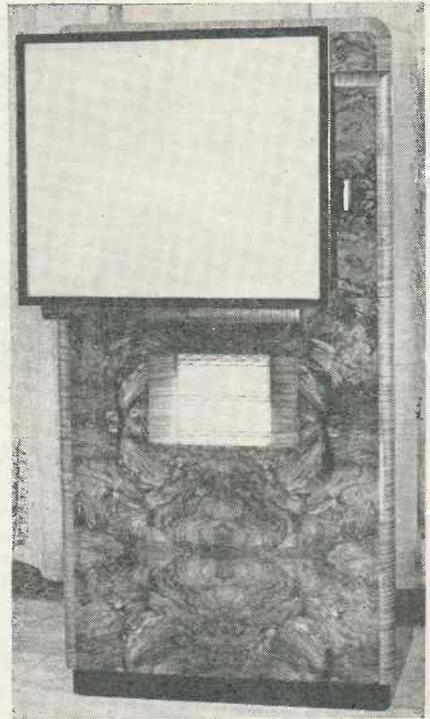
**SOME
TELEVISION**



Baird Console Model T20.



Ferranti Console Model T3.



Scophony Mechanical-optical.

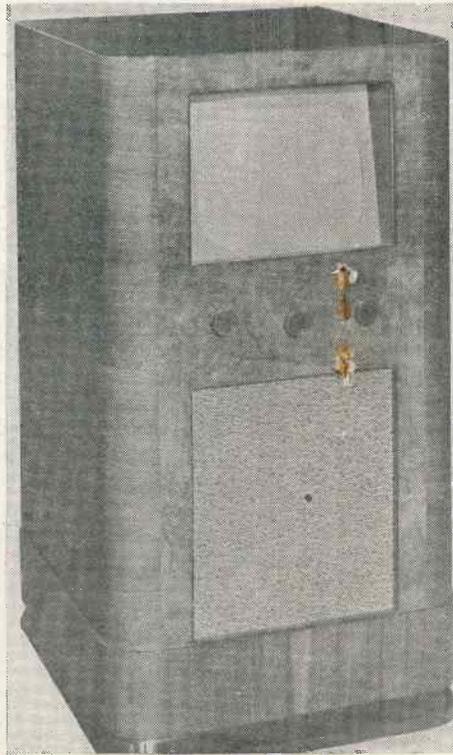


H.I. Table type manufacturerally supplied to convert

SOME REPRESENTATIVE TELEVISION RECEIVERS



Baird Table Model T18.



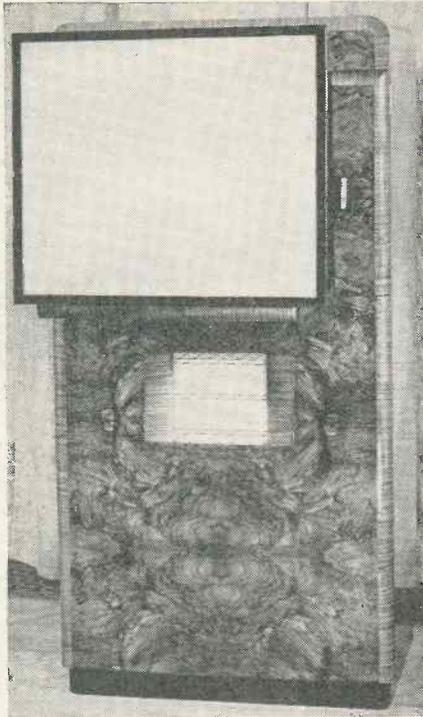
G.E.C. Console Model BT9121.



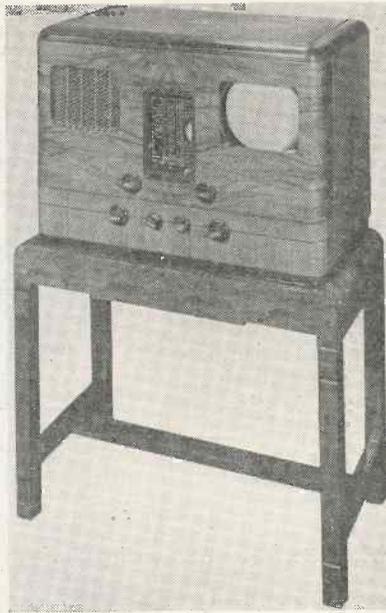
Philips C.R. Projection.



