

# Mullard *Outlook*



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Issued by the Mullard Valve Sales Department



Mr. S. S. ERIKS  
Director of  
Mullard Electronic Products Ltd.

## A message from MR. S. S. ERIKS

Although I know that many thousands of dealers will receive this new Mullard publication, I write these words as a personal message to you. I feel that to-day, more than ever, the cordial relations which exist between my Company and its numerous trade friends are a mutual assurance of future prosperity.

Many of us can trace our histories back to the very beginnings of the Radio Industry, but none will deny that we are now on the threshold of great new developments. In television alone one sees enormous potentialities, and this, incidentally, implies no restriction in the continued expansion of radio. In addition, new fields are opening up in Industrial Electronics—fields in which the progressive and qualified service dealer is destined to find rich harvests.

But while it is true to say that all the signs portend a period of prosperity, it is only the well-equipped, well-managed, and well-informed dealer who can hope to command his rightful share of the market.

As you know, it has always been the policy of my Company to base its marketing upon a solid foundation of technical and commercial information services. The publication of MULLARD OUTLOOK is, in fact, merely an extension of the comprehensive services which we consider you are entitled to receive. Nevertheless, the OUTLOOK differs from other forms of published Mullard literature in that it provides a new vehicle for the exchange of important information. And I emphasise the word "exchange", for while there may be few actual contributions from our readers, it is an essential part of the OUTLOOK's purpose that mutual problems are discussed.

In this way we hope to render even greater service to our friends in the Trade, and to offer them such co-operation as they may need to fulfil their vital role in a growing, virile industry.

S. S. ERIKS  
Director.

## EDITORIAL

Editorial Offices:

CENTURY HOUSE, SHAFTESBURY  
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Published by:

MULLARD ELECTRONIC  
PRODUCTS LTD.

The 1950 National Radio Show at Castle Bromwich will be the prelude to what everybody hopes will be a record year for the Industry. Certainly there will be no lack of new products to whet the public's appetite for better home entertainment, and a great volume of advertising will help to swell the demand.

For you, the dealer, busy days are ahead. The business will be there all right, but you will have to go after it—and the harder you go the more you will get.

Can we help you? We believe we can. That is why we have chosen this moment to introduce the OUTLOOK, a monthly publication for the progressive retail organisation. A commercial section and a section for the service department will be included in each issue. The former will contain articles and information on sales aids, sales promotion schemes, publicity, and methods. The other section will be devoted to matters of interest to the service engineer.

In this first issue, you will find details of the Mullard valve exhibits at Castle Bromwich, an announcement about a revolutionary valve-testing instrument, particulars of some useful educational services, guidance

on handling the new all-glass miniature valves, and information about important new publications.

We hope you will make the most of the OUTLOOK, by regarding it as the official medium of Mullard Valve news and information, and by using it, if you wish, to air your own views. For our part, we will continue to do our best to keep the OUTLOOK bright.

## VALVE REPLACEMENT GUIDE

New Edition now available.

In response to many requests from our Trade friends we have now revised and extended the well-known Mullard Valve Replacement Guide.

Whilst the previous edition of this popular book covered all receivers marketed between 1933 and 1939, the new edition includes all receivers introduced between 1933 and 1949, both years inclusive. The Dealer thus has at his disposal, in a compact and convenient form, lists of the valve complements of practically every commercial set at present being used in this country.

The receivers are listed in alphabetical order of maker's name, and the post-war models are grouped separately from the pre-war models.

Where applicable, appropriate Mullard replacement valves are listed for all receivers manufactured between 1933 and 1940. For those valves for which no Mullard equivalent is available, the original valve type and make is quoted, and is printed in italics.

Receivers manufactured after 1939 are listed with their original valve complements, irrespective of make. Suitable Mullard

replacements, if available, can be quite easily selected from the comprehensive Equivalents List printed on tinted sheets at the end of the book.

