

# THE BRITISH BROADCASTING CORPORATION

## *ENGINEERING DIVISION*

DESIGNS DEPARTMENT

ANNUAL REPORT

1951

## ANNUAL REPORT - DESIGNS DEPARTMENT

Designs Department is organised in six 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.

An organisation chart is attached.

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 exploited by 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 on devising new apparatus for service needs, and the greater emphasis has been placed on improved methods and mechanical devices to save staff. Sequential monitoring, time switching apparatus and new O.B. equipment are good examples of this, and important staff savings have resulted.

The Special Systems and Instrument Section is almost wholly employed on devising means to increase efficiency. The automatic monitor was the outcome of this section's endeavours, and now they are making a useful contribution 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 extension of the service to Scotland, and the Regional O.B. scheme has required the development of special test apparatus, as by this means alone can we ensure an expectation of good quality reproduction at the end of the chain. The trade have tried to attribute some of their own design shortcomings to the quality of our transmissions. Our work has enabled us to show them fairly where improvement is required. The importance of simplifying technique has not been forgotten. Our work on special scenic effects, 'inlay' and back projection should simplify and reduce demands for actual scenery, as well as improving facilities.

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 and link performance and common methods of test.

Examination of outside manufactured apparatus 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 what we want and what 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. A striking example of this is the back projection equipment at Lime Grove to replace the expensive Pinewood equipment. By assembling some parts available at Lime Grove, some parts bought outside, and others made in our Model Shop, a replacement equipment was provided for less than 1/10th the cost of the Pinewood machine.

The presentation of jobs which follows indicates those which have been carried to completion during the year and the state of those still current.

1 - RECORDING UNIT - 5 Engineers  
2 Laboratory Technicians

Job	Work and Purpose	State of Work
1.1 <u>Tape Wiper</u>	A machine for erasing signal from magnetic tapes at a rate of about 12 reels per minute (and without removing the reels from their boxes) was completed and handed to Operations Department.	Completed.
1.2 <u>Tests of Commercial Tape Recorders</u>	Tests and reports in order to assess the relative merits of these machines. In case of R.G.D. and Boosey & Hawkes, modifications required and agreed.	Completed.
	R.G.D. (5 versions) Stancil Midget (2 versions) Boosey & Hawkes Midget (many versions) Ferrograph Scophony-Baird M.S.S. Magnecorder E.M.I. Portable Philips (semi-professional) Philips (professional portable)	
1.3 <u>D.C./A.C. Convertor</u>	Tests have been carried out on a commercial governed rotary convertor and the results compared with those from an original design of commutator-interrupter DC/AC convertor. The commercial unit was recommended for operational use. Subsequently, tests have been carried out on a commercial vibrator type of convertor and this too has been recommended for operational use.	Completed.

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Job	Work and purpose	State of Work
1.4 <u>Generator for Mobile Recording</u>	A search was made for a small engine driven alternator quiet enough and with adequate stability to supply mobile recorders. Diesel and petrol units were tested at the makers' works or at Maida Vale and a unit with a 2 stroke watercooled petrol engine was recommended for operational use.	Completed.
1.5 <u>Standardisation</u>	A considerable measure of dimensional standardisation has been achieved during the past year both in B.S.I. and in C.C.I.R. discussions, though agreement on a magnetic recording characteristic is not yet obtained. In this connection a number of test tapes have been prepared and means of determining absolute head alignment have been developed. This work has been carried out in close collaboration with Research Department who have carried out the fundamental investigations into magnetic recording.	Essentially of continuing nature.
1.6 <u>Buchmann-Meyer</u>	A prototype production model of a portable Buchmann-Meyer device for setting up disk recorders has been made from a development model supplied by Research Department	Completed.
1.7 <u>Disk Recording</u>	An investigation is in hand to determine the possibility of using heated cutting styli or alternatively sharper ones	Still in hand.

