

# THE BRITISH BROADCASTING CORPORATION

*ENGINEERING DIVISION*

DESIGNS DEPARTMENT

ANNUAL REPORT FOR 1952.

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Head of Designs Department.

## ANNUAL REPORT - DESIGNS DEPARTMENT.

The preamble of last year's report is repeated in condensed form for the benefit of those receiving this report for the first time. Where necessary it has been brought up to date.

Designs Department is organised in seven development units and one General Services Section giving Model Shop and Drawing Office service to all units. Each unit is responsible for the development and design of a particular class of apparatus for the service as follows:-

### Sound Section.

1. Sound Recording.
2. Programme and Communication line transmission.
3. Programme switching and audio frequency facilities.

### Special Systems and Instrument Section.

4. Automatic Control of transmitters, automatic monitoring. Special short distance radio links.

### Television Section.

5. Television transmission.
6. Television Studios.
7. Television Recording.

An organisation chart is attached.

It has become evident that a greater output can be achieved by increasing the ratio of junior staff to senior staff. During the year a number of non-operative senior engineering posts were surrendered in return for 5 Laboratory Technicians, 1 Laboratory Mechanic and 1 Clerk. An effort will be made to continue this policy somewhat further as it has the additional advantage that more young personnel are trained to take responsibility in the future.

The work of the whole department can be divided into three classifications as follows:-

1. Design work to achieve economies and improve the service by superseding routine operations by mechanical and electrical devices, and by reduction of physical size.

2. Devising and providing new methods and apparatus to meet developing service needs. Part of this effort must be directed to maintaining reasonable standards as television and sound broadcasting develop in scope and complexity.
3. The 'know how' gained from this work is used in the critical examination of products of outside manufacturers to ensure that these products meet our requirements, and to encourage and help the manufacturer to improve the article.

The division of available effort between these classifications, varies with the sections. Sound studio technique has become mature and requires rather less effort in devising new apparatus for service needs, and the greater emphasis has been placed on improved methods and mechanical devices to save staff.

The special Systems and Instrument Section is mainly employed on devising means to increase efficiency. The automatic monitor was the outcome of this section's endeavours, and a useful contribution is being made in the methods of working automatic, unstaffed transmitters.

Television being a much newer art than sound broadcasting and still in the intensive development stage, it is natural that design has to cater for expanding service needs and numerous day-to-day problems. The importance of simplifying technique has not been overlooked. Our work on special scenic effects, 'inlay' and 'back projection' should simplify and reduce demands for actual scenery, and also improve facilities. The Television Recording Unit has been set up during the year and has examined various methods of producing 16 mm film. In addition some fundamental investigations have been undertaken in order to forecast the standards which are obtainable by various means of recording.

Examination of apparatus manufactured outside the Corporation takes a large part of the time of the sound recording section, and a lesser, though still important part of the effort of the other sections. The search for reasonable magnetic tape recording equipment, mobile and portable, has led us to make tests on many machines, sometimes many editions of the same machine. Here, our advice and encouragement has helped to obtain a better and more reliable product.

The technical clauses included in specifications to outside manufacturers must be based on experience, as they must represent a wise compromise between that which we require and that which we can afford to have. . Our experimental work and close contact with the operational side enable us to help P.& I.D. in formulating these requirements. We often go further and suggest to manufacturers simple ways of achieving our requirements, and in a number of cases we have reduced the cost to the B.B.C. by this means.

The department is in an ideal position to adapt existing equipment to meet our special needs. An example of this, is the recent work in co-operation with P.& I.D. to convert RCA 250 watt transmitters for use in Television sound and vision.

A small but important part of the work is the participation in national and international discussions directed towards standardisation in both sound recording and television. Although other countries have adopted a different number of scanning lines there is still great value in establishing agreed standards in apparatus, link performance and common methods of test.

The attached summary is presented in a way which indicates those jobs which have been completed during the year and the state of those still in progress.

1 - RECORDING UNIT - 5 Engineers  
2 Laboratory Technicians.

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| <u>No.</u> <u>Job.</u>         | <u>Work and Purpose.</u>   | <u>State of Work.</u> |
|--------------------------------|--|-----------------------|
| <u>1.1 Magnetic Recording.</u> |  |                       |
| 1.11 Motosacoche.              | The Motosacoche magnetic tape channel has been tested and a report is in hand. Some modifications were made to improve operational convenience and the equipment has been handed to Recording Dept.                            | Completed.            |
| 1.12 Brosey and Hawkes.        | Seven production models of B & H midget tape recorders were tested and two of them selected and passed to Recording Dept. to complete outstanding order.   | Completed.            |
| 1.13 E.M.I.<br>(Midget).       | Six production models of E.M.I midget tape recorders were tested and the testing procedure for future deliveries passed to R.M.U.  | Completed.            |
| 1.14 R.G.D.                    | Tests on four early production models of the R.G.D. magnetic tape recorder were carried out in conjunction with P.& I.D. and the necessary modifications were made to enable the machines to be despatched for the Royal Tour. | Completed.            |
| 1.15 E.M.I.                    | Tests were carried out and a report issued on the prototype of the new E.M.I. Studio tape recorder BTR/2.  | Completed.            |

| <u>No.</u> <u>Job.</u>             | <u>Work and Purpose.</u>   | <u>State of Work.</u> |
|------------------------------------|--|-----------------------|
| 1.16 Miscellaneous Tape Recorders. | Tests were carried out on the following commercial magnetic tape recorders;-<br>E.M.I. BTR/1C.<br>Ferrogaph (15ins/sec)<br>Leevers Rich.<br>Reflectograph.                                     | Completed.            |
| 1.17 Long Duration Recorders.      | Tests have been carried out and reports issued on two long duration magnetic recorders, one with 25 hrs. duration by Phidelity Products., one with 8 days duration by A.C.E.C.                 | Completed.            |
| 1.18 Tape Tension.                 | A device for the dynamic measurement of magnetic tape tension has been developed and the first models will soon be tested.   | Continuing.           |
| 1.2 <u>Pickups.</u>                |  |                       |
| 1.21 New Pickups.                  | Tests have been carried out on the MSS Pickup and on the new EMI Transcription Pickup.   | Completed.            |
| 1.22 Existing Pickups.             | A scheme for simplifying the adjustment of EMI Type 12 pickup heads by the use of grease damping has been tried in the laboratory and 12 heads treated in this way have been put into service. | Continuing.           |

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| <u>No.</u> | <u>Job.</u>                     | <u>Work and Purpose.</u>  | <u>State of Work.</u> |
|------------|---------------------------------|---|-----------------------|
| 1.3        | <u>Disk Reproducing Desks.</u>  |   |                       |
| 1.31       | Special desk for 60 c/s supply. | The development of an urgently demanded adaptation of the DRT/1 Reproducing Desk to run on a 60 c/s supply had just been completed when the need for it disappeared with the closing of the Latin American Offices.   | Completed.            |
| 1.32       | Disk Editing.                   | A version has been prepared, suitable for manufacture, of the 'Disk Drop' editing device which was offered to D.C.C. with a request for 60 specimens.   | Completed.            |
| 1.4        | <u>Power Supply.</u>            |   |                       |
| 1.41       | Vibrators.                      | Ways of improving the frequency stability of the Vibrovertor DC/AC Converter were developed. Subsequently when it was found that the contact life of these units had been misrepresented attempts have been made to improve their durability.   | Continuing.           |
| 1.42       | Constant Frequency Supplies.    | A method of adapting a commercial 1 KW amplifier to serve as a constant frequency source of power for two R.G.D. tape recorders (without interaction) has been developed. A scheme for improving the frequency stability of existing and future rotary sets has been discussed with B.T.H. and preliminary tests are to be carried out. | Continuing.           |