## OUR FRONT COVER



Our Front Cover Picture shows a model of Mullard's Stand No. 64, at Castle Bromwich. Models of Exhibition Stands such as this are frequently produced at the same time as the plans, and

provide an excellent three-dimensional conception of the final structure. The finished stand is an effective compromise between such conflicting requirements as the fundamental design motif, the need for effective display of the products, space for discussion with customers, the various rules and regulations imposed by the exhibition authorities, and of course, the cost.

Since many of these factors have also to be borne in mind in the design of Dealer Exhibitions, an account of how Mullard plan their stands may be of help to the Dealers in the design of their own exhibition stands. An article on this subject will appear in a future issue of MULLARD OUTLOOK.

## Mullard Valves at Castle Bromwich

The Radio Show at Castle Bromwich is something more than a mere prelude to just another season's trade activities. With television developing in coverage, in variety of programmes, and in the technique of reception, the Industry is on the threshold of a great market expansion.

And it is probably true to say that at no other time in the history of Radio has the future depended so much upon that section of the industry responsible for the design and manufacture of receiving valves and cathode ray tubes.

Mullard's exhibits at Castle Bromwich are indicative of the great advances which have been made, and, above all, of the measures which have been planned to stimulate retail sales. On Stand 64, the larger of the two sites devoted to Mullard products, both the public and the Trade will find much to interest them.

### SIDNEY—

#### A SYMBOL OF SERVICE

Making his debut, for instance, is Sidney, a new advertising character who will be popularised in Press and Window Display. Sidney stands for Service. He is the mouth-piece of every enterprising dealer who realises that the active promotion of valve sales is the surest way to build repeat business in receivers. At Castle Bromwich, in a *Radio Times* campaign, in literature, and in display material, Sidney will give the listening and viewing public two important messages. The first is that valves *do* wear out, and 'new performance' cannot be maintained indefinitely without replacements. The second message is that the B.B.C. (who ought to know) strongly urge the public to get regular attention for their receivers from skilled service engineers.

#### INTRODUCTION TO A NEW PUBLICITY CAMPAIGN

Mullard's pre-eminence in the Industry, a factor which qualifies them for such an educational role, is demonstrated on Stand 64 by a fine display of valves and tubes, including a giant cut-away model of a typical receiving valve. This and other features are the introduction to a new publicity campaign which will be described in detail in the next issue of MULLARD OUTLOOK.

#### NEW MULLARD HIGH-SPEED VALVE TESTER

The introduction of the new Mullard High-speed Valve Tester at this particular time has, therefore, even greater significance than would normally follow from its revolutionary design. Apart from its sales creating



The telephone in this picture indicates the size of the preliminary scale model of Mullard Stand No. 74

potential, however, it offers dealers great advantages over any similar type of instrument. It is automatic in operation, it tests to manufacturers' limits, and it is virtually foolproof. But even more important to the busy dealer, is that an unskilled assistant can test any normal receiving valve in a few moments. The instrument is being demonstrated on the stand, and, of course, orders are being booked. The Tester is described in detail on another page.

#### NEW SERVICE AND SALES AIDS

Inside Stand 64, there are a number of other items of special interest for dealers. Not the least important of these are new service and sales aids, and some advance information on sales promotion schemes. The Mullard Sales and Technical Service departments are well represented and available for discussions.

#### VALVES DESIGNED SPECIFICALLY for TELEVISION

Stand 74, the second Mullard site at Castle Bromwich, is devoted to equipment manufacturers, but dealers will be interested in seeing the valves and tubes which will be current equipment in so many of the new radio and television receivers. Of outstanding importance here is the introduction of a range of receiving valves *specially designed for television*. Engineers will appreciate the importance of this announcement and will realise what an influence the new valves will have on receiver design. Their importance to the Industry's exports cannot be overestimated for they enable manufacturers to design receivers

suitable for any system and any conditions. This is one of the reasons why the new range is to be known as the "World Series". Another reason for this name is to emphasise that these valves, like all other Mullard valves and tubes, are available for maintenance in all countries to which British radio manufacturers export their products.