Baird

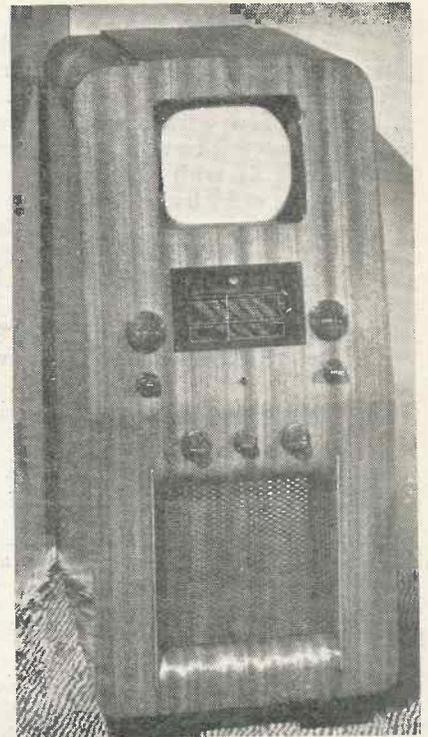


Scophony Mechanical-optical.



H.M.V. Table Model 905.

Table type receivers are made by several manufacturers. Small stands are generally supplied at an extra charge in order to convert the receivers to the console types.



Marconiphone Console Model 709

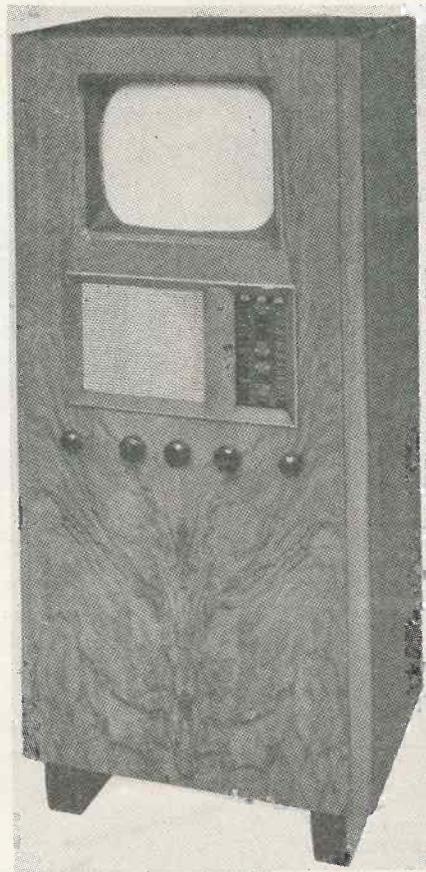
l T3.

REPRESENTATIVE TELEVISION RECEIVERS

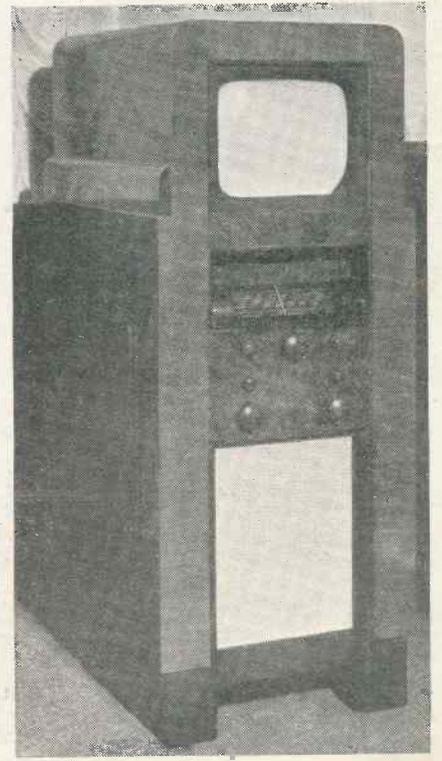
Two interesting examples of modern console type television receivers which also include a radio set for normal broadcast reception.