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| <u>No.</u> <u>Job.</u> | <u>Work and Purpose.</u> | <u>State of Work.</u> |
|------------------------|--------------------------|-----------------------|
|------------------------|--------------------------|-----------------------|

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1.5 Standardisation.

|                                      |  |             |
|--------------------------------------|--|-------------|
| 1.51 Tape Recording Characteristics. | A number of 25 micro-second test tapes were made and exchanged with various European Administrations to establish methods of measurement. Discussions of the technical problems involved have continued with various Administrations and in close co-operation with Research Dept. | Continuing. |
|--------------------------------------|--|-------------|

A number of test tapes to the proposed C.C.I.R. recording characteristic are being prepared, some of which will go to European Organisations and some to America where full agreement has not yet been reached.

|                                      |  |             |
|--------------------------------------|--|-------------|
| 1.52 Disk Recording Characteristics. | Test Disks made to the proposed C.C.I.R. recording characteristic are required but work is at present held up because a preliminary investigation indicates that it may be difficult to work to the proposed C.C.I.R. standards with the pickups now in use. | Continuing. |
|--------------------------------------|--|-------------|

1.6 Miscellaneous.

|  |  |            |
|--|--|------------|
|  | A considerable number of minor miscellaneous jobs, such as the development of plug-in adaptors to enable EMI tape recorders to take any type of spool, the production of speed adjusting sleeves for | Continuing |
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| <u>No.</u> | <u>Job.</u> | <u>Work and Purpose.</u> | <u>State of Work.</u> |
|------------|-------------|--------------------------|-----------------------|
|------------|-------------|--------------------------|-----------------------|

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1.6 Miscellaneous.  
(cont.)

the DRD/1 desk, investigation of printing troubles in operational service and so on have been carried out.

Work on both disk and tape recording has continued in B.S.I. as well as C.C.I.R.

2 - S.B. LINES AND COMMUNICATIONS UNIT - 4 Engineers  
3 Lab. Technicians

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| <u>No.</u>             | <u>Job.</u>             | <u>Work and Purpose.</u>   | <u>State of Work.</u> |
|------------------------|-------------------------|--|-----------------------|
| <u>2.1 S.B. Lines.</u> |                         |  |                       |
| 2.11                   | System Design.          | In connection with the maintenance of quality standards in S.B. system, 8 new equalisers were provided. A review of the S.B. system is being made in conjunction with S.E.L with the object of economising in the rental payable to G.P.O. | Continuing.           |
| 2.12                   | New Lines Acceptance.   | New S.B. lines are accepted by this Department. About 36 equalisers were provided, this is more than normal due to the Home Service Coverage extension and to the provision of deferred facilities.  | Continuing.           |
| 2.13                   | Temperature Correction. | To reduce maintenance effort required on the S.B. system.  | Completed.            |
| 2.14                   | Special Lines Work.     | Approximately 25 equalisers were provided in connection with the switching of existing S.B. lines into special premises.   | Continuing.           |
| 2.15                   | Special Planning Work.  | In co-operation with S.E.L., a comprehensive plan for special switching centres was drawn up for deferred facilities.  | Completed.            |

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| <u>No. Job.</u>   | <u>Work and Purpose.</u>   | <u>State of Work.</u>     |
|---|--|---------------------------|
| <u>2.2 Equalisers.</u>  |  |                           |
| 2.21 "Bode" type equalisers.  | The first 6 equalisers produced were tested and it was found possible to add a pre-set local end section integral with the original design. A prototype of the additional unit has been produced. These equalisers will reduce the maintenance effort required on the S.B. system. | Completed.                |
| 2.22 Redesign of Variable Equalisers EV2, 3 and 4.                    | The electrical design of these equalisers was modernised, to give improved quality with reduced effort.  | Completed.                |
| 2.3 <u>Equipment for accepting O.B's via Public Telephone System.</u> | A prototype set of equipment was produced and is being given a service trial at Bristol. It provides a new facility at very low cost.  | Continuing.               |
| 2.4 <u>Line-Break Recorder.</u>                                       | A cheap and simple device to improve the supervision of S.B. lines and to economize in man-power.  | Continuing.               |
| <u>2.5 Remote Control.</u>  |  |                           |
| 2.51 Dundee and Wrexham.  | Design work in connection with the installation and commissioning of these stations. This provides a saving in man-power. Line troubles have proved severe and changes are in hand to deal with these.   | Completed.<br>Continuing. |

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| <u>No.</u> <u>Job.</u>                | <u>Work and Purpose.</u>   | <u>State of Work.</u> |
|---------------------------------------|--|-----------------------|
| 2.52 Towyn.                           | A system similar to the Wrexham system has been designed to suit the special conditions at Towyn. The apparatus has been produced and tested. The purpose is to reduce man-power demands.  | Completed.            |
| 2.53 Bournemouth and Fareham.         | A remote control system has been designed in order to save man-power.  | Completed.            |
| 2.54 Folkestone, Barrow and Dumfries. | A very cheap temporary system was designed and produced to enable man-power to be saved in the interval that must elapse before the stations can be made fully automatic.  | Completed.            |
| 2.6 <u>Communication Services.</u>    |  |                       |
| 2.61 "Facsimile" Transmission System. | A study of the available systems for the facsimile transmission of written or printed messages by line was made. A report has been prepared and recommendations made for the starting of a trial service. The object is to provide a new service, and to economize in teleprinter operated effort. | Completed.            |

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| <u>No.</u> | <u>Job.</u>   | <u>Work and Purpose.</u>   | <u>State of Work.</u> |
|------------|---|--|-----------------------|
| 2.62       | Review of Design Information for Part 2 of Communications Scheme. | A review has been made of design information affecting expansion and improvement of communications System at Low Annual Cost.  | Completed.            |
| 2.63       | Stability of Long Chains of Carrier Links.                        | The stability of long chains of Carrier Links was investigated with a view to improvement of the service.  | Completed.            |
| 2.64       | Tatsfield Teleprinter Service.                                    | Interference troubles arising out of the special requirements at Tatsfield were investigated and cured. The object of the system is to save manpower.  | Completed.            |
| 2.65       | Birmingham-Nottingham-Norwich Control Line Scheme.                | In order to include Nottingham in the inter-communication system at low annual cost, new prototype units have been designed and produced for Birmingham, Nottingham and Norwich.   | Continuing.           |
| 2.66       | General.  | Problems arising from the experience of O. & M. Department with existing apparatus produce a number of small jobs requiring investigation. Changing requirements and the availability of new components also call for some design effort. The object of this work is to maintain and improve the performance of the Communications System. | Continuing.           |

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| <u>No.</u> <u>Job.</u>   | <u>Work and Purpose.</u>   | <u>State of Work.</u> |
|--|--|-----------------------|
| 2.67 Tariff D<br>Line Records.   | Records of Tariff D lines were revised in co-operation with P.O. Engineering Department. This work enables the efficiency of the communications system to be improved.   | Completed.            |
| 2.7 <u>Investigation of Line Repeating Coils.</u>                        | In co-operation with the Sound Apparatus Section, an investigation of existing line repeating coils and of possible new designs was made in order to decide whether a suitable product could be obtained at a reduced price. | Continuing.           |
| 2.8 <u>Audio Inductance Coils.</u>                                       | About 450 inductance coils were produced, for use in equalisers or in prototype models of new designs. This is a service which assists the maintenance of the S.B. system and facilitates the work of Designs Department.    | Continuing.           |
| 2.9 <u>Systems for S.B. lines. Belfast-Stagshaw and Belfast-Glasgow.</u> | These two systems were put into service, and have improved the service at very low cost.   | Completed.            |
| 2.01 <u>Training of Mobile Maintenance Team.</u>                         | Maintenance of Remote Control Systems.   | Completed.            |

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| <u>No.</u> <u>Job.</u>  | <u>Work and Purpose.</u>  | <u>State of Work.</u> |
|---|---|-----------------------|
| 2.02 <u>Music Channels</u><br><u>from T.V. cir-</u><br><u>cuit.</u> | Production and field trial of a laboratory model for deriving 3 music channels from television circuit, with a view to reducing P.O. line rentals. Second important stage is to give this facility simultaneously with television transmission if possible. | Continuing.           |

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3 - SOUND APPARATUS UNIT - 5 Engineers.  
3 Laboratory Technicians.