... SIDNEY—THE SERVICE MAN

## IN YOUR AREA

### SCOTLAND

MR. GEORGE MARSH is well known to Wholesalers and Dealers throughout Scotland.



Mr. GEORGE MARSH

Engineer in Scotland. Subsequently he transferred to the retail side of the trade to initiate Service Departments with two well-known retailers. Later, Mr. Marsh opened a Trade Service Establishment, which he ran successfully until the outbreak of war in 1939.

During the war, Mr. Marsh was engaged on important work, both with the Ministry of Supply and the Radio Production Branch of the Signals Establishment. He joined the Mullard Valve Sales organisation to the trade in 1946.

Motor car speed trials and angling for trout and salmon in the truly Scottish style are among Mr. Marsh's various hobbies. He is also very interested in high fidelity audio - frequency reproduction and the development of precision timing equipment, being, among other things, official timekeeper for the R.A.C. in Scotland.

### NORTH OF ENGLAND

MR. E. H. WILDING of the Northern Area has been interested in radio from the very early days of broadcasting. As far back as 1919 he was a licensed Radio Amateur, and he is still active on the air as "G2BV".

Mr. Wilding has had a wide technical experience. Educated at Wigan Grammar School and later at Liverpool University, he has since become a Grad. I.E.E. After being trained as an Electrical Engineer with the Wigan Coal and Iron Co., he left to become Works Manager of the S.S. Radio Co., Manchester.

Mr. Wilding's association with the Mullard organisation dates back to 1927, when he joined the special technical staff



Mr. E. H. WILDING

1178 Squadron A.T.C. Mr. Wilding is married, and has a "teenage" daughter.

### MIDLANDS

MR ALAN BURR is well known to the Trade throughout the Midlands both for his tremendous enthusiasm in the selling of valves and for his interest in radio and other branches of electronics.



Mr. ALAN BURR

representative for the selling of Mullard Valve Testing Gear.

When the war broke out, Mr. Burr returned to the factory and laboratories of the Mullard organisation, where he was engaged on the manufacturing and design problems on various communications and other electronic equipment.

When later the Industrial Laboratory was moved to Salfords, Surrey, Mr. Burr found himself amongst what he describes as one of the busiest bunch of back-room boys in Britain. His work here was principally concerned with the applications of electronic devices.

Mr. Burr's valuable technical background serves him well in his present capacity.

### LONDON and HOME COUNTIES

MR. G. W. MORRIS needs no introduction to dealers and wholesalers in London and

of the Mullard Wireless Service Co. at Balham, where he worked under Mr. John Ree.

During the war he was engaged in important work at the Blackburn factory. At the same time he served as Commanding Officer, 1178 Squadron A.T.C. Mr. Wilding is married, and has a "teenage" daughter.

the Home Counties. Joining the Mullard organisation as early as 1927, he has, in fact, grown up with the trade.

When Mr. Morris first joined the Company he spent a short time in the Accounts Department. He then joined the Mullard Sales force, and for many years represented the Company in North and North-West London, Herts, Beds, and Middlesex. Later he spent a number of years among his many trade friends in Kent, Surrey and Sussex.

Since taking up his present position in the London and Home Counties Area in 1948, Mr. Morris has maintained direct contact with all Wholesalers, Chain Stores and large buyers of valves for maintenance purposes.

Up to 1948, Mr. Morris was a very keen club cricketer. He is now a golfing enthusiast, and is an active member of the Radio Industries Golfing Society.



Mr. G. W. MORRIS

### WEST OF ENGLAND

MR. C. BARRAND has been associated with radio since 1917, when he took his First-Class P.M.G. Certificate. He then joined the Marconi Company, and went to sea as a wireless operator.