Philips C.R. Projection.



Baird Console Model T18.



Ferranti Console T4.

T9121.

TELEVISION

AND
SHORT-WAVE WORLD

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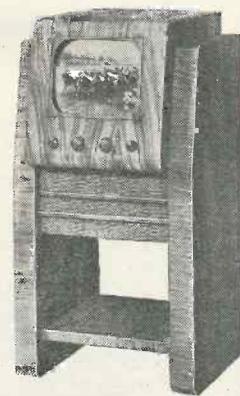
sound, combined with on-off switch, and focus, brightness and contrast for the picture.

The picture is a clear black and white, size $7\frac{1}{2}$ in. by 6 in. Sound output is ample for all ordinary purposes. The compactness of the instrument is largely due to the use of a new short type of cathode-ray tube. Fifteen valves are used for the sound and vision, and synchronising with three rectifiers to deliver the high voltages necessary. By an ingenious design, the chassis can be lowered in its cabinet and is, therefore, accessible for service.

The cabinet dimensions are $34\frac{1}{2}$ in. high, 18 in. wide, and $17\frac{1}{2}$ in. deep.

Another Murphy model, the A58V, contains the same television equipment and gives the same size picture, but also included is an all-wave radio receiver, and the cabinet is wider. The price of this is £45.

Below : Murphy combined all-wave radio and television receiver.
Right : The Ultra T24 console television receiver.



$7\frac{1}{2}$ INCHES BY $5\frac{3}{4}$ INCHES

Maker.	Type.	Cabinet.	Price.	System.
Invicta.	Sound and vision.	Table.	£32 11 0	Cathode-ray directly viewed.
Pye.	Television sound, all-wave radio.	Auto-radiogram.	£68 5 0	Cathode-ray directly viewed.
Pye.	Sound and vision.	Table.	£31 10 0	Cathode-ray directly viewed.
Pye.	Television, sound, all-wave radio.	Console.	£52 10 0	Directly-viewed.
Pye.	Television and sound.	Console.	£45 3 0	Directly-viewed.

Invicta

A particularly compact table model giving a directly-viewed picture $7\frac{1}{8}$ in. by $5\frac{3}{4}$ in. is the Invicta TL5, the cabinet size being only 19 in. high by 17 in. wide by 14 in. deep and the consumption 150 watts.

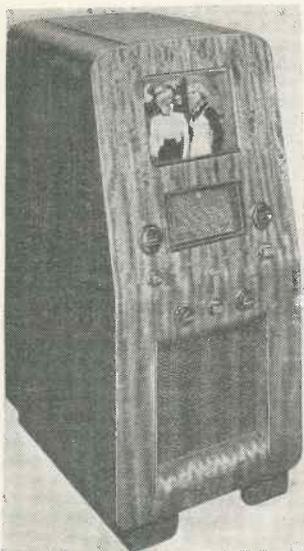
One combined chassis carries both sound and vision circuits, resulting in increased compactness and elec-

Pye

Four receivers giving a picture $7\frac{1}{4}$ by $5\frac{3}{4}$ in. are manufactured by Pye, Limited, and these comprise a combined television receiver broadcast set and auto-radiogram in one cabinet, model 838, a table model 815, and two consoles, models 4046 and 843, the latter including all-wave radio with push-button tuning. The cabinet size of model 838 is $36\frac{1}{2}$ in. high by $39\frac{1}{2}$ in. wide by $19\frac{3}{4}$ in. deep, and the consumption 200 watts.

In the table model (815), which measures 19 in. high by 17 in. wide by 14 in. deep, only thirteen valves are used in a combined circuit. Only two controls are required.

The television pictures of the console models are



Marconiphone console, picture size $7\frac{1}{4}$ ins. by 6 ins.



Pye combined all-wave and television receiver.



Pye all-wave radio and television table type receiver.