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| <u>No.</u> | <u>Job.</u>  | <u>Work and Purpose.</u>   | <u>State of Work.</u>                           |
|------------|--|--|---|
| 3.1        | <u>Auto-Sequential Monitoring and Switching Equipment.</u> | The operation of this apparatus in service required some minor modifications.<br><br>Two million operations of selectors in service have raised contact problems, the solution of which may improve reliability of these switches in general service.<br><br>Design of small additional installations. | Completed.<br><br>Continuing.<br><br>Completed. |
| 3.2        | <u>O.B. Equipment.</u>                                     | Designed to reduce bulk and facilitate transport of O.B. gear. Should result in more output per man. Field trial showed need for small additional oscillator. This has also been designed. 50 sets have been ordered.  | Completed.                                      |
| 3.3        | <u>Standard Bays. (Transmitter Bay TL/52.</u>              | Required to rationalise Sound service requirements. A Single Bay now carries Sound input and crystal drive equipment.  | Completed.                                      |

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| <u>Nc.</u> | <u>Job.</u>   | <u>Work and Purpose.</u>   | <u>State of Work.</u>   |
|------------|---|--|---|
| 3.4        | <u>Studio Desks-Continuity.</u>                       | A modern design has been produced of a continuity desk required for Bristol, Belfast, London, etc.   | Completed.<br>(except for miscellaneous work after installation.) |
| 3.5        | <u>General Type A Mark VII Studio Equipment.</u>      | Designed and prototype being constructed to satisfy the requirements of Variety Department.  | Nearly completed.   |
| 3.6        | <u>Microphone Stands (Boom).</u>                      | To remove present unsatisfactory features of present stand, a modified commercial unit has been developed.   | Completed.  |
| 3.7        | <u>Increased Modulation of Overseas Transmitters.</u> | A prototype of an alternative design to the Langevin pre-emphasis/peak-chopping amplifier, has been designed and made. This may enable an improvement to be made in the signal noise ratio of propaganda services. | Completed.<br>(as far as is known at present.)                    |
| 3.8        | <u>Limiters.</u>                                      | A new limiter has been designed to occupy very much less rack space. These are required to keep up percentage modulation on Home Services. Additional uses are visualised.   | Completed.  |

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| <u>No.</u> | <u>Job.</u>                                      | <u>Work and Purpose.</u>  | <u>State of Work.</u> |
|------------|--|---|-----------------------|
| 3.9        | <u>Valves.</u>                                   | AC/SP3 valves are now obsolete, and a decision has been made on a preferred new standard. Meantime, service trial of miniature valves proceeding satisfactorily.                                    | Continuing.           |
| 3.01       | <u>Automatic Chain Switching for Bush House.</u> | Automatic chain switching apparatus has been designed and is being placed on service trial alongside alternative design by A/E.i.C., Bush House. This should save staff.                            | Continuing.           |
| 3.02       | <u>Clocks and Time Control.</u>                  | A need has arisen for a cheaper and more accurate time control equipment. First prototype crystal control clock proved unreliable and has been replaced by pendulum type. Service trial commencing. | Continuing.           |
| 3.03       | <u>Mains Units.</u>                              | To reduce the multiplicity of designs and achieve maximum economy. Preferred list is being prepared, and the optimum arrangement of power supply investigated.                                      | Continuing.           |

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| <u>No.</u> | <u>Job.</u>                                   | <u>Work and Purpose.</u>  | <u>State of Work.</u> |
|------------|---|---|-----------------------|
| 3.04       | <u>Amplifiers for Condenser micro-phones.</u> | A foreign cardioid condenser microphone has been approved and a much smaller amplifier is required than the commercial unit. Such a unit is being developed.  | Continuing.           |
| 3.05       | <u>Reactivating Dry Batteries.</u>            | To save expenditure on dry batteries, a feature for reactivating them was included in design of O.B.A.9 equipment. The report of London O.B. Unit on its general use not favourable and causes of complaint are being examined. | Continuing.           |
| 3.06       | <u>Two Tone Testing.</u>                      | Existing testing methods are cumbersome and time wasting. A simplified quick method is required. A prototype portable equipment has been developed, using two-tone method and is undergoing service trial.                      | Continuing.           |
| 3.07       | <u>Quadrant Faders.</u>                       | To ascertain whether the continental type of studio fader is desirable for general use in the B.B.C., a six-way panel was constructed for use in existing studios. Result inconclusive.   | Completed.            |

| <u>No.</u> | <u>Job.</u>   | <u>Work and Purpose.</u>   | <u>State of Work.</u>               |
|------------|---|--|-------------------------------------|
| 3.08       | <u>Automatic Equip-<br/>ment for inject-<br/>ing G.T.S.</u>       | The loss of G.T.S. on programme is regarded as serious and automatic equipment is required. Design work in hand.   | Continuing.                         |
| 3.09       | <u>New Studio and<br/>Control Room<br/>Equipment<br/>designs.</u> | Cost, and other factors render the existing B.B.C. designs unsuitable for future installations. Long term new design therefore is required under three headings:<br><br>(a) Studio Equipment.<br>(b) General Control Room Apparatus.<br>(c) Switching and Operating equipment.   | Continuing.                         |
| 3.001      | <u>Miscellaneous.</u>   | Various minor jobs, e.g. the design of transformers and other small components. Examination of commercial microphones, loudspeakers, and other equipment. Advice to P.& I.D. and others on such topics as monitor loudspeakers in T.V. Studio cubicles, the vetting of technical instructions etc. Assistance to O.& M. in clearing minor faults and giving special service e.g. clicks in amplifiers d-V.H.F. transmitters at Lime Grove; special moving coil headphones for T.V. use. Programme Meter Recorder, for checking S.B. circuits and studio modulation levels. | Essentially of a continuing nature. |

4 - SPECIAL SYSTEMS AND INSTRUMENT SECTION - 3 Engineers  
2 Lab. Technicians.