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Job	Work and Purpose	State of work
1.8 <u>Disk Reproduction</u>	<p>A method of securing a proper adjustment of the E.M.I. type 12 head has been worked out and a specification issued. This head is widely used for disk reproduction. Efforts have been made to find a more satisfactory way of applying damping to these heads; so far results are rather encouraging and ageing tests are in hand.</p>	Continuing.
	<p>With a view to the development of a turntable to replace the present Garrard units a test rig has been made to enable tests on a novel form of reduction gear to be carried out.</p>	Continuing.
1.9 <u>Frequency Stabilisation</u>	<p>The adaptation of the vibrator unit referred to above as a means of deriving stable frequency supply from varying mains.</p>	Continuing.

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

Job	Work and Purpose	State of Work
2.1 <u>S.B. System Design</u>	Lines require new equalisers occasionally and temperature correction data has to be collected so that temperature correction can be systematically applied. Small but steady effort to maintain quality standards.	Continuing nature.
2.2 <u>New Lines Acceptance</u>	In order to keep in touch with trends, new permanent lines are equalised by this section.	Continuing.
2.3 <u>Further Design on Temperature Correctors</u>	To reduce maintenance effort required.	Continuing.
2.4 <u>Redesign of Variable Equaliser EV/5</u>	Reduction of testing effort on O.B. lines	Complete.
2.5 <u>Investigation of Methods of Measuring Line Noise. Design and production of Experimental Weighting Networks for Line Noise Measurement</u>	Noise is always present on lines to some extent. Work was to obtain consistent readings so that maintenance is simplified.	Continuing.
2.6 <u>Investigation of Phase Distortion on Long Music Lines</u>	Improvement of line quality at distant transmitters.	Continuing.
2.7 <u>Design of 'Bode' Type Equaliser EV/9 and EV/10</u>	This is a simplified overall equaliser which should improve overall quality with no increase of effort.	Complete.
2.8 <u>Design and Production of High Pass Filter</u>	Improvement of performance of Hamburg music line: a service requirement.	Complete.

Job	Work and Purpose	State of Work
2.9 <u>Design work in Connection with Installation and Putting into Service of Remote Control Systems at Liverpool, Preston and Stockton</u>	Saving of man-power	Complete.
2.10 <u>Completion of Design Work for Remote Control Systems at Dundee, Wrexham and Exeter</u>	Saving of man-power	Continuing.
2.11 <u>Switching System for Northern Ireland Home Service to Stagshaw</u>	Improvement in line quality at Stagshaw in view of many complaints.	Design complete - await P.O. line work before putting into service.
2.12 <u>Reversing System for Glasgow - Belfast Music Line</u>	To obtain two-way facilities to Northern Ireland at reduced annual rental.	Design complete - await P.O. line work before putting into service.
2.13 <u>Design Work to Complete Part 1 of Communications Scheme</u>	Expansion and improvement of Communications System at low annual cost.	Nearly complete.
2.14 <u>Review of Design Information for Part 2 of Communications Scheme</u>	Expansion and improvement of Communications System at low annual cost.	Continuing.



Job	Work and Purpose	State of Work
2.15 <u>Provision by Designs Department of three telegraph margin testers, two telegraph distortion measuring sets, one teleprinter test panel and one telegraph test bay for above scheme.</u>	Expansion and improvement of Communications System at low annual cost.	Design complete - some supervision of manufacture and testing required.
2.16 <u>Teleprinter Signalling Unit TPSU/1 and work in connection with production of prototype.</u>	Improvement and expansion of teleprinter services.	Design complete - supervision of manufacture and testing required.
2.17 <u>4-wire Terminating and Ringing Unit FWTR/1 and work in connection with production of prototype.</u>	Improvement of control lines, especially for television service. Essential on some difficult lines.	Complete.
2.18 <u>V.F. Remote Programme Selection System at Tatsfield.</u>	Reduction of operational effort and saving in line rental.	Complete.
2.19 <u>Tatsfield D.C. Teleprinter Service.</u>	Reduction of operational effort.	Design complete - some teething troubles to overcome.
2.20 <u>Investigation into stability of long chains of carrier links.</u>	Improvement of communication service.	Continuing.
2.21 <u>Preliminary investigation into facsimile (picture telegraph) systems.</u>	New service and reduction of skilled effort.	Continuing.