Invicta table television receiver.

trical efficiency. It can be tuned with perfect results by any member of the family, because there are only two principal controls—one for vision brightness and the other for volume and on/off switch.

the same, but the cabinet of the one incorporating all-wave radio is larger. It is interesting to note that a special model of either of these is available for use outside the ordinary accepted service area.

$6\frac{1}{4}$ INCHES BY 5 INCHES

Maker.	Type	Cabinet.	Price.	System.
Ekco	Sound and vision.	Table	£27 6 0	
Ekco	Add-on vision Unit	Table	£23 2 0	
H.M.V.	Television sound, all-wave radio.	Table.	£36 15 0	Cathode-ray directly viewed.
Marconiphone.	Television sound, all-wave radio.	Table.	£36 15 0	Cathode-ray directly viewed.

Ekco

Ekco receivers comprise two models at present, but

two more are in course of development and will be ready shortly. Model TS701 is for sound and vision,

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with the following specification. Power pack (3 rectifiers), 7-metre sound and vision receiver (12 valves), timebase (3 valves, with flat-ended, all-magnetic tube. Picture size is 6¼ in. by 5 in., the walnut cabinet 21½ in. by 17 in. by 16 in., and the sound output, 3 watts. The price is 26 guineas.

Model TA201 is an add-on unit for use in connection with A.C. radio sets fitted with pick-up sockets. This

model, of course, does not include a sound output circuit and loudspeaker. The picture is 6¼ in. by 5 in., and the cabinet measures 19½ by 17 in. by 16 in. Eighteen valves are used, and the price is 22 guineas.

The models in the course of development are a sound and vision console model with a 9-in. tube and a radio and television table model giving a 6¼ in. by 5 in. picture.

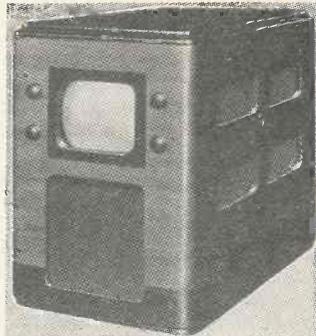
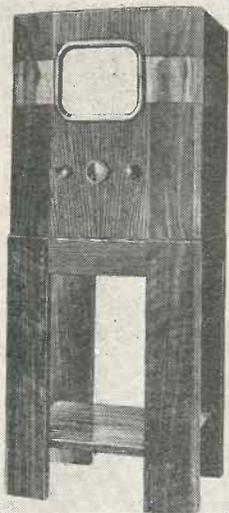
H.M.V.

H.M.V. model 905, a combined television and all-world radio receiver, and is generally similar in appearance to model 904, described later. This instrument shows a black and white picture 6¼ in. by 5 in. It also incorporates a 6-valve superhet sound receiver. The 3 waveband radio receiver brings in stations between 16.5 to 50, 200 to 570 and 725 to 2,000 metres. The price is 35 guineas.

Marconiphone

Marconiphone model 707 provides a picture 6¼ in. by 5 in. It is a combined television and all-wave radio and the controls are no more complicated than those normally employed on many ordinary broadcast receivers. The equipment consists of a single chassis carrying (a) the vision receiver with associated equipment; (b) the Emiscope receiving tube; (c) the all-wave broadcast receiver; and (d) the power supply units for both sections.

Left: Ekco add-on vision unit.
Below: Cossor table model 54 giving a 5 in. by 4 in. picture.



5 INCHES BY 4 INCHES

Maker.	Type.	Cabinet.	Price.	System.
Cossor.	Sound and vision.	Table.	£27 6 0	Cathode-ray directly viewed.
Cossor.	Sound and vision.	Table.	£24 3 0	Cathode-ray directly viewed.
H.M.V.	Television sound, all-wave radio.	Table.	£30 9 0	Cathode-ray directly viewed.
Marconiphone.	Television sound, all-wave.	Table.	£30 9 0	Cathode-ray directly viewed.

Cossor

A picture size 5 in. by 4 in. is provided by the Cossor table models 54 and 54a. Simplicity of operation is a great feature, there being only two vision and two sound controls to operate. The cabinet, walnut finished, is 17½ in. high, 13 in. wide, and 20½ in. deep.