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| <u>No.</u> | <u>Job.</u>                | <u>Work and Purpose.</u>   | <u>State of Work.</u> |
|------------|----------------------------|--|-----------------------|
| 4.1        | <u>Automatic Monitors.</u> |  |                       |
| 4.11       | Minor.                     | Tests carried out to ascertain whether a Limiter could be used in the Monitored Chain. This is not possible without modification to A.S.O., which is now being considered.                 | Continuing.           |
| 4.12       | Major.                     | Set of operational equipment installed at Start Point and tested in collaboration with General Services Section.   | Completed.            |
| 4.13       | Line LAM.                  | New system developed from the basic prototype between London and Ramsgate. First set of equipment installed at Barnstaple. Further development required for through station apparatus.     | Continuing.           |
| 4.14       | Transmitter<br>AMT.        | Development of a simple Monitor for transmitters, with executive action to shut down a faulty transmitter. Some more design work may be necessary - subject to trial result at Barnstaple. | Continuing            |

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| <u>No.</u> | <u>Job.</u>   | <u>Work and Purpose.</u>   | <u>State of Work.</u> |
|------------|---|--|-----------------------|
| 4.2        | <u>Telephonic Indication Panel.</u>                 | Development of a unit associated with an Exchange Telephone Line. When a telephone call is made to the remote station, this gives coded information of the state of the equipment at the station. Prototype at Ramsgate, production model being tried at Barnstaple.   | Continuing.           |
| 4.3        | <u>R.F. Combining Units for small transmitters.</u> | Design of a Unit for coupling two low-power M.W. transmitters with adequate loss separation between each transmitter output, to provide for monitoring. Prototype installed at Ramsgate. Other models made up for Barrow and (by P.& I.D. to our design) for caravans. | Completed.            |
| 4.4        | <u>Unattended Transmitters.</u>                     |  |                       |
|            | 4,41 Ramsgate.                                      | Development of equipment for automatic transmitting stations.  | Completed.            |
|            | 4.42 Barnstaple.                                    | General design, manufacture and installation of the first sets of equipment to the final design for automatic operation of transmitters.   | Continuing.           |

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| <u>No.</u> | <u>Job.</u>                              | <u>Work and Purpose.</u>  | <u>State of Work.</u> |
|------------|--|---|-----------------------|
| 4.5        | <u>Television Studio Communications.</u> | Provision of communication system between Studio Manager and Producer. The receiver has been manufactured and is in general use. Design information of the transmitter has now been completed and manufacture is in progress.   | Completed.            |
| 4.6        | <u>Rebroadcast Receiver.</u>             | <p>A good quality, selective and stable receiver for picking up weak signals in the presence of strong local signals. Intended as an alternative to programme line if the latter fails. Field trials and design information completed. Drawings about to be issued.</p> <p>This has also involved design of Aerial Coupling Units for matching an aerial to the Feeder Cable.</p> | Nearly completed.     |
| 4.7        | <u>H.F. Transformer Design.</u>          | General design of small H.F. Transformer for use in various Departments. Particular designs have been of the R.F. Hybrid Coil for combining the outputs of small M.W. transmitters having output powers of up to 1 Kw.  | Continuous demands.   |



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| <u>No.</u> | <u>Job.</u>                           | <u>Work and Purpose.</u>   | <u>State of Work.</u>     |
|------------|---------------------------------------|--|---------------------------|
| 4.8        | <u>Investigation of Dry Joints.</u>   | Application of the Dry Joint Tester to conditions at various stations. This apparatus does not seem to have extensive use.   | Completed.                |
| 4.9        | <u>Variable Equalisers.</u>           | Design of Variable Equaliser EV3/2, EV4/2 and EV11 to circuits provided by Communications Section. Mechanical design by this Section for sake of uniformity.   | Continuing.               |
| 4.01       | <u>Television Transmitters.</u>       | In co-operation with P. & I.D., conversion of RCA 250 watt 2-20 Mc/s transmitters for operation in 60 Mc/s band. Two types of transmitter to be produced: one for Sound and one for Vision.<br>Sound transmitter.<br>Vision transmitter. | Completed.<br>Continuing. |
| 4.02       | <u>Transmission Equivalent Meter.</u> | Equipment to indicate on equivalent of long lines while transmitting programme. Laboratory prototype made up and demonstrated. Additional models will be made up for field trial.  | Continuing.               |

5 - TELEVISION TRANSMISSION UNIT. Jan-Aug.1952.- 5 Engineers.  
 2 Lab.Technicians.  
 Sept-Dec.1952- 4 Engineers.  
 4 Lab.Technicians.

| <u>No.</u> | <u>Job.</u>   | <u>Work and Purpose.</u>  | <u>State of Work.</u>   |
|------------|---|---|---|
| 5.1        | <u>Replacement of G.P.O. Repeater Equipment on Balanced Television Cable.</u> | To provide improved technical performance and to save annual rental.  | B.H. and A.P. equipment in service. Lime Grove equipment complete and waiting installation. |
| 5.2        | <u>Stabilising Equalising Units</u>   | Stabilises synchronising pulses and restores deficiencies in low frequency response. Acceptance tests have been carried out on 6 units manufactured by Pye's and Radio-Aid.                 | Completed.  |
| 5.3        | <u>Stabilising and level raising Amplifier.</u>                               | Incorporates a black level clamp, sync. pulse stabiliser and amplifier. Required for use at A.P. to raise the signal level from lv.D.A.P. to 30v.D.A.P. to operate existing A.P. equipment. | Completed.  |
| 5.4.       | <u>Equalisers.</u>  | Units for Kirke O'Shotts and Wenvoe. Correction of frequency characteristic for long lines.   | Completed.  |

| <u>No.</u> | <u>Job.</u>                               | <u>Work and Purpose.</u>   | <u>State of Work.</u> |
|------------|---|--|-----------------------|
| 5.5        | <u>Television Amplitude Meter.</u>        | To measure important amplitudes of television signals; peak white, average picture, sync. pulse. Modifications to include measurement of "picture black" relative to "black level".                              | Continuing.           |
| 5.6        | <u>Phase Equalisers TV/EQ/6.</u>          | To compensate for delay distortion on television O.B. and S.B. circuits. 6 sets being supplied for use in Switching Centres. 6 sets being supplied for use at T.V. Transmitters.                                 | Completed.            |
| 5.7        | <u>Bode Equaliser. TV/EV/3.</u>           | For use with T.V. links to correct distorted waveforms which cannot be dealt with by existing equalisers. 6 sets being supplied for use in Switching Centre. 6 sets being supplied for use at T.V. Transmitters. | Completed.            |
| 5.8        | <u>Amplifier Detector.</u>                | To provide part of insertion loss measuring set to facilitate testing and measurements at video frequencies.   | Completed.            |
| 5.9        | <u>Stabilised video Frequency Sender.</u> | To provide an amplitude stabilised video frequency source to facilitate testing and measurements.  | Continuing.           |

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| <u>No.</u> | <u>Job.</u>   | <u>Work and Purpose.</u>  | <u>State of Work.</u> |
|------------|---|---|-----------------------|
| 5.10       | <u>Television Receiver TV/REC/3.</u>                  | Quality check and re-broadcast receiver in the 40-70 Mc/s band. 12 being manufactured and an order for a further 18 placed.   | Completed.            |
| 5.11       | <u>Television Reception Test in Northern Ireland.</u> | Investigation of television reception in the Belfast area to determine the feasibility of using a radio pick up signal from Kirk O'Shotts for providing a local television service.   | Completed.            |
| 5.12       | <u>Television Receiver for 187-210 Mc/s.</u>          | Two receivers are required at Swains Lane for use with PTA/2, the 190 Mc/s TV.O.B. Transmitter. This is now the only radio O.B. link equipment in the London area, as the 64 Mc/s transmitters have been transferred to broadcasting service. These receivers are also for use in the field in connection with television O.B. links. | Continuing.           |
| 5.13       | <u>Centimetric Wave Test Team.</u>                    | Co-operation on tests at Wrotham and acceptance tests on new E.M.I. and S.T. & C. centimetric wave equipment.   | Continuing.           |
| 5.14       | <u>Television for Schools.</u>                        | Provision of seven 190 to 56 Mc/s convertors for use with commercial TV receivers in connection with Schools Television Experiment.   | Completed.            |