3 - SOUND APPARATUS UNIT - 5 Engineers  
3 Laboratory Technicians

Job	Work and Purpose	State of Work
3.1 <u>Auto.Sequential Monitoring and Transmitter Switching Equipment.</u>	Sequential monitoring allows one operator to monitor the entire output of the station without undue fatigue thereby enabling each transmitter engineer to attend to two senders instead of one, with a consequent staff saving.	Skelton complete and working, application to other stations under consideration.
3.2 <u>Master Operating Position (Regions).</u>	Equipment employing selector switching technique which enables a single operator to control the entire switching and programme monitoring load for a regional centre; including continuity for most of the day.	Prototype for Bristol complete.
3.3 <u>O.B. Equipment.</u>	Reduce the bulk and to facilitate transport of O.B. gear. Should result in more output per man.	Prototype complete and undergoing service trial.
3.4 <u>Standard Bays.</u> O.B. Termination Control Position.	Required to rationalise sound service requirements.	Continuing.

Job	Work and Purpose	State of Work
3.5 <u>New Units.</u> Attenuator. Telephone. Key and Lamp. Filter. Control. Relay.	To meet demands of the operating departments.	Complete.
3.6 <u>Studio Desks.</u> Talks.	Investigation of requirements and examination of available commercial model, resulting in use of Marconi desk which is much cheaper than Type A, Mark II.	Work on Marconi desk complete; other desks being investigated.
General.	Specification of performance in an endeavour to interest manufacturers in our general requirements. Discussions with Equipment Department to reduce any difficulties on Mark VII for Variety Department.	Continuing.
3.7 <u>Microphone Stands.</u>	Introduction of cheap commercial stand.	Complete.
3.8 <u>Cue Light Stands.</u>	To remove present unsatisfactory features.	Complete.
3.9 <u>Booms.</u>	To remove present unsatisfactory features.	Continuing.
3.10 <u>Increased Modulation of Overseas Transmitter.</u>	To determine efficacy of limiting and pre-emphasis on Overseas service.	Continuing.

Job	Work and Purpose	State of Work
3.11 <u>Limiters.</u>	Limiters are required to keep up percentage modulation on Home Service. A new and cheaper version is being designed.	Continuing.
3.12 <u>Valves.</u>	To find a replacement for now obsolete AC/SP.3 and to try miniature valves in prototype service equipment.	Experimental work complete - supervision of service trial in progress.
3.13 <u>Mains Variations.</u>	To overcome the effects of mains variation on our routine programme measuring equipment.	Complete for certain important testing apparatus.
3.14 <u>Automatic Chain Switching for Bush House.</u>	To carry out the present regular chain switching automatically. Staff saving. This has demanded development of modified timing arrangements.	Continuing.
3.15 <u>Re-activating Dry Batteries.</u>	To save expenditure on dry batteries.	Complete.
3.16 <u>Miscellaneous.</u>	Numerous small apparatus such as transformers, and power units, have been designed for the service.	Essentially continuing nature.

4 - SPECIAL SYSTEMS & INSTRUMENT SECTION - 4 Engineers.  
2 Laboratory Technicians.