Model 54a is the same as model 54, but with extra amplifier (16 valves in all) for ranges over 20 miles and for exceptional conditions.

H.M.V.

H.M.V. model 904 is a combined television and all-world radio receiver for 29 guineas. The black and white picture, 4¾ in. by 4 in., is seen directly on the end of the cathode ray tube and gives clear vision over a

wide range. All main controls are grouped together on the front of the cabinet. The 6-valve radio receiver has the wavelength scale clearly marked with many station names and a vernier scale simplifies tuning. The wave-range cover 16.5 to 50, 200 to 570 and 725 to 2,000 metres.

Marconiphone

Marconiphone Model 706 combines an efficient television receiver giving a picture 4¾ by 4 in., with an all-wave radio receiver of the very latest design. In picture brilliance and detail it compares favourably with the more expensive instruments. The Emiscope receiving tube has a diameter of 5 in., and the picture colour is black and white.

4 INCHES BY 3¾ INCHES

Maker.	Type.	Cabinet.	Price.	System.
Invicta.	Vision only.	Table.	£22 11 6	Cathode-ray directly viewed.
Pye.	Television sound, medium and long.	Table.	£30 9 0	Cathode-ray directly viewed.
Pye.	Vision only.	Table.	£22 1 0	Cathode-ray directly viewed.

Invicta

The Invicta table model TL4 is one of the smallest television receivers made, and the price is very low. It is a vision set with an adaptor, and specially designed for use in conjunction with any existing radio set having pick-up terminals and operating from A.C. mains to provide the sound. The picture, which measures 4 in. by 3¾ in., and the cabinet size is 16 in. by 13 in. by 12 in. Consumption is 110 watts.

Pye

The two Pye table models differ only in that one incorporates an all-wave push-button broadcast set, and the cabinet is necessarily larger. The small model (817) is intended for use in conjunction with an ordinary broadcast set for the provision of the television sound. The large model (819) is, of course, entirely self-contained. Current consumption is 150 and 110 watts respectively. Only one vision control is required in either case.



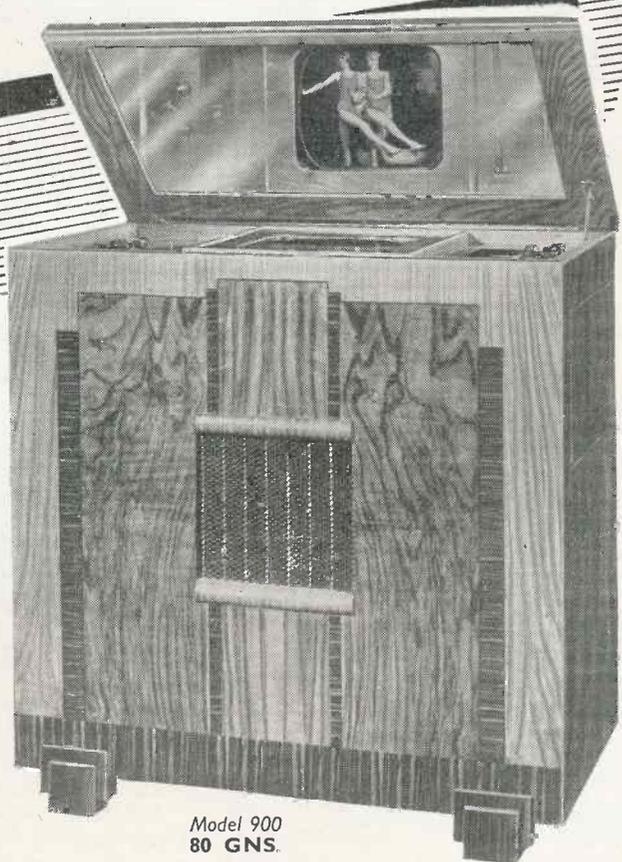
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Model 900
80 GNS.