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| <u>No.</u> | <u>Job.</u>   | <u>Work and Purpose.</u>  | <u>State of Work.</u> |
|------------|---|---|-----------------------|
| 5.15       | <u>Receiving equip-<br/>ment at Swains<br/>Lane.</u>                                  | Overhaul and line up<br>of Swains Lane Tele-<br>vision O.B. Receiving<br>Equipment.   | Completed.            |
| 5.16       | <u>200 Mc/s recep-<br/>tion.</u>  | Investigation into low<br>noise 200 Mc/s Ampli-<br>fiers which has resulted<br>in considerable improve-<br>ment in the range of the<br>PTA/2 O.B. Mobile Trans-<br>mitter Link. | Completed.            |
| 5.17       | <u>Filters in the<br/>40-70 Mc/s Band.</u>  | Design of input filters<br>for use with television<br>receivers when used for<br>rebroadcast or quality<br>check purposes in the<br>presence of strong local<br>fields.         | Continuing.           |
| 5.18       | <u>Television re-<br/>ception tests<br/>at Wenvoe and<br/>Sutton Cold-<br/>field.</u> | Tests with re-broaeast<br>receiver to provide an<br>immediately available<br>reserve for London/<br>Birmingham and London/<br>Wenvoe T.V.Links.                                 | Continuing.           |
| 5.19       | <u>Manchester/<br/>Kirk O'Shotts<br/>S.B. Links.</u>                                  | Tests on 2-way tele-<br>vision links between<br>Manchester and Kirk<br>O'Shotts prior to<br>accepting them for<br>service.  | Completed.            |
| 5.20       | <u>London/Wenvoe<br/>Radio S.B.Link.</u>  | Tests on temporary<br>radio link London to<br>Wenvoe prior to the<br>opening of the station.  | Completed.            |

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| <u>No.</u> | <u>Job.</u>  | <u>Work and Purpose.</u>  | <u>State of Work.</u> |
|------------|--|---|-----------------------|
| 5.21       | <u>London, Wenvoe Cable. S.B. Link.</u>                              | Tests on new London/Wenvoe cable link prior to acceptance. This is the permanent circuit which replaces the temporary radio link.   | Continuing.           |
| 5.22       | <u>Television reception tests in the Bristol area.</u>               | The G.P.O. have so far been unable to provide a return link between Wenvoe and Bristol. Tests were carried out to find a suitable reception site near Bristol, to enable signals picked up from Wenvoe to be fed into the BS/LO cable link.                                   | Completed.            |
| 5.23       | <u>Reception of Wenvoe for the opening and subsequent T.V. O.Bs.</u> | Reception of television signals at Brentry for injection into the Bristol/London cable and main S.B.system.   | Completed.            |
| 5.24       | <u>Television Waveform restoration.</u>                              | Investigation into the feasibility of the removal of the distorted synchronising waveform from a picture signal and re-insertion of a new locally generated one. The purpose of this is to try and handle distorted waveforms which can not be dealt with by present methods. | Continuing.           |
| 5.25       | <u>Television Picture Monitors.</u>                                  | Performance and acceptance tests carried out on a number of picture monitors produced by various manufacturers.   | Continuing.           |

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| <u>No.</u> | <u>Job.</u>                               | <u>Work and Purpose.</u>   | <u>State of Work.</u> |
|------------|---|--|-----------------------|
| 5.26       | <u>Television ampli-<br/>fier TV/A/1.</u> | Acceptance tests on amplifiers made to our design information by All Power Transformers Ltd. These amplifiers are for use in the Television Service.                                       | Continuing.           |
| 5.27       | <u>Vision link to<br/>Langham Hotel.</u>  | Provision of a vision circuit from B.H. to Langham Hotel for feeding picture monitors, by equalising a telephone cable pair.   | Completed.            |
| 5.28       | <u>E.M.I. Waveform<br/>Monitor.</u>       | Modifications and design information for converting critically damped model to have maximally flat characteristic. They are for use by Television O and M Departments.                     | Completed.            |
| 5.29       | <u>Low pass Filters.</u>                  | Provision of a series of phase corrected Low Pass Filters with different cut off frequencies. These are for use by Television O. and M Lines Department.                                   | Continuing.           |
| 5.30       | <u>Television Test<br/>Generator.</u>     | This is a portable test generator primarily for field use, e.g. setting up and testing temporary television O.B. links. 30 of these instruments for use by Television O and M Departments. | Continuing            |

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| <u>No.</u> | <u>Job.</u>   | <u>Work and Purpose.</u>   | <u>State of Work.</u> |
|------------|---|--|-----------------------|
| 5.31       | <u>Television Amplifier TV/A/2.</u>                   | This amplifier has been designed at the request of Television O & M to enable the E.M.I. Picture Monitors at A.P. to be operated from a lv. D.A.P. television signal.  | Completed.            |
| 5.32       | <u>Tie Line Equalisers.</u>                           | Provision of equalisers at Lime Grove to correct the distortion on tie lines between Studio 'D' and temporary Line Termination Room.   | Completed.            |
| 5.33       | <u>Television Distribution Amplifier TV/DA/1.</u>     | Investigation into instability experienced on production models of this amplifier, with certain valves. Source of trouble located and satisfactory solution found. Equipment Department supplied with the necessary information.                                 | Completed.            |
| 5.34       | <u>Television Waveform Monitor TV/WM/1.</u>           | Investigation into random movement and jitter of the displayed trace on fast sweeps, experienced with certain of the production models of this instrument.   | Continuing.           |
| 5.35.      | <u>Filters for re-broadcast Receiver at Brighton.</u> | The video signal for the temporary TV transmitter at Brighton will be provided by radio pick up of A.P. using TV/REC/3. As this receiver will be operated on the same site as the local transmitter, special input filters are required to prevent interference. | Continuing.           |



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| <u>No.</u> | <u>Job.</u>  | <u>Work and Purpose.</u>   | <u>State of Work.</u> |
|------------|--|--|-----------------------|
| 5.36       | <u>Temporary Television Transmitters.</u>                      | Modifications are in progress to Television stabilising Amplifiers TV/STA/2 for providing the video input to the temporary vision transmitters at Brighton, and reserve transmitters at Pontop Pike and Belfast.                     | Continuing.           |
| 5.37       | <u>Synchronization of local and remote television signals.</u> | Investigation into the feasibility of synchronizing local and remote television signals to facilitate smooth switching between different programme sources. Also to enable such devices as inlay to be used on composite programmes. | Continuing.           |
| 5.38       | <u>Training Lines Department Engineers.</u>                    | Training of Lines Department Television Engineers in television transmission technique.  | Continuing.           |
| 5.39       | <u>Calibrated Frequency Meter.</u>                             | Extension of range of crystal calibrator from 40-200 Mc/s.   | Completed.            |

6 - TELEVISION APPARATUS UNIT - 4 Engineers.  
2 Laboratory Technicians.

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| <u>No.</u> | <u>Job.</u>  | <u>Work and Purpose.</u>  | <u>State of Work.</u> |
|------------|--|---|-----------------------|
| 6.1        | <u>Zoom Lens.</u>  |   |                       |
| 6.11       | Motorisation of 5:1 Watson Zoom Lens.                    | A second lens has been delivered and motorised for zoom, focus and iris control. (The first lens was motorised for zoom control only.)  | Completed.            |
| 6.12       | Motorisation of 5:1 Zoom Lens Taylor, Taylor and Hobson. | Considerable design co-operation with Taylor, Taylor and Hobson about the mechanical design of their 5:1 Zoom Lens which they will supply next year. We shall supply the electronic apparatus to operate the servo motors in the lens.  | Continuing.           |
| 6.13       | Control of 5:1 Zoom Lens (New Watson Lenses).            | Four 5:1 zoom lenses of a new type are expected from Watson's in time for the Coronation. Because of the time factor, and because of the mechanical design of the lens lends itself, purely mechanical controls are being provided. The design work of these is being pressed forward in parallel with the lens design. We shall construct the lens cradles and control arrangements. | Continuing            |

| <u>No.</u>                  | <u>Job.</u>              | <u>Work and Purpose.</u>  | <u>State of Work.</u>                            |
|-----------------------------|--------------------------|---|--|
| <u>6.2 Back Projection.</u> |                          |   |  |
| 6.21                        | Still Back Projection.   | Early in the year the work of reconstructing the still back projection machine at Lime Grove was completed. The machine has given excellent service, having done over 200 shows. Design work for further projectors is in hand.   | Completed.                                       |
| 6.22                        | Back Projection Screens. | Sources of back projection screens were investigated and several samples of screen measured optically. A satisfactory type of screen available from a British firm was found.<br>Further experiments in conjunction with Television Design and Supply are in progress to find a cheaper screen material.<br>Experiments with projective aluminium blinds for the back projection screens are in hand. | Completed.<br><br>Continuing.<br><br>Continuing. |
| 6.23                        | Moving Back Projection.  | The plan to use 16 mm film for moving back projection was modified after further examination and tests on 35 mm were carried out. Satisfactory results in the C.P.S. cameras were obtained and moving B.P. has been used in several transmissions. Further tests on Photicon cameras are in hand.   | Continuing.                                      |