Mr. C. BARRAND

Leaving the Marconi Company in 1930, Mr. Barrand joined the technical staff of the Six-sixty Radio Company, and stayed there until 1933, when the firm closed down. After this he was appointed Technical Assistant to Mr. Rogers in the Service Department of the Mullard Wireless Service Co. Ltd. He transferred to the Mullard Sales organisation in 1936. During the war Mr. Barrand maintained contact with wholesalers throughout the South of England. At the same time he also served as an A.T.C. Signals Officer.

### MULLARD FILMSTRIPS Aid Technical Instruction

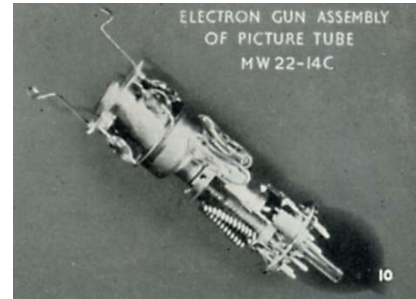
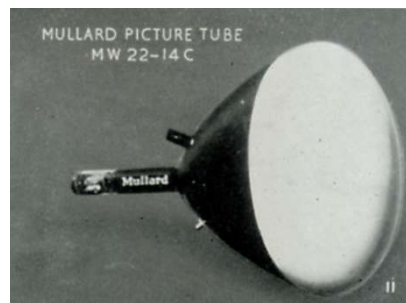
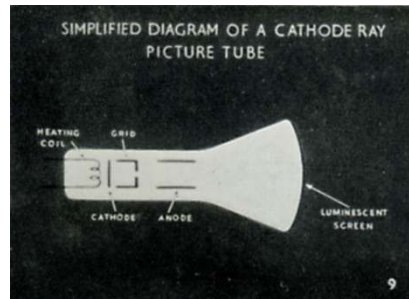
The Mullard organisation has always taken a great interest in Technical Education. It is not surprising, therefore, that they were one of the first firms in this country to realise the great value of filmstrips as an aid in the teaching of radio and television. A number of these filmstrips have already been produced by the Mullard Technical Publications Department, and some thousands are already in use throughout the country.

#### TALKS and LECTURES EASILY PREPARED

This series of filmstrips completely replaces the old service of lantern slides and duplicated lecture notes which formed a major item in the Mullard Educational Service before the war. Besides being of great value to lecturers in technical colleges, schools and other training establishments, they also have a particular interest for those radio dealers who are members of local radio societies and trade associations. With the aid of these filmstrips it is possible, with very little trouble, to prepare interesting talks and lectures on either a technical or popular level.

#### GREAT SAVING IN WEIGHT

For those who are not familiar with this type of teaching aid, it should be explained that a filmstrip is a short length of standard 35 mm. film on which are recorded all the illustrations required for a complete lecture. These illustrations are shown to the audience one at a time by means of a "Still" projector. The filmstrip, therefore, takes the place of the old-fashioned, bulky and expensive lantern slide, and its convenience will at once be recognised from the statement that a strip containing fifty or more illustrations can be carried in a small aluminium can only an inch and a half in diameter, and weighing only a fraction of an ounce.



The illustrations reproduced on this page show three frames taken from a Mullard Television Filmstrip. In the Filmstrip itself, these frames are in colour.

#### TELEVISION FILMSTRIPS IN COLOUR

The instructional value of the Mullard Filmstrips Parts 7 and 8, which describe the "mechanism" of television and the general features of television receiver circuits, is greatly enhanced by the judicious use of colour. For example, in curves and diagrams it facilitates the differentiation between a number of variables, e.g., voltage, current, and the sound, vision and synchronising signals. It is also extremely useful for illustrating the basic principles of operation of such devices as the television camera or iconoscope, and the cathode ray tube.

#### FREE SERVICE TO RADIO SOCIETIES and THE TRADE

Normally Mullard Filmstrips are available from various filmstrip agencies, the price being 10s. 0d. each strip for the five titles in the first series, and £1 0s. 0d. each for the two titles in the television series.