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VALVEHOLDERS



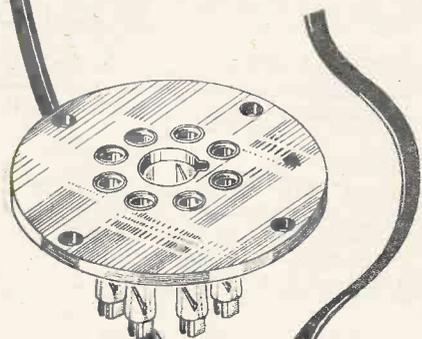
The CLIX valveholder range covers patterns to accept all the recognised English and American valves including the Midget and Acorn types.

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CONNECT WITH CLIX



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A Directory of British Radio Clubs

(Continued from February issue and compiled from Charles Lettis Wireless Diary)

- Morpeth Amateur Radio Society.** Hon. Sec.: C. L. Towers, 2, Edward Street, Morpeth.
- Newbury and District Short-Wave Club.** Hon. Sec.: L. Harden, 11, Highfield Avenue, Newbury, Berks.
- Newcastle Radio Society.** Hon. Sec.: G. C. Castle, 28, Sandringham Road South, Gosforth, Newcastle, 3.
- New Eltham Ratepayers' Ass. (Radio Secn.).** Hon. Sec.: E. A. Gillborn, 87, Montbelle Road, New Eltham, S.E.9.
- Newtownards Amateur Radio Club (N. Ireland).** Hon. Sec.: T. L. Kirk, Chapel View, Newtownards, Ulster.
- North Manchester Radio Society.** Hon. Sec.: R. Lawton, 10, Dalton Avenue, Thatch Leach Lane, Whitefield.
- North Middlesex Radio Society.** Sec.: H. A. Crouch, 27, Middleton Park, Whetstone.
- North Shields Radio Society.** Hon. Sec.: G. A. Lee, 9a, Saville Street.
- N.W. Ireland Amateur Radio Society.** Hon. Sec.: S. Foster, 2, Florence Street, Park Street, Derry.
- Northampton Radio Society.** Hon. Sec.: D. W. Harries, 99, Ardington Road.
- Northern Ireland Radio Society.** Hon. Sec.: F. A. Robb, 46, Victoria Avenue, Sydenham, Belfast.
- Oxford Short-Wave Radio Club.** Hon. Sec.: E. G. Arthurs (2BHP), 13, Walton Well Road, Oxford.
- Peckham Radio Society.** L. J. Orange, 11, Granard Road, Peckham, S.E.15.
- Perth Radio Society (Proposed).** R. Adams, 120, Canal Street, Perth.
- Peterborough and District Short-Wave Club.** Jt. Hon. Sec.: W. S. Cornwell (2ACP), 80, Elmfield Road, Peterborough.
- Portsmouth and District Wireless and Television Society.** Hon. Sec.: F. L. Moore, 78, Laburnum Grove, Portsmouth.
- Port Talbot Radio Club (Proposed).** W. Ryan, 47, Margam Terrace, Port Talbot.
- Prestatyn Short-Wave Club.** Hon. Sec.: R. J. Stellig, "Romir," Victoria Road.
- Radio Physical and Television Society.** Hon. Sec.: V. R. Walker, 49, Fitzjames Avenue, London, W.14.
- Radio Society of Great Britain (Bristol Area).** Sec.: A. J. Webb, 12, Mervyn Road, Bishopston, Bristol, 7.
- Radio Transmitters' Union.** C/o W. H. Martin, Knockinagh, Cloughfern, White-abbey, N.I.
- Redhill and District Radio Society (Proposed).** Hon. Sec.: H. Cartwright, Radio House, Victoria Road, Horley, Surrey.
- Redhill and District Short-Wave Club.** Sec.: D. Hessenaver, 139, Frenches Road, Redhill, Surrey.
- Robert Blair Radio Society.** Hon. Sec.: A. R. Richardson, 24, Mercers Road.
- Sale and District Short-Wave Radio Club.** Hon. Sec.: M. Postles (2CXH), "Norward," 56, Firs Road, Sale, Cheshire.
- Salisbury and District Short-Wave Club.** Hon. Sec.: C. A. Harley, 85, Fisherton Street, Salisbury, Wilts.
- Sheffield Short-Wave Club.** Sec.: D. H. Tomlin, 32, Moorsyde Avenue, Sheffield, 10
- Sheppey Amateur Radio Club.** Hon. Sec.: F. G. Maynard, 161, Invicta Road.
- Short-Wave Radio and Television Society (Thornton Heath).** Hon. Sec.: J. T. Webber, 368, Brigstock Road, Thornton Heath.