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| <u>No.</u> | <u>Job.</u>                     | <u>Work and Purpose.</u>   | <u>State of Work.</u> |
|------------|---------------------------------|--|-----------------------|
| 6.3        | <u>Inlay.</u>                   | Two complete sets of inlay equipment were finished. One set installed in Studio B with Photicon cameras and a series of demonstrations given to programme and engineering staff. The equipment now awaits installation in studios. | Completed.            |
| 6.4        | <u>Telefilm Test Equipment.</u> |  |                       |
| 6.41       | Pulse Generator.                | The new pulse generator which produces a number of specialised waveforms for telefilms has been completed.   | Completed.            |
| 6.42       | Staircase Generator TVTG.4.     | A design of a staircase waveform generator was produced for telefilm recording units. Four were constructed and two have already been installed.   | Completed.            |
| 6.5        | <u>Scene Reflector.</u>         | A prototype scene reflectometer has been delivered to Tel.O & M to develop the technique of calibrating the reflectivity of scene and dress materials. Further work may be necessary later in the light of their experience.       | Completed.            |

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| <u>No.</u> | <u>Job.</u>                                 | <u>Work and Purpose.</u>  | <u>State of Work.</u> |
|------------|---|---|-----------------------|
| 6.6.       | <u>S.B. Switching Panel for Television.</u> | A relay panel to facilitate switching of television signals at switching centres either at video or carrier frequency was designed. Seven have been constructed and installed.  | Completed.            |
| 6.7        | <u>Single Frame Exposure Pulse.</u>         | A device for exposing a single television frame on a picture tube was produced for the photography of television pictures.  | Completed.            |
| 6.8        | <u>Caption Scanners.</u>                    | Preliminary experimental work in connection with the design of a flying spot Transparency scanner was done. Work dropped since the request for caption scanners has been dropped on financial grounds.                              | Completed.            |
| 6.9        | <u>High Grade Picture Monitors.</u>         | Design work has commenced on the design of a high grade picture monitor for telefilm recording purposes. This is required for our own work in the Telefilm section, and also as a possible cheaper design for future installations. | Continuing.           |

7 - TELEFILM RECORDING UNIT - 2 Engineers.  
1 Laboratory Technician.

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| <u>No.</u> | <u>Job.</u>                           | <u>Work and Purpose.</u>   | <u>State of Wrk.</u>                  |
|------------|---------------------------------------|--|---------------------------------------|
| 7.1        | <u>Microdensitometer.</u>             | This instrument is required for measurement of Telefilm recording characteristics. An experimental model has been set up and tested and a further prototype is being constructed.  | Continuing.                           |
| 7.2        | <u>Kemp Duddington 16 mm. Camera.</u> | This project was taken over from P.& I.D. in February. The performance of the optical system is <sup>u</sup> satisfactory. It has been established that little improvement is possible without extensive re-design. It is likely that this camera will be modified to have a normal pull down arrangement for use as a 16 mm. test camera. | In abeyance but report to be written. |
| 7.3        | <u>Eclair 16 mm. Camera.</u>          | A fast pull down 16 mm. camera has been on loan from the makers, Messrs. Cameflex of Paris. Experimental recordings have been made to evaluate its performance as a recording camera with very satisfactory results. The camera has been returned to the makers who hope to eliminate some phase unsteadiness which has been experienced.  | Completed.                            |

| <u>No.</u> | <u>Job.</u>                            | <u>Work and Purpose.</u>  | <u>State of Work.</u> |
|------------|--|---|-----------------------|
| 7.4        | <u>35mm/16 mm. Reduction Printing.</u> | Reduction prints from 35 mm. Telefilms have not been satisfactory. A study of the problem has revealed that some reduction in printing losses is possible, but that the remaining losses would still be serious when they are added to the original recording loss.   | Continuing.           |
| 7.5        | <u>Photographic Investigation.</u>     | Difficulty has been experienced in recording interlaced pictures on 16 mm. film owing to an effect in which two interlaced frames do not record with equal intensities. Similar phenomena have been described in photographic literature. The advice of Messrs. Ilford Ltd., has been sought as to how the effect may be minimized. No conclusions have yet been reached. | Continuing.           |

8 - GENERAL SERVICES SECTION - 4 Engineers.  
4 Laboratory Technicians.  
1 Outside Inspector.  
6 Draughtsmen.  
12 Mechanics.  
6 Finance, Clerical and  
Stores.

The General Services Section gives production, technical and administrative service to the whole department.

The work involves the complete production of prototypes in connection with new designs. This includes draughting, ordering and stocking of components, manufacture, technical inspection and testing, and in some cases installation. To an increasing extent the section advises on mechanical features to facilitate production and collaborates on the design of specialised mechanism. The work of the production side of the section can best be expressed by the accompanying schedule of projects handled during the year under review. The times taken give a measure of the effort involved in the actual production of equipment.

When only a few units are required for the service and are unlikely to be repeated, these are often manufactured outside the Corporation. Such manufacture usually takes place with relatively scanty draughting information but under close supervision from this section. In this way considerable draughting effort is saved.

The test Room staff inspects prototypes and determine a suitable working test specification, required for manufacture or maintenance. For this reason, they often co-operate in the installation of field trial equipment.

The Drawing Office work on prototypes is kept to a minimum, but where the preparation of manufacturing information is essential, our drawings are produced in a form so as to be acceptable to Equipment Department without re-drawing.

Considerable Drawing Office effort is also required in the preparation of Reports, Design Specifications, etc., for subsequent production. As in many cases these serve as interim Technical Instructions, the circulation may be considerable; between 500 and 1,000 folders have been prepared and issued during the year. This work is additional to the preparation of drawings such as those for I.E.E. Papers, Lectures, Lantern Slides, Exhibition Captions, B.B.C. Quarterly, and data sheets for items like relays, coils and transformers.



Financial submissions, scheme accounts, requisitioning, technical filing, library service and all normal administrative matters are dealt with by this section. The whole of this side of the work is carried out by a financial assistant and four clerks.