In preparing these lectures, however, Mullard also had in mind the needs of Radio Societies, Trade Associations and similar bodies who might require the filmstrips for a single showing only. A small library of filmstrips is therefore maintained at Century House, and any of the films, with the lecture notes, can be borrowed for a few days free of charge. A projector can also be loaned should difficulty be experienced in obtaining one locally. Applications for loan should be sent to Technical Publications Department, Century House, Shaftesbury Avenue, London, W.C.2.

#### WIDE RANGE OF SUBJECTS

Two series of Mullard filmstrips are at present available. The first, comprising five strips, covers six separate lectures with the following titles:—

- Part 1—"AN INTRODUCTION TO ELECTRONICS."
- Part 2—"THE PRINCIPLES, PROPERTIES AND APPLICATIONS OF THE RADIO VALVE."
- (The above two titles are combined on one strip.)
- Part 3—"THE CONSTRUCTION AND MANUFACTURE OF RADIO VALVES."
- Part 4—"THE MEANING OF VALVE CHARACTERISTICS."
- Part 5—"THE BASIC VALVE CIRCUITS."
- Part 6—"INDUSTRIAL HIGH FREQUENCY HEATING."

The second series at present comprises two filmstrips in colour:—

- Part 7—"THE PRINCIPLES OF TELEVISION —1."
- Part 8—"THE PRINCIPLES OF TELEVISION —2."

Each filmstrip contains up to 50 illustrations with the necessary captions and references, and is accompanied by a printed booklet of notes written in the form of a lecture. These can be used at the discretion of the teacher or lecturer, either as self-contained lectures or as the basis of more extended lessons.

## NEW MULLARD VALVE TESTER

### *Entirely new instrument of* **REVOLUTIONARY DESIGN**

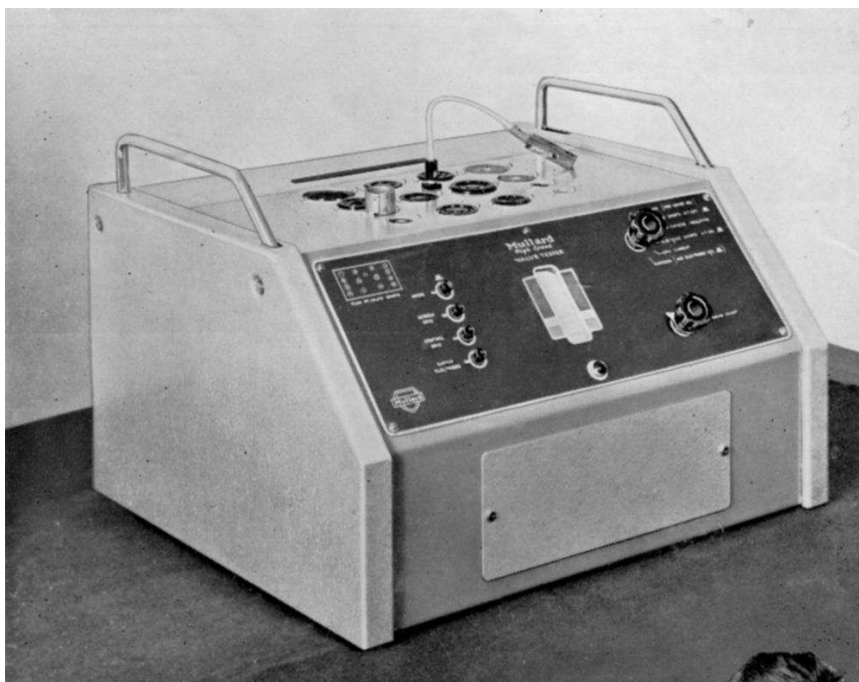
The provision of valve testing apparatus suitable for use by dealers and service engineers has been under review by Mullard over a period of some years. Eighteen months ago, a group of engineers at the Mullard research laboratories analysed the results of discussions between our representatives and dealer service engineers, and then set to work to design an instrument which would satisfy all the exacting requirements of the modern retail service departments, and the test conditions laid down by the valve manufacturers.