- Slade Radio Society.** Hon. Sec.: G. Game, 40, West Drive, Heathfield Park, Handsworth, Birmingham.
- Slough and District Short-Wave Club.** J. H. White, 20, Chalvey Road East, Slough.
- Smethwick Wireless Society.** Hon. Sec.: E. Fisher, 33, Freeth Street, Oldbury, Nr. Birmingham.
- Southall Radio Society.** Hon. Sec.: H. F. Reeve, 26, Green Drive, Southall.
- South Hants Radio Transmitting Society.** Sec.: E. J. Williams, B.Sc., "Rochdale," London Road, Purbrook, Portsmouth.
- Southend and District Radio and Scientific Society.** Hon. Sec.: J. M. S. Watson, 23, Eastwood Boulevard, Westcliff.
- South London and District Transmitters' Society.** Sec.: H. Cullen, 164, West Hill, Wandsworth, S.W.
- Southport Amateur Radio Society.** Birch Villa, Lulworth Road, Southport.
- S.T.C. Radio Experimental Society.** The Chief Instructor, Training Battalion, R. Signals, Catterick Camp, Yorks.
- Stoke-on-Trent Radio Society (Proposed).** H. Churton, 26, Victoria Street, Smallthorne, Stoke-on-Trent.
- Surrey Radio Contact Club.** Hon. Sec.: E. C. Taylor, 35, Grant Road, Croydon.
- Sutton-in-Ashfield Society.** Hon. Sec.: A. W. Fowler, 78, Kirkby Road, Sutton-in-Ashfield.
- Swansea Radio Club.** Hon. Sec.: R. J. Davies (Messrs. Watson & Davies), Mansel Lane, Swansea.
- Swindon and District Short-Wave Society.** Hon. Sec.: W. G. Barnes (2BWR), 7, Surrey Road, Swindon.
- Thames Estuary Radio Society.** F. S. A. Jenkins, R.N., W.A.R., "Cranleigh," Spencer Close, Rochford, Essex.
- Torrington and District Short-Wave Club.** Hon. Sec.: A. E. Cornish, 1, Halsdon Road, Torrington, N. Devon.
- Thames Valley Amateur Radio and Television Society.** Sec.: J. N. Roe, 19a, The Barons, St. Margarets, Middlesex.
- Tottenham Wireless Society.** Hon. Sec.: F. E. R. Neale, 17, Whitely Road, Tottenham, N.17.
- Tottenham Short-Wave Club.** Hon. Sec.: E. Jones, 60, Walmer Terrace, Firs Lane, Palmers' Green, N.13.
- Tunbridge Wells and District Amateur Transmitting Society.** Sec.: W. H. Allen, 32, Earls Road, Tunbridge Wells.
- Wallasey Junior Radio Club.** A. M. Wilding, 2, Wallacre Road, Wallasey.
- West London Radio Society.** Hon. Sec.: D. Reid, 15, Tring Avenue, Ealing Common, S.5.
- West Sussex S.W. and Television Club.** Hon. Sec.: L. Frost, "Mikado," Station Road, Bognor Regis, Sussex.
- Weymouth S.W. Club (Proposed).** W. E. G. Bartlett, 59a, Franchise Street, Weymouth, Dorset.
- Willesden Short-Wave Club (Proposed).** S. A. Reeve, 115, Willesden Lane, Kilburn, N.W.6.
- Wirral Amateur Transmitting and Short-Wave Club.** Hon. Sec.: J. R. Williamson, 49, Neville Road, Bromborough, Birkenhead.
- Worthing and District S.W. Club.** Hon. Sec.: G. A. Lambourne, 16, Angola Road, Worthing.