Job	Work and Purpose	State of Work
4.1 <u>Automatic Monitors.</u>		
Minor.	Detail work in regard to particular installations. Fifteen now installed and important staff savings effected.	Complete.
Major.	Preparation of information for Scottish and West of England installations.	Design complete - assistance during putting into service will be required.
4.2 <u>Unattended Transmitters.</u>		
Ramsgate.	Double unit transmitter with automatic supervision and sustantation on experimental field trial. The complete development, design and installation was handled by Designs Department. If this development proves to be successful, a staff saving of about 5 men per transmitter will accrue.	Prototype completed - service trial in progress.
Daventry.	Automatic monitor apparatus has been designed, developed and manufactured for unattended supervision of the Third Programme transmitter at Daventry.	Trial installation complete and working.

Job	Work and Purpose	State of Work
4.3 <u>Television Studio Communication Transmitter and Receiver.</u>	This provides 'walkie-talkie' communication between Television Studio Manager and the Producer. The prototypes of the receiver are already in studio use and the final, more compact, model is being manufactured. The compact transmitter is now designed and preparation of manufacturing information is in progress.	Receiver complete. Transmitter nearly complete.
4.4 <u>Miniature Lapel Microphone.</u>	A miniature pocket amplifier permits the use of a miniature lapel microphone for interview purposes at difficult O.B. points and is used as an inconspicuous microphone in some television broadcasts.	Complete.
4.5 <u>Paraboloid Microphone.</u>	Developed from Research Department information and used for noise effects, etc. for television O.B.'s at which there is difficulty in using a microphone close up.	Complete.
4.6 <u>440 Cycle International 'A' Generator.</u>	A small portable unit designed to provide an accurate International 'A', loud enough for orchestral tuning purposes.	Complete.
4.7 <u>Rebroadcast Receiver.</u>	A good quality, robust, receiver to pick up a weak signal in presence of strong local signal. Acts as standby if cable link fails.	Long wave complete. Medium wave nearly complete.
4.8 <u>H.F. Transformer Design.</u>	Several small H.F. transformers have been designed for use in this and other departments.	A continuous demand.

5 - TELEVISION TRANSMISSION UNIT - 6 Engineers  
2 Laboratory Technicians.

Job	Work and Purpose	State of Work
5.1 <u>Pulse Generator.</u>	Modification of two generators of pulses for pre-transmission tests in order to meet new operational requirements.	Complete.
5.2 <u>Sending Amplifiers.</u>	Manufacture and testing of 5 sending amplifiers for M.C.R's.	Complete.
5.3 <u>General Purpose Video Amplifiers.</u>	Complete design and production of first six.	Complete.
5.4 <u>London University/B.H. Link.</u>	Design and provision of equipment for this link.	Complete.
5.5 <u>Stabilising and Equalising Units.</u>	Stabilises synchronising pulses and restores low frequency deficiencies. Manufactured by Pye to our circuit design. Two have been tested by us, four more to come.	Continuing.
5.6 <u>Equalisers.</u>	Correction of frequency characteristic for long tie lines. Units for Alexandra Palace, Line Grove, Sutton Coldfield, Holme Moss and Kirk O'Shotts.	Complete.
	For other locations.	Continuing.
5.7 <u>Programme Meter.</u>	Means of measuring television programme peaks and includes measurement of average signal. Three prototypes made. Further work when more information on features of signal to be measured are known.	Complete.

Job	Work and Purpose	State of Work
5.8 <u>Phase Equalisers.</u>	To compensate the transmission delay of circuits incoming to switching centres.	Continuing.
5.9 <u>Alexandra Palace Corrector.</u>	Correction of Alexandra Palace transmitter response.	Complete.
5.10 <u>Equalisers for 64.75 Mc/s transmitters.</u>	To correct the response and consequent modification of input amplifiers.	Complete.
5.11 <u>Philips Standard Signal Generator.</u>	Appraisal tests with a view to use as standard signal generator.	Complete.
5.12 <u>Marconi Distribution Amplifier.</u>	Performance Tests.	Complete.
5.13 <u>E.M.I. Conversion Amplifier.</u>	Performance tests which demonstrated need for modifications.	Complete.
5.14 <u>Amplifiers at A.P.</u>	Conversion of line termination room apparatus to standard 1-volt signal, in order to centralise operation on central apparatus room (Alexandra Palace).	Complete.
5.15 <u>S.B. Link Performance.</u>	Investigation of A.P./Sutton Coldfield link performance to determine whether an equaliser would improve it.	Complete.
5.16 <u>B.H.-Lime Grove Equaliser.</u>	Replacement of existing equaliser to improve signal to noise ratio.	Complete.
5.17 <u>E.M.I. Waveform Monitor.</u>	Tests on production model.	Complete.