Schedule of Equipment produced under Designs Department supervision during 1952.

| No. | Description of Equipment.   | No. of Units. | D.Dept. Model Shop Man Mths. | Outside Contractors Mths. | Comments.                              |   |
|-----|---|---------------|------------------------------|---------------------------|--|---|
| 8.1 | <u>HOME COVERAGE (Towyn).</u><br>comprising:-<br><u>Line Termination.</u><br><u>Panels.</u> |               |                              |                           | All panels completed within six weeks. |   |
|     | LTP/5A  | 1             | }                            | 1½                        |  |   |
|     | LTP/5B  | 1             |                              |                           |  |   |
|     | <u>Relay Panel.</u><br>RLP/5C   | 1             |                              | 1                         |  |   |
|     | <u>Holding and Delay Panel.</u><br>HLD/1  | 1             |                              | ½                         |  |   |
|     | <u>Monitor Unit RF</u><br>MURF/1A   | 2             |                              | 1                         |  |   |
|     | <u>Holding Panel</u><br>HLP/1C  | 1             |                              | ½                         |  |   |
|     | <u>Sequential Monitoring Panel.</u><br>SQM/2  | 1             |                              | 1                         |  |   |
|     | <u>Control Panel</u><br><u>Rack Mounted.</u><br>CPR/23                                      | 1             |                              | 1                         |  |   |
|     | CPR/13D   | 1             |                              | 1                         |  |   |
| 8.2 | <u>HOME COVERAGE (Barnstaple)</u>   |               | 12                           |                           |  | Prototype system constructed and assembled in laboratories. This involved manufacture of 12 units and their assembly and wiring in bay cabinet. |

| No. | Description of Equipment.   | No. of Units. | D.Dept. Model Man | Shop Mths. | Outside Contrac-<br>tors Mths. | Comments.   |   |
|-----|---|---------------|-------------------|------------|--------------------------------|---|---|
| 8.3 | <u>HOME COVERAGE (Reserve Panels)</u><br>comprising:-<br><u>Phantom Alarm Panel.</u><br>PAP/1 | 1             |                   | -          |                                | Work in progress. The working drawings for all this home equipment were produced concurrently with its manufacture. |   |
|     | <u>Debit-Credit Integrator.</u><br>DCI/1  | 1             |                   |            |                                |   |   |
|     | <u>Phantom Relay Panel (Receiving)</u><br>PRR/1   | 1             |                   |            |                                |   |   |
|     | <u>Phantom Relay Panel (Sending)</u><br>PRS/1   | 1             |                   |            |                                |   |   |
|     | <u>Telephonic Indicator Panel.</u><br>TIP/1   | 1             |                   |            |                                |   |   |
|     | <u>Line Monitor Detector (Sending)</u><br>LMDS/1  | 1             |                   |            |                                |   |   |
|     | <u>Line Monitor Detector (Receiving)</u><br>LMDR/1  | 1             |                   |            |                                |   |   |
|     | <u>Hybrid Coils RF</u>  | 4             |                   | 1          |                                |   |   |
| 8.4 | <u>TELEVISION SENDING AMPLIFIER.</u><br>TVSA  | 2             |                   |            | 2                              |   | Completed.  |
|     | <u>Stabilised Power Supply.</u><br>SPS/4  | 2             |                   |            |                                |   |   |
| 8.5 | <u>TELEVISION EQUALISERS BODE.</u><br>TV/EV3  | 12            |                   |            |                                |   | Work in progress. To be manufactured to very close electrical tolerances. |
|     | <u>Equalisers Phase.</u><br>TV/EQ/6A  | 12            |                   |            |                                |   |   |
| 8.6 | <u>TELEVISION TEST GENERATOR.</u><br>TV/TG/2  | 3             |                   |            | 1                              | Made by Research and Eqpt. Dept.  |   |
|     | <u>Stabilised Power Supply.</u><br>SPS/4.   | 3             |                   |            |                                |   |   |

| No. | Description of Equipment.   | No. of Units.                                     | D. Dept. Model Man | Shop Mths.                 | Outside Contractor Mths.                        | Comments.  |
|-----|---|---|--------------------|----------------------------|---|--|
| 8.7 | <u>BUSH HOUSE PROGRAMME SWITCHING.</u><br>comprising:-<br><u>Wiring and Installation.</u><br><u>'V' Bay</u>   | 1   |                    | 5                          | 1½  | Completed.   |
| 8.8 | <u>INLAY.</u><br>comprising:-<br><u>Slide Unit Supply Panels.</u><br><u>TV/SUS/1 Picture Delay Units.</u><br><u>PDU</u><br><u>Mirror Panels</u><br><u>TV/IMP.</u><br><u>Mains Dist. Panels.</u><br><u>TV/SEP</u><br><u>Television Inlay Control Unit.</u><br><u>TV/ICU</u><br><u>Stabilised Power Supply.</u><br><u>SPS/7</u><br><u>Meter Terminal Guards.</u><br><u>Electronic Switches.</u><br><u>TV/ES</u><br><u>Television Slide Units.</u><br><u>Slide Mechanism Control.</u><br><u>TVSA/1A</u><br><u>SPS/4</u><br><u>Frame for Picture Mon.</u> | 2<br>3<br>2<br>2<br>12<br>100<br>3<br>2<br>2<br>2 |                    | 15 (Development)<br>3<br>3 | 2<br>2<br>1<br>1<br>1<br>1½<br>1<br>2<br>2<br>½ | Precise mechanical work without final drawings.<br>Work continuing |

| No.  | Description of Equipment.   | No. of Units. | D. Dept. Model Shop Man Mths. | Outside Contrac- tors Mths. | Comments.   |
|------|---|---------------|-------------------------------|-----------------------------|---|
| 8.9  | <u>REMOTE CONTROL (Stop Gap).</u><br>comprising:-<br><u>Control Panel</u><br>CPR/21   | 3             |                               | 2                           | Work practically complete. Interim equipment to implement staff saving. |
|      | <u>Relay Panel.</u><br>RLP/7  | 3             |                               | 2                           |   |
|      | <u>Relay Panel</u><br>RLP/8   | 1             |                               | 1                           |   |
|      | <u>Filter Low Pass</u><br>FLP/4   | 2             | 1                             |                             |   |
|      |   |               |                               |                             |   |
| 8.10 | <u>ZOOM LENS.</u><br>comprising:-<br><u>Focus Handle for</u><br><u>5:1 Zoom Lens.</u><br><u>Handle Cable Drive</u><br><u>and Servo Control.</u> | 1<br>1<br>1   | 4                             | 2                           | Precise mechanical work.<br><br>Work complete.                          |
| 8.11 | <u>BACK PROJECTION</u><br>comprising:-<br><u>Fitting and</u><br><u>Assembly</u>   |               | 3                             | 1                           | Work complete. Calling for manufacture without drawings.                |
| 8.12 | <u>TELEVISION TEST GENERATOR.</u><br>TV/TG/4  | 4             |                               | 4                           | Completed.  |
| 8.13 | <u>G.P.O. TELEPHONE</u><br><u>O.B. EQUIPMENT.</u>   |               | $\frac{1}{2}$                 |                             | Completed.  |
| 8.14 | <u>TELEVISION DISTORTION MEASURING SET.</u><br>TDM/2  | 1             |                               | 2                           | Completed.  |
| 8.15 | <u>LANGEVIN AMPLIFIER.</u><br>PCA/2   | 1             | 1                             |                             | Completed.  |
| 8.16 | <u>SUPPRESSION GENERATORS.</u>  | 3             | 3                             |                             | Completed.  |
| 8.17 | <u>MOTORISING CINECAMERA.</u>   | 1             | 1                             |                             | Completed.  |