The new Mullard High Speed Valve Tester is the outcome of their work. It will be demonstrated for the first time on Stand 64 at Castle Bromwich, and initial supplies will be available to dealers during the coming season.

#### IMPORTANT FEATURES

As can be imagined, the problems of the Mullard engineers were not in designing a valve tester, but in adapting the characteristics of proved factory and laboratory instruments to meet the requirements of the dealer.

The new tester had to be compact, accurate, easy to operate by non-



**The Mullard High Speed Valve Tester . . . impressive, efficient, simple in operation.**

technical personnel, fast in operation, and, if possible, automatic. These qualities, and more besides, are features of this remarkable new instrument.

If you have seen valves undergoing test in a modern factory, you will appreciate what has been achieved in producing an instrument less than 12" high, and occupying a bench space of 16" square. And yet this compact apparatus embodies all the exacting features necessary for the accurate testing of valves in shop or service department. It is quite automatic.

Operating on similar principles to the original Mullard Master Test Board, it uses perforated cards which, when inserted in a gate-switch, automatically select the appropriate testing circuits



and apply the correct potentials. No other adjustments of these circuits and operating potentials are necessary.

The accuracy of this instrument is of the highest order, and it will give the same results as if the valves were similarly tested by a valve manufacturer. Despite this, it is so simple to operate that a non-technical assistant

can learn to use it in ten minutes. What is more, it is virtually impossible to damage either the tester or the valves under test. And in this connection there is yet another important feature—it employs as an indicator, a cathode ray tube instead of the usual expensive and vulnerable meter.

As for the speed of the instrument in use, any normal receiving valve can be completely, and accurately, tested in a few moments.

## RANGE OF TESTS

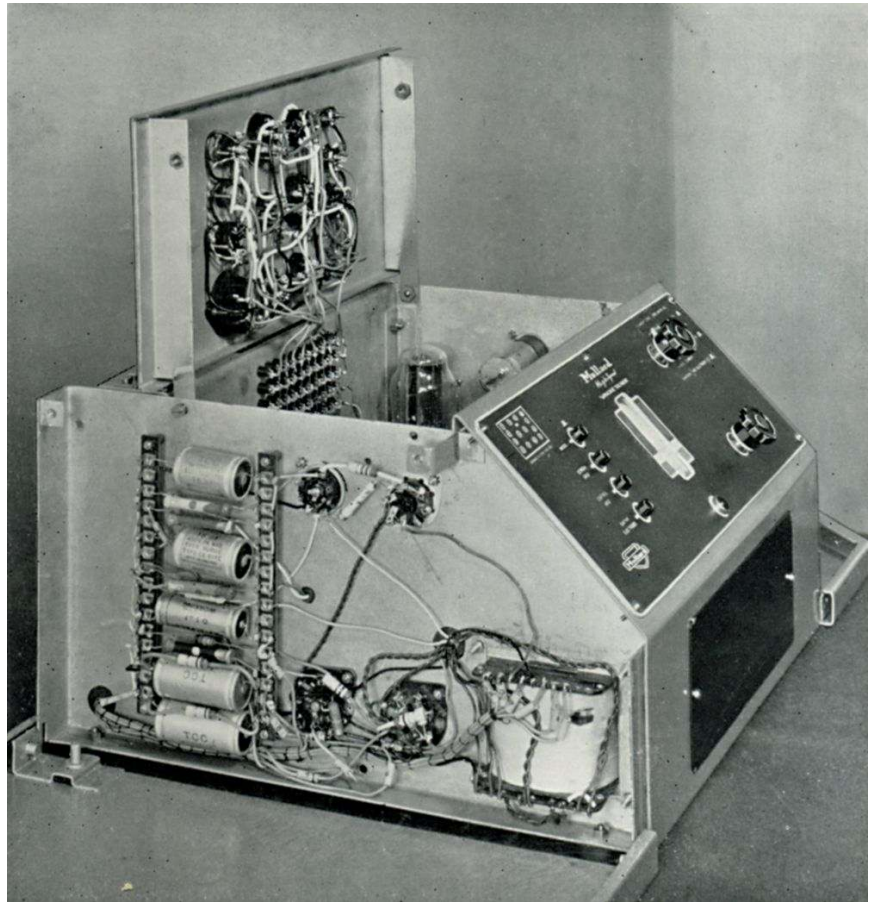
Valves, of course, are tested under working conditions, and a simple arrangement of switch and push buttons enables all possible faults to be detected rapidly. The tests not only include inter-electrode insulation, continuity of electrodes and degree of emission, but also grid current and heater-cathode insulation. The position of a moving spot on the cathode ray tube immediately indicates whether the valve on test is or is not within its proper operating limits.