Job	Work and Purpose	State of Work
5.18 <u>Switching Centres.</u>	Design and provision of reserve switching arrangements at Birmingham and Manchester to save manning.	Complete.
5.19 <u>Swains Lane-A.P. Link.</u>	Re-equalisation to improve performance.	Complete.
5.20 <u>Wayne-Kerr Oscillator.</u>	Performance tests.	Complete.
5.21 <u>Demonstration to B.R.E.M.A.</u>	To convince B.R.E.M.A. of good quality of Sutton Coldfield transmissions.	Complete.
5.22 <u>Callender's Camera Cable.</u>	Crosstalk tests.	Complete.
5.23 <u>Repeater Equipment at B.H.-A.P. and Lime Grove.</u>	Replacement of G.P.O. equipment to save annual rental.	Nearly complete.
5.24 <u>Amplifier Detector</u>	New design to facilitate testing.	Continuing.
5.25 <u>Marconi Centimetric Wave Equipment.</u>	Performance tests to determine whether equipment met specification.	Complete.
5.26 <u>E.M.I. Vestigial Sideband Receiver.</u>	Performance Tests.	Complete.
5.27 <u>Eye Picture Monitor.</u>	Performance tests to assess suitability for use at switching centres.	Complete.
5.28 <u>Interference from Third Programme Transmitter at Manchester.</u>	Tests to determine whether Third Programme should be closed down.	Complete.

<u>Job</u>	<u>Work and Purpose</u>	<u>State of Work</u>
5.29 <u>Picture Quality</u>	Investigation of Wimbledon transmissions with consequent improvement in picture/quality.	Complete.
5.30 <u>Test Modulator</u>	To permit precise testing of receivers in 47-70 and 180-200 Mc/s band.	Complete.
5.31 <u>Vision Check Receiver</u>	Special high quality vestigial sideband receiver to serve as a standard of quality checking.	Complete.
5.32 <u>Rebroadcast Receiver</u>	Design and provision of rebroadcast receiver gives immediate reserve for Birmingham-Holme Moss link. A high quality receiver working in presence of strong local field.	Prototype complete, and working.
5.33 <u>200 Mc/s Transmitters</u>	Tests on 200 Mc/s 340 watt mobile transmitter at Wembley and reception tests at Swains Lane requiring subsequent work by Marconi to give improvement.	Complete.
5.34 <u>Centimetric Wave Test Team</u>	Co-operation on propagation tests at Sutton Coldfield, Birmingham, Daventry, Wrotham and London University.	Continuing.
5.35. <u>Television for Schools</u>	Design and provision of seven convertors to receive special 200 Mc/s transmission with ordinary commercial sets.	Continuing.
5.36 <u>Interference at Swains Lane</u>	Tests and design of filter to eliminate interference.	Complete.
5.37 <u>S.B. Links</u>	Tests prior to acceptance from G.P.O. (Birmingham-Manchester-Holme Moss).	Complete for link chain - continuing work on new links.

Job	Work and Purpose	State of Work
5.38 <u>Monitoring Amplifiers</u>	Tests on monitoring amplifiers at Birmingham and Manchester switching centres. Supplied by G.P.O. to our requirements.	Complete.

6 - TELEVISION APPARATUS UNIT - 5 Engineers  
2 Laboratory Technicians

Job	Work and Purpose	State of Work
6.1 <u>Motorisation of the 5:1 Zoom Lens</u>	Method of control of focus was mechanical as delivered. As this was inadequate for operational use we produced servo-control. This has already helped to simplify O.B.s	Complete.
6.2 <u>Servo Panning Head</u>	Because of the failure of commercially available gyroscope heads to cope with our heavy television cameras on O.B.s, we have produced a design of a servo operated panning head which will perform the functions previously attempted with gyro heads as well as several additional facilities. The normal action of moving the panning handle in fact causes the motor to drive the camera round so that extraneous influences, such as gusts of wind, cannot affect the smooth panning of the camera. Because the camera panning is motorised, it will be possible if it is found desirable to control this panning remotely.	Continuing.
6.3 <u>Still Back Projection</u>	We arranged for the hire of the Pinewood still background projector and have carried out a number of demonstrations and tests building up to a field trial which has been, and is still, going on.	Complete.
6.4 <u>Renovation of Still Back Projector</u>	Renovation of Lime Grove back projector to replace one hired from Pinewood.	Nearly complete.

Job	Work and Progress	State of Work
6.5 <u>16mm. Moving Back Projection</u>	In co-operation with P.I.D. we have demonstrated that satisfactory moving back projection on a small scale can be obtained from a 16mm. film. The design of a final projector has been discussed with the manufacturers.	Continuing.
6.6 <u>Inlay</u>	Provides means of inserting parts of one picture in a background of another. Makes wipes and dissolves simple operation. Three complete models for Lime Grove are being manufactured by us.	Design complete. Manufacture continuing.
6.7 <u>Test Equipment for Telefilm Recording</u>	A considerable amount of work has been done in producing the design of test equipment to assist in telefilm recording.	Continuing.
	(a) A new pulse generator which provides a number of specialised test wave-forms has been designed and a prototype is in manufacture.	
	(b) A design of microdensitometer has been commenced and the basic electrical circuit designed. The necessary optics have been ordered, but are not due for delivery for some months.	
6.8 <u>Scene Reflectometer</u>	A design for a scene reflectometer for measuring the relative brightness of painted scenes.	Continuing.

Job	Work and Purpose	State of Work
6.9 <u>Prototype Camera</u>	A prototype camera, using an E.M.I. midget image iconoscope tube, was designed and manufactured by Designs. This incorporated novel optical view-finding. Was tested at Lime Grove working beside C.P.S. cameras in Studio D. High quality and general utility and reliability approved by both programme and engineering users.	Complete.

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. It undertakes all prototype production in connection with new designs, and the associated draughting work.

Associated with the actual production of equipment is the ordering and stocking of components.

Technical inspection and testing of equipment, and in some cases, testing of systems on site is carried out by the Test Room.

Financial submissions, scheme accounts, requisitioning, technical filing 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.

The work of the production side of the section can best be expressed by a schedule of models completed 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, it has often been agreed that we should supervise the production of these few by outside manufacturers. This saves a great deal of time and draughting effort as against that required by Equipment Department for the production of full manufacturing information, and has often proved the only way of getting panels in time to meet operational requirements.

Considerable technical testing, investigation and co-operation on electrical and mechanical design is also involved.

The construction of apparatus in the Model Shop calls for a minimum of Drawing Office effort, but more complex drawings are required for all production work put on outside firms, and for the preparation of Reports, Descriptions, and Design Specifications for subsequent production. Sixty seven such specifications etc., each incorporating three or four drawings and two or three parts list sheets, were produced during the year and are in many cases being used together with operating information to serve as interim Technical Instructions. This work is additional to the preparation of drawings for I.E.E. Papers, Lectures, Lantern Slides, Exhibition Captions, B.B.C. Quarterly, etc., and drawings and data sheets for such items as relays, coils, transformers and so forth.