| No.  | Description of Equipment.                    | No. of Units. | D. Dept. Model Man | Shop Mths. | Outside Contrac- tors Mths. | Comments.  |
|------|--|---------------|--------------------|------------|-----------------------------|--|
| 8.18 | <u>TELEVISION SWITCHING PANEL.</u>           |               |                    |            |                             |  |
|      | TV/SP/3                                      | 2             |                    |            | 3                           | Completed.   |
|      | Television Key Panel                         |               |                    |            |                             |  |
|      | TV/kP/16                                     | 2             |                    |            |                             |  |
| 8.19 | <u>PORTABLE RELAY TESTER.</u>                | 5             | 2                  |            |                             | Manufactured to Designs Dept. Test Room proto- type infor- mation.                           |
| 8.20 | <u>TELEVISION AMPLIFIER.</u>                 |               |                    |            |                             |  |
|      | TV/A/2                                       | 3             |                    |            | 1                           | 1 completed. 1 being made.   |
| 8.21 | <u>TELEVISION TEST MODULATOR.</u>            |               |                    |            |                             |  |
|      | TV/TM  | 2             |                    |            | 2                           | Manufactured to rough laboratory sketches.   |
| 8.22 | <u>MICROPHONE MOUNTING AND ADAPTORS ETC.</u> |               |                    |            |                             |  |
|      |  |               |                    |            | 2                           | Continuing.  |
| 8.23 | <u>LINE PERFORMANCE RECORDER.</u>            |               |                    |            |                             |  |
|      | LPR/1  | 1             |                    |            | 1                           | Completed.   |
| 8.24 | <u>INSPECTION GAUGES.</u>                    |               |                    |            |                             |  |
|      |  | 2             |                    |            | 1                           | Manufactured to within .0002" .  |
| 8.25 | <u>LINE TEST SETS.</u>                       |               |                    |            |                             |  |
|      |  | 1             |                    |            | $\frac{1}{2}$               | Manufactured to free hand sketches.  |
| 8.26 | <u>TELEVISION RECEIVER 4.</u>                |               |                    |            |                             |  |
|      | 200 Mc/s Receiver.8                          |               |                    |            |                             | Work in pro- gress. Manu- facturer copy- ing prototype and supplying full drawings to B.B.C. |
|      | plus SPS/7                                   | 14            |                    |            |                             |  |
|      | Stabilised Power Supply Video Strip.         | 1             |                    |            | $\frac{1}{2}$               |  |

| No.  | Description of Equipment.   | No. of Units.             | D. Dept. Model Shop Man Mths. | Outside Contractors Mths. | Comments.  |
|------|---|---------------------------|-------------------------------|---------------------------|--|
| 8.27 | <u>CONVERSION OF RCA TRANSMITTERS.</u><br>for<br>Sound<br>Vision        | 1<br>1                    | 1<br>2                        |                           | High priority for Corona-tion Manu-factured without draw-ings.           |
| 8.28 | <u>PATCH BOX BRIDGES.</u> 6   |                           |                               |                           | Work in pro-gress for S.E.L.   |
| 8.29 | <u>PROTOTYPE BAKELITE MOULDING.</u><br>for<br><u>Lamp Holders.</u> 40   |                           |                               |                           | Work in pro-gress to rough sketch.                                       |
| 8.30 | <u>EQUALISERS.</u><br>EV/9<br>EV/10                                     | 6<br>6                    |                               | 3<br>3                    | This involv-ed co-ordina-tion of var-ious manu-facturers. Work complete. |
| 8.31 | <u>TEMPERATURE CONTROL UNITS.</u><br>TCU/1<br>" 2<br>" 4a<br>" 5<br>" 6 | 24<br>18<br>18<br>12<br>9 |                               |                           | } 4<br>Considerable Test Room effort required. Continuing.               |
| 8.32 | <u>TV EQUALISERS.</u>   | 11                        | 4                             |                           |  |
| 8.33 | <u>MINIATURE GENERAL PURPOSE AMPLIFIER.</u>                             |                           | 1                             |                           |  |
| 8.34 | <u>TV OSCILLATOR.</u>   | 1                         | 2                             |                           |  |
| 8.35 | <u>TV DELAY LINE.</u>   | 9                         | 1                             | 1                         |  |

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| No.  | Description of Equipment.   | No.of Units. | D.Dept. Model Shop<br>Man Mths. | Outside Contrac-<br>tor Mths. | Comments.  |
|------|---|--------------|---------------------------------|-------------------------------|------------|
| 8.36 | <u>SKELTON.</u><br>comprising:-<br>1 KL/34<br>1 FLP/6<br>and<br>installation. |              | 2                               | 1                             | Completed. |

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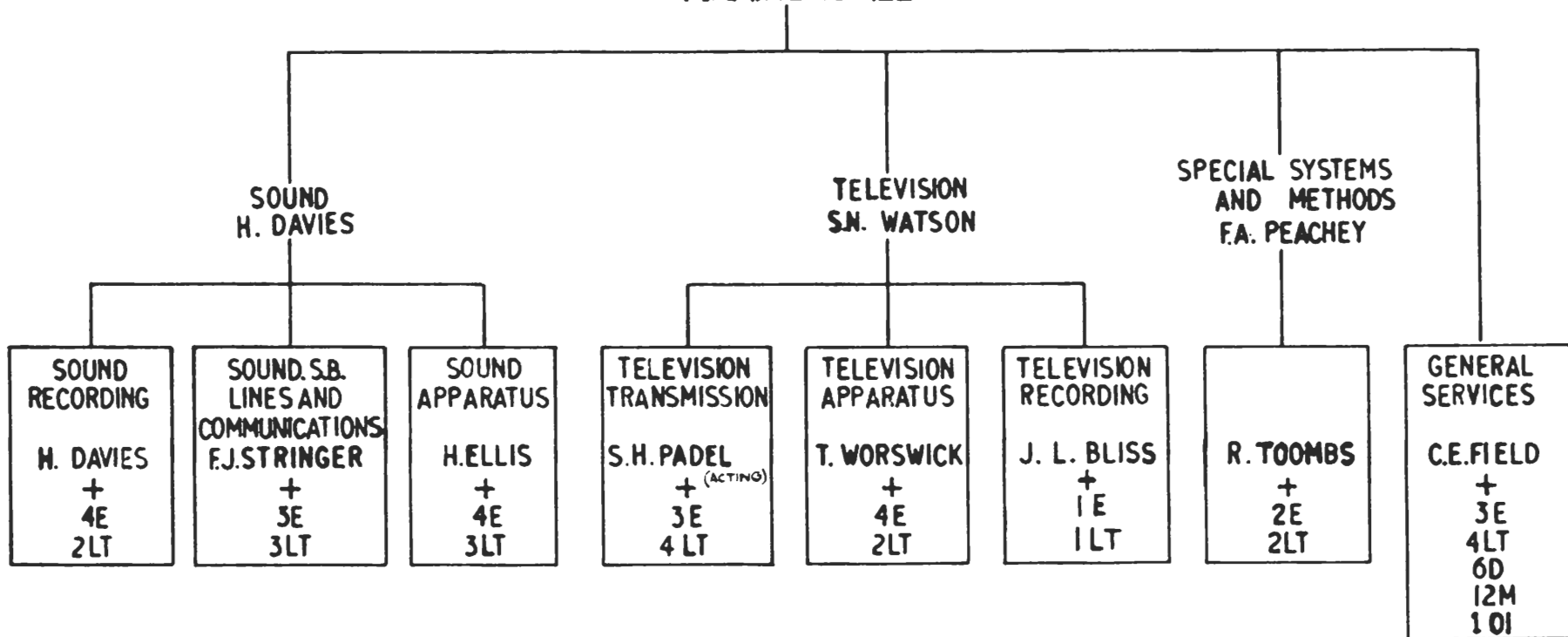
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16.1.53.



# DESIGNS DEPARTMENT

ORGANISATION CHART SHOWING  
TECHNICAL STAFF

H.D.D.  
ARA.RENDALL



E = ENGINEER

M = MECHANIC

LT = LABORATORY TECHNICIAN OI = OUTSIDE INSPECTOR

D = DRAUGHTSMAN