From a practical point of view, the new valve tester will be a delight to service engineers. It is solidly constructed, it has an impressive appearance, and yet all component parts are readily accessible.

## TIME & MONEY-SAVER

Dealers will recognise at once that this instrument has important advantages. Assistants without technical knowledge can deal with valves brought into the shop for testing, and can give the customer a thoroughly reliable report on their condition.

In the service department, the engineer can now make a practice of testing complete sets of valves from receivers brought in for repair, for even in the case of elaborate television receivers, the total testing time is very small.



This interior view of the new High Speed Tester shows the neat, compact and accessible arrangement of wiring and components.

## —MONEY-MAKER TOO

Finally, dealers will not overlook the profitable possibilities of cultivating a valve testing business with this instrument. Previously, the need for technical personnel and the time involved has made valve testing in the shop something of a problem. Now it is both easy and economical to take the fullest advantage of all the sales and publicity aids which Mullard are providing.

Full details of the High Speed Tester are contained in a booklet which is available on request. If you are not going to Castle Bromwich, complete and return the enclosed Prepaid Card to Mullard Electronic Products Ltd., Valve Sales Department, Century House, Shaftesbury Avenue, London, W.C.2.

## NEW EDITION OF VALVE AND SERVICE MANUAL

The second edition of the Mullard Valve and Service Manual is now available, and can be obtained from your usual wholesalers at a trade discount of 25 per cent. Like the first edition of this popular book, which sold out within a few weeks of its appearance in 1949, the new issue is also priced at 5s.

The valve section has been thoroughly revised to include the very latest additions to the Mullard range. The contents have also been rearranged to facilitate rapid reference. For example, all the data concerning a particular valve will be found on one page, and will include a base connection diagram.

In the technical section of the book most of the original tables and formulae have been retained, but useful additions have been made. The circuit section includes several new special circuits of interest both to the service engineer and the keen amateur constructor.



# NEW VALVES New Methods

Inevitable progress towards the common employment of miniature all-glass valves in radio and television receivers has introduced many new problems for manufacturers and dealers.

## ESTABLISHED NEED

The manufacturers are primarily concerned with attaining the highest standards of efficiency and reliability in a product which uses the most delicate components and operates within narrow tolerances. Only the absolute necessity for such types could possibly justify the very large amounts which have been invested in research, development and capital equipment. But nobody taking a long view of radio and television reception would deny that the necessity exists. Valves of these dimensions and design have made possible great improvements in performance at higher frequencies and have already opened avenues

along which broadcast and reception techniques will advance.