Schedule of Equipment produced under Designs Department supervision during  
1951  
(Unless otherwise stated the work has been completed)

Description of Equipment	No. of Units	Designs Department Model Shop	Effort Outside Mans.	Features Calling for Special Treatment
7.1 <u>Vision Lines Terminating Panel Type LTT/7 (Outgoing) Type LTT/6 (Incoming)</u>	8     5		5 months	Not likely to be repeated. Made from minimum drawings.
7.2 <u>Video Amplifiers Type TVA/1</u>	12		12 months	Made from development model to save drawing work.
7.3 <u>Electrical Prototype of Automatic Monitor Major</u>	1	7 man months.		
7.4 <u>Video Amplifier Detector and Attenuator Panel</u>	1	5 man months.		
7.5 <u>Switching Panels and Relay Panels for Birmingham and Manchester</u>	4	3 man months.		Special panels not likely to be repeated.
7.6 <u>Remote Control Panel for Penmon</u>	1	2 man months.		
7.7 <u>Experimental Work on Continuity Switching</u>	1	5 man weeks		



	Description of Equipment	No. of Units	Designs Model Shop	Department Outside Mans.	Effort	Features Calling for Special Treatment
7.8	<u>Remote Control System for Exeter, Wrexham and Dundee</u>	24			7 months	Three sets of eight different and special panels.
7.9	<u>Miniature Receiver for Vision Studio Use.</u>	1	3 man months.			A very intricate job calling for first class work.
7.10	<u>Automatic Monitor Major 4 Systems of 17 different panels</u>	68	A great deal of effort required on this job,		12 months	Four systems required. One is a prototype and in order to save draughting work and duplication of effort the others are being manufactured at the same time.
7.11	<u>'Inlay Projects for Vision. Three Systems of about ten different panels</u>	30 approx.	6 man months. (estimated)		14 months (estimated)	This comprises development model and two sets for operational use at Lime Grove. Work proceeding.
7.12	<u>Various work for Festival of Britain</u>		6 man weeks			
7.13	<u>'Automarker' for Selector Switch</u>	1	4 man weeks		1 month	A job requiring almost watchmaking precision when produced as a prototype.
7.14	<u>International 'A' Generator (Standard 440 cycle tone source).</u>	1	3 man months.			

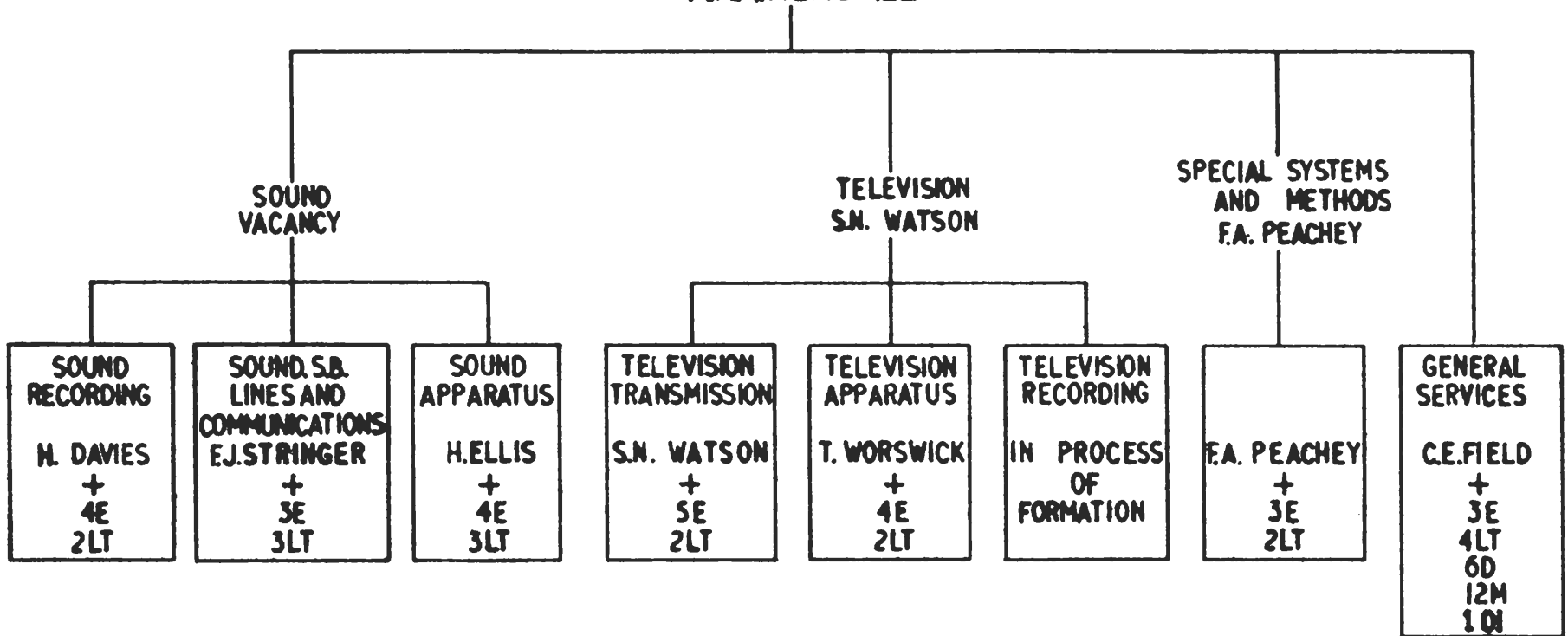
Description of Equipment	No. of Units	Designs Department Model Shop	Effort Outside Mans.	Features Calling for Special Treatment
7.15 <u>Relay Unit for Remotely Controlled Stations.</u> <u>Type RLB/105C</u>	9	4 man months.		
7.16 <u>Servo Controlled Panning for Vision Camera</u>	1	4 man months.		
7.17 <u>Vision Switching Panels for Birmingham, Manchester and Kirk O'Shotts</u>	5		6 months (estimated)	Job nearing completion.
7.18 <u>Vision Test Modulator</u>	1	3 man months.		
7.19 <u>Miniature Talk-back Transmitter</u>	2	3 man months.		
7.20 <u>Zoom Lens Adaptations</u>	1	2 man months.		
7.21 <u>Designs and Construction of Standard Video Panels</u>	60	1 man month.	6 months (estimated)	Basic panels for all development models of rack-mounted vision equipment. Work in progress.
7.22 <u>Vestigial Side Band Receivers for Vision</u>	1	1 man month.		
7.23 <u>Vision Programme Meter</u>	3		4 months	
7.24 <u>Vision Quality Check Receiver</u>	3	2 man months.		

	Description of Equipment	No. of Units	Designs Model Shop	Department Effort Outside Mans.	Features Calling for Special Treatment
7.25	Vision Amplifier Detector (Redesign)	1	3 man months.		Not complete.
7.26	<u>Ramsgate - Improved Home Coverage</u>	10	8 man months.		Ten development panels for field trial produced in two months.
7.27	<u>Communication Scheme Part 3</u>	3	2 man months.		Job not complete.
7.28	<u>Vision Repeatering Equalisers</u>	39	8 man months.		Job not complete. Each panel contains components requiring adjustment to meet transmission requirements. Cannot be readily specified for quantity production.
7.29	<u>Recondition Back Projector for Lime Grove</u>	1	10 man months.		Urgent job for operational use at Lime Grove.
7.30	<u>Vision Convertors for Schools Television Experiment</u>	7	4 man months	2 months	Panels manufactured and now in Model Shop for wiring.

# DESIGNS DEPARTMENT

ORGANISATION CHART SHOWING  
TECHNICAL STAFF

H.D.D.  
ARA.RENDALL



E = ENGINEER

M = MECHANIC

LT = LABORATORY TECHNICIAN OI = OUTSIDE INSPECTOR

D = DRAUGHTSMAN