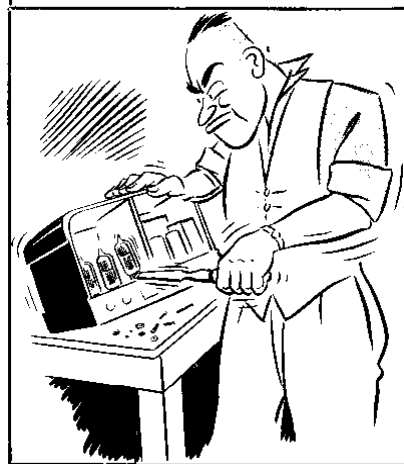
Dealers who have had an opportunity of visiting one of the Mullard valve factories will have seen for themselves some of the manufacturing problems involved. They will have seen new and intricate valve making machinery, impressive testing operations, and above all, the considerable degree of skill exercised by the employees engaged in making and assembling the minute parts.

## SERVICE PROBLEMS

All this, however, does not lessen the service engineer's problems. For him these new valves can be, at the very least, a source of irritation. Fortunately, the difficulties are not as great as they appear at first sight, and as the valves become more familiar the initial troubles will gradually disappear. It is really a case of new valves—new methods.

Let us first of all consider how the miniature all-glass valve differs mechanically from its larger, pinch-type predecessor. Well, it is certainly a more delicate construction. It has a small glass base through which as many as nine very slender pins protrude, and it will be obvious to the service engineer that a small amount of distortion of either the valve pins or the sockets in the valve base may provide a source of trouble. In fact, rough handling can easily cause damage by bending the pins or fracturing the base. So these valves

Effective perhaps—  
but **NOT** the best way



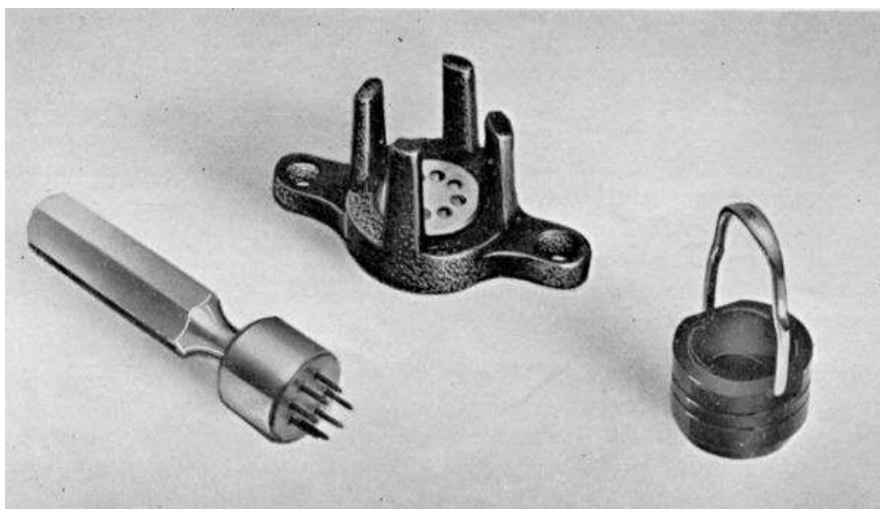
clearly require more care in handling than the older valves with their composition bases and thick rigid pins.

But despite this, there are really only three points to watch. The new valves must be extracted carefully (prising them out with any form of tool can be quite disastrous). They must be located and inserted into their sockets carefully to avoid distorting the pins in the socket contacts, and the socket itself must be treated with respect when replacing components on the underside of the chassis.

## THREE POINTS TO WATCH

Fortunately, all these points are catered for by three ingenious tools which are now available to service engineers and which are illustrated here. One is a clever device which, when placed over the valve, grips it firmly and enables it to be extracted safely. The second is a small jig for straightening pins which may get out of adjustment. Pin straightening, of course, should not be attempted on Mullard 'A' Technique Valves (E.40 Series), as these are fitted with hard pins. The third is a soldering jig which fits into the valve socket and permits soldering to be carried out without the risk of distorting the socket contacts.

A final tip—use of the soldering and the pin-straightening jigs before inserting the valve in a socket will ensure easy insertion of the valve, good contacts and lack of strain.



These three ingenious tools are designed to facilitate the handling of the new all-glass valves